Effects of Capital Market Development on Inflow of Foreign Direct Investment to African Countries

A PhD Thesis

By

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Abstract

The role of foreign direct investment (FDI) in economic growth is well documented in the literature. Various studies have established that FDI contributes both directly and indirectly to economic growth of the host country, especially, in the developing countries. Despite the proven benefits of FDI to developing countries, Africa continues to account for less than six per cent of the global stock of FDI. To uncover why developing countries (especially countries in Africa) are less attractive to inflow of FDI, a number of studies have been conducted.

In most of those studies, the role of macroeconomic fundamentals is presented as the major hindrance to the developing world in attracting FDI. However, the fact that some developing countries (particularly in Asia and South America) falter on these considerations and still manage to attract inflow of FDI begs the straightjacket validity and appropriateness of those postulations. This new line of thought motivates the interest in looking at other set of variables that are capable of influencing the attractiveness of countries (especially developing countries like those in Africa) to inflow of FDI.

This study investigates the effects of capital market development on inflow of FDI to African countries. The reason for undertaking the study is because of the proven benefits of FDI to the host country, which include economic growth, enhanced industrialisation capacity, human capital development, and technological spillover, amongst others. It is thus considered important to investigate the role of capital market development on the attractiveness of Africa to inflow of FDI. In this study, we presented material on the measurable indicators and determinants of FDI flow. Most of the documented studies argue that FDI flows to countries with high purchasing power, better infrastructure, resource endowment and developed human capital. The role of capital market development on inflow of FDI is rarely researched.

In addition, there is no documented study yet that investigates the role of capital market development on inflow of FDI on regional basis in Africa. More importantly, the importance of institutional framework to capital market development in Africa has not been documented. Further, documented studies on the role of institutional framework on the attractiveness of Africa to inflow of FDI are rare, and studies that look at these dynamics on regional basis are rare. This study fills these missing gaps in the academic literature. Using annual data from various sources from 1980 to 2012 in a dynamic panel environment, the findings of the study are as follows:

Capital market development is an important determinant of inflow of FDI to Africa. Specifically, the financial resources provided to the private sector by domestic money banks as a share of GDP, equity capitalisation, stock turnover rate, and claims on domestic real nonfinancial sector by the Central Bank as a share of GDP are important determinants of inflow of FDI to Africa. This finding is also corroborated by the regional analysis. Further, this study establishes the importance of institutional framework on capital market development in Africa, especially corruption, the rule of law, regulatory quality, inflation as well as polity.

Furthermore, it is suggested, through the impulse response approach, that one standard deviation innovations shock on capital market variables would lead to moderate improvement on inflow of FDI to the selected African countries in the short run and the improvement becomes more substantial in the long run. Similar result is recorded for the regions as well. The impulse response result also suggests that the regulatory quality in the selected African countries as well as the regions is weak. The finding indicates that one standard deviation innovations shock on this variable will negatively affect inflow of FDI and the development of capital market. The negative effects are smaller in the short run as compared to the long run. Further, improvement in corruption perception, political environment and the rule of law, in general, are found to positively influence capital market development as well as the attractiveness of Africa to inflow of FDI.

The causality tests that attempt to ameliorate shortcomings regarding institutional framework may enhance the development of capital market on the continent. In addition, one of the most important components of the capital market (*BANK*)) is also found to directly Granger cause the inflow of FDI to Africa. Incidence of corruption, rule of law and the quality of regulatory framework are also identified as the most important institutional frameworks that determine the attractiveness of Africa to inflow of FDI. The study thus suggests the need for African countries to initiate policies that are capable of improving the institutional environment as a way of enhancing the efficiency of the capital market, and ultimately, enhance the attractiveness of the continent to inflow of FDI.

Declaration

I, Aregbeshola Rafiu Adewale declare that the research work reported in this thesis is my own, except where otherwise indicated and acknowledged. It is submitted for the Degree of Doctor of Philosophy in the University of the Witwatersrand, Johannesburg. This thesis has not, either in whole or in part, been submitted for a degree or diploma at any other university. Error and omission noted in this work are attributed to my imperfection.

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Aregbeshola Rafiu Adewale Date

Certification

I hereby certify that this work was supervised by me in accordance with the laid down regulations of the University of the Witwatersrand and in consonance with the principles of scholarship building, knowledge development and dissemination.

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Professor **Oludele Akinloye AKINBOADE** Date

(Supervisor)

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List of acronyms

2SLS – Two Stage Least Squares

ADI – Africa development indicators

ASEA – African Securities Exchange Association

BANK - The financial resources provided to the private sector by domestic money banks as a share of GDP

CMD – Capital market development

CORRUPTION – Corruption perception index

ECM – Error correction models

EQCAP – Capitalisation of the equity market

FDI – Foreign direct investment

FDINFL – Estimated variable for inflow of foreign direct investment

FPI - Foreign Portfolio Investment

GDP – Gross domestic product

GEF – Global economic freedom

GFD - Global Financial Development

GMM – Generalised method of moments

IMF – International monetary fund

INFLATION – Annual percentage change in consumer price index

LAWRULE – Rule of law

MNCs – Multinational corporations

NONFIN - Claims on domestic real nonfinancial sector by the Central Bank as a share of GDP

POLITY – Polity score

PRIVY – Domestic credit to private sector as a percentage of GDP

QLEGAL – Quality of legal framework

R and D – Research and development

TURNOVER – The turnover rate of the equity stock

UNCTAD – United Nations Conference on Trade and Development

UNECA – United Nations Economic Commission for Africa

UNIDO – United Nations Industrial Development Organisation

WDI - World Development Indicators

Chapter one
Introduction and background to the study

1.1 Introduction

Capital market development is crucial for attracting foreign direct investment. The development of the capital market, which is a measure of the improvement in the functional efficiency and relevance of the capital market system, plays a crucial role in generating surplus funds and channelling it through the market agents, to the deficit units of the economy (Madura, 2001). A developed capital market serves as a conduit through which foreign capital flows into an economy and it is an indication of a market's viability to absorb structural financial shocks. After the initial capital commitment of multinational firms, MNCs are expectant that subsequent long term investment is sourced from the domestic capital market to enhance the operational sustainability of the multinational corporation in the host country (Caves, 2007). A well-developed capital market signals to the foreign investors that complementary domestic capital is available to tap for further investment and for portfolio risk diversification (Jeffus, 2004).

This study is underpinned by Caves (1974; 1982; 2007) theory of investment behaviour of firms. The theory postulates that multinational corporations venture abroad to reap location specific advantages, of which financial gains are paramount. The theory further acknowledges the role of local capital market as a major determinant of the destination of FDI. This postulation has been supported by some studies as well (Baker, Foley & Wurgler, 2009; Chousa, Vadlamannati & Tamazian, 2008; Hailu, 2010; Vladimir, Tomislav & Irena, 2013). According to the theory, multinational corporations would most likely chose to invest in countries with developed capital markets in order to diversify portfolio risks by raising capital from the domestic capital market, especially for future expansion (Jeffus, 2004).

For multinational corporations, the main roles of the capital market in international business operations are the efficient transfer, allocation and repatriation of financial resources. These roles are achievable only in a well-functioning and efficiently supervised capital market (Ito, 1999; Lee & Chang, 2009; Vladimir, Tomislav & Irena, 2013). In addition, because of the high risks of socio-political and economic failures in developing countries, MNCs minimise their offshore financial commitments in developing countries by adopting various portfolio management strategies (Froot & Stein, 1991). Evidence suggests that multinational organisations generally seek to finance part of their investments with external debt capital or sell equity in capital markets, especially in the host country (Jeffus, 2004; Baker, Foley & Wurgler, 2009). In a way, foreign investors explore the possibility of matching foreign currency assets to foreign currency liabilities to offset, among others, foreign exchange exposures, which are widespread in the developing countries.

The rationale for this financial strategy may be premised on Modigliani and Miller's theory of capital structure (the capital structure "relevance" principle), which suggests that firms will seek a capital structure that minimises their weighted average cost of capital (Modigliani & Miller, 1958). According to this theory, debt financing are less costly compared to equity financing, given that interest expenses are largely tax deductible. However, there is always the need to balance the organisational capital structure in a way that leverages the positive effects of both debt and equity financing (Robb & Robinson, 2010). This form of portfolio management strategy has increased the need for the development of domestic capital markets as a possible means of attracting foreign investments, especially in developing countries (Hope, 1999; Binswanger, 1999; Azman-Saini, Law & Ahmad, 2010).

Research also finds that a liquid capital market accelerates growth, as they enhance efficient resource allocation (Levine & Zervos, 1998; Rousseau & Wachtel, 2000). In particular, healthy capital markets have been observed to enable investors rebalance their portfolios quickly and cheaply (Bencivenga, Smith & Starr, 1996). Therefore, as capital market development mobilises investible capital, it also reduces portfolio risks. Along this line, empirical evidence suggests that a well-developed and efficiently supervised capital market is capable of attracting inflow of foreign direct investment (King & Levine, 1993c; Levine & Zervos, 1998; Wurgler, 2000; Rajan & Zingales, 2003; Acemoglu, Johnson, & Mitton, 2005; Antràs, Desai & Foley, 2008).

Capital market stability is therefore considered an essential consideration for the destination of foreign direct investment. Although, FDI is more resilient to capital market crises, as compared to foreign portfolio investment (Fernandez-Arias & Hausmann, 2001), the fact that FDI is not as easily reversible as other forms of capital inflows (such as portfolio investments of short and long-term loans, currency denominated deposits, and other accounts receivable and payable) (Ito, 1999; Madura, 2001; Gullapalli, 2013) allude to the cautious premonition of foreign investors.

Despite concerted efforts to attract foreign direct investments by African countries, investors are largely reluctant to commit long-term production activities to Africa, especially in the form of greenfield investments. A larger portion of investments to Africa is directed to the commodity sector, and a few others come in via mergers and acquisitions (UNCTAD, 2013). For example, FDI inflow to Africa only grows by 3.7 per cent in 2012 (which accounted for barely 5.6 per cent of global stock). Latin America and the Caribbean recorded an increase of 13.5 per cent in inflow FDI in the same year; while Asia recorded 28.4 per cent; South, East and South-East Asia recorded 22.2 per cent increase over the same period (UNCTAD, 2013:Xiii).

One of the reasons attributed to the reluctance of MNCs to invest in less developed countries (particularly countries in Africa) has been identified as risk aversion (Allen & Ndikumana, 2000; Asiedu, 2002; Lamont & Polk, 2002; UNCTAD, 2006). The political economy of most African countries remain shaky, while African capital markets are generally regarded as fledgling and lacking the requisite supporting infrastructures that could aid their viability (IMF, 2008).

Arguably, volatility in the macroeconomics of a country may trigger a worrying volatility in the equity value of the locally listed firms. This problem may be compounded by market inefficiency that characterise many capital markets in the developing countries (Rangan, 1989; Lamont, 1997; Fauver, Houston & Naranj, 2003; Jeffus, 2004; Vladimir, Tomislav & Irena, 2013). However, these trends are changing in Africa. Capital market development in Africa is on the increase and improvement in their performance has been noticeable. Table 1.1 shows the Top 5 stock market performers for Year 2010 in Africa:

Table 1.1: The Top Performers in Africa Stock Markets, 2010

Value Traded (USD million)	Volume Traded (million shares)	Market Capitalisation (USD million)
JSE (451, 762)	NSE (93, 335)	JSE (1, 012, 070)
EGX (55, 361)	JSE (71, 251)	Namibia SE (173, 438)
Casablanca SE (10, 898)	EGX (33, 429)	EGX (84, 103)
NSE (5, 365)	Namibia SE (7, 545)	Casablanca SE (69, 286)
Bourse de Tunis (1, 912)	Zimbabwe SE (6799)	Botswana SE (67, 497)

Source: Author's compilation from data generated from African Securities Exchanges Association, 2013

From Table 1.1, it is evident that Africa now boasts some relatively developing stock markets in terms of viability. Notable among these stock markets are those of South Africa (JSE), Nigeria (NSE), Egypt (EGX), Casablanca (Casablanca SE), Namibia (Namibia SE), Tunisia

(Bourse de Tunis), Ghana Stock Market (GSE) and Zimbabwe (Zimbabwe SE). However, apart from the South African stock market (JSE), trading on most of the other African markets is sparse and just a few companies dominate the markets (ASEA, 2013). Although, the JSE is the most advanced stock market in Africa, it is still dominated by a few mining corporations (JSE, 2013).

The increase in the number of stock markets in Africa and their improving viability can be attributed to the recent financial sector reforms undertaken by a number of African countries over the past decades (Ntim, 2012), and the reforms are evidently still on-going across the continent. Because of these reforms, African capital markets are fast becoming one of the top performers in the global capital markets. According to Ventures Africa (2013), African stock markets are world best performers in early 2013, when Egyptian Exchange (EGX) recorded 49.56 per cent yield-to-date (YTD) return on investment, while Kenya Stock Market and Nigeria Stock Market yielded 39.32 and 35.45 per cent respectively to come second and third in this regard.

1.2 Capital market development and FDI inflow (a synopsis)

Africa's poor economic development has been a source of worry for scholars, policy makers and international organisations (Amsden, 1985; UNIDO, 1988; Haggard, 1990; UNECA, 2006, 2012; Easterly, 2007). More importantly, Africa has lagged behind other developing regions in attracting the requisite foreign capital of various forms, and the continent has not been able to participate competitively in international trade - the two major drivers of long-term and sustainable economic growth (UNCTAD, 2005; Martin, 2008).

Despite the challenges of institutional efficiency on the continent (Bates, 1981; World Bank, 1997; IMF, 1999), it must be pointed out that African economies have made significant efforts to attract various forms of capital, but their efforts have been relatively disappointing (UNCTAD, 2005). For example, most countries in Africa pursued the comprehensive macroeconomic policy reforms under the IMF structural adjustment programs (SAP) that were introduced in the 1980s. Informed by their desperation to attract foreign capital, they agreed to economic and financial market liberalisation without adequate consideration for the establishment of export capacity and possible safety nets to accommodate the effects of foreign competition on the domestic markets (Stiglitz, 2002; Martin, 2008).

As expected, the policy culminated in crowding out most of the fledgling firms in African manufacturing sector, and the few survivors are operating below their optimal capacity (Stiglitz, 2002). There are evidence (Stiglitz & Charlton, 2005) to suggest that the unintended negative consequences of unguided economic liberalisation in the face of low manufacturing capacity, weak institutions and low safety nets that characterised almost all the countries in Africa at the time (and even now) have contributed to the present state of underdevelopment on the continent.

To address some of the bitter lessons learnt through the SAP programme, some African countries have been particularly diligent in establishing stock markets, and the banking sectors have undergone considerable reforms to ensure their sustainability (UNCTAD, 2013). Further, African leaders have been undertaking reforms needed to provide favourable investment climate more than any other developing countries outside of Asia, without attracting the expected FDI (Hallward-Driemeier, 2003). Although the stock of FDI in the region has increased significantly since the 1980s, Africa still account for less than six per cent of the global stock of FDI (UNCTAD, 2013: xiii) while the OECD countries alone account for almost 80 per cent of the sock of global FDI (OECD, 2013).

Evidently, multinational corporations are largely regarded as the key conduit for channelling foreign direct investments (FDI) (UNCTAD, 2008). When foreign capital flows into an economy, the flow usually takes the form of share purchases from the listed firms (acquisition). This leads to the capitalisation of the particular firm that is attracting the foreign interest. The capitalisation of a number of firms in the country, therefore, may lead to capital market development in that particular country (Temple, 1999; Enisan & Olufisayo, 2009).

Companies operating in that economy can therefore raise large sums of money on the equity platform to expand their operations, as an alternative to sourcing expensive bank loans. Although risk aversion is one of the primary concerns of multinational corporations in Africa, the possibility of raising future expansion funds through domestic capital market is an important determinant of the destination of the offshore subsidiary of multinational corporations (Caves, 2007; Chousa, Vadlamannati, & Tamazian, 2008; Hailu, 2010; Vladimir, Tomislav & Irena, 2013).

Given that firms can only raise future expansion capital through efficient capital market platforms, the state of underdevelopment that have pervaded many capital markets in Africa since their political independence have hindered this financial strategy of multinational firms in the affected countries (Kumar, 1984; Jefus, 2004; Kok and Ersoy, 2009), thus hindering the attractiveness of these countries to inflow of FDI. However, these challenges are improving as African leaders are continuously striving towards creating enabling investment environment to boost capital market efficiency and to attract inflow of FDI. It is therefore essential to benefit from a clear understanding of these new developments (improving capital market environment) through recent dataset and apposite methodology, as they affect the efficiency of the capital market and the attraction of Africa to inflow of FDI.

1.3 The problem statement

Countries or regions with developed capital markets are able to attract funding for development projects. This finance for development could come from internal sources through household savings, domestic investment in shares, government bonds and so on (Madura, 2001). A peculiarity of less developed capital market is the inability to generate domestic funding for development projects. The inability to mobilise domestic savings could be due to many reasons, such as high household consumption, government preoccupation with nation formation, and insufficient ability to create and subscribe to government bonds (Ito, 1999).

Another problem is that in most of the developing countries, investments tend to have short-term horizon and market participants are more interested in short-term gains (Jeffus, 2004; Vladimir, Tomislav & Irena, 2013). The short-term drive for investments is underpinned largely by the risk profiles of the capital markets in the developing nations (including countries in Africa). As such, capital market development is essential for long-term development and provision of infrastructure that are crucial to economic productivity (Khamfula, 2005).

Capital market development is a growing area of research interest, especially in the African context. Over the past few decades, there has been a dramatic increase in the number of stock markets and improved capitalisation, as well as improving bank efficiency on the continent. To this extent, African capital markets are gradually being seen as viable and capable of supporting a meaningful level of real economic activity. For instance, a number of African countries such as Ghana, Malawi, Swaziland, Uganda, and Zambia, amongst other developing nations have established stock markets, as a means of staying competitive in the global capital market (Yartey & Adjasi, 2007). By 1960, eight of the oldest African stock markets have been established.

Between 1989 and 2007, the number of national stock markets in Africa grows from nine to 16 (ASEA, 2013). To buttress this trend, the IMF (2007) notes that the capitalisation of African stock markets more than doubled between 1992 and 2006, from US $113 billion to US $245 billion. Today, there are 29 exchanges in Africa, representing 38 nations' capital markets of which 21 are members of the African Stock Exchange Association - ASEA (ASEA, 2013).

The increasing number of national equity markets in Africa coupled with their increasing market capitalisation and high turnover rates have the potential to provide an avenue to generate necessary investible capital in foreseeable future (Singh, 1999; Fauver, Houston & Naranj, 2003). This is expected to motivate foreign investments as these capital markets mature enough to assure investors of market stability, efficiency and liquidity (Levine, 1997; Temple, 1999; Baker, Foley & Wurgler, 2009).

Equity markets generally provide domestically listed firms with the opportunity to raise funds for expansion at a relatively lower cost than in inadequately spanned financial markets (Ojah & Pillay, 2009). This reduces the dependence of large firms on bank financing, thereby reducing investors' exposure to credit rationing (Caporale, Howells & Soliman, 2004). The regulatory framework that governs the operations of the financial system also provides mechanisms that foster efficient allocation of resources by capital markets and the requisite operational discipline. This framework, especially the corporate governance aspect, ensures that stock market liquidity is managed efficiently to avoid allocating funds to inefficient projects, as the possibility of adverse selection and credit rationing are mitigated concomitantly (Froot & Stein, 1991; Binswanger, 1999; Durham, 2002).

On its own, a developed capital market encourages domestic savings, thereby providing investable capital needed to fund further expansion of existing production capacity and ultimately enhancing economic growth (Kumar, 1984; Enisan & Olufisayo, 2009; Vladimir, Tomislav & Irena, 2013). The more the capital in form of FDI flows into an economy, the more the economy grows. The resultant virtuous cycle of investment is underpinned by the costly-state-verification models of Townsend (1979), which explains the financial organisation of firms by way of information asymmetries. Townsend argues that the more efficient a market becomes, the lesser the cost of capital, and the more attractive the market becomes for investment.

Froot and Stein (1991:1193) further developed Townsends' model where they established that "increases in wealth stimulate agents' demand for investment". This process also increases the efficiency of capital market intermediation, thereby expanding the investable capital base (Temple, 1999). As a result, the development of capital markets in Africa would serve as an important mechanism for generating expansion capital for local industries (including foreign investors) while accomplishing the portfolio diversification agenda of MNCs concomitantly. Given these compelling potential benefits of viable capital markets, it becomes puzzling as to why African countries are not initiating more capital markets and/or developing further the already established ones. The problem that now arises is how best can Africa improve the capital market framework as a strategy for attracting the needed inflow of FDI in order to growth the economy, and ultimately, alleviate poverty on the continent.

1.4 Research questions

The recent increase in the stock and flow of foreign investments and the marked increase in capital markets development are clear indications of the changing world economic order (Bhagwati, 1998; Kok & Ersoy, 2009). Evidence suggests that capital flows to the developing world has been increasing steadily over the last decade (UNCTAD, 2008). It is crucial for Africa to utilise the benefits of these global trends to achieve a sustainable capital inflow, and ultimately economic growth and development. To this effect, this research answers the following general and specific questions: How can African countries achieve a meaningful capital market development that is capable of enhancing inflow of FDI? The main research question encompasses the following sub-questions:

1. To what extent does capital market development influence the inflow of foreign direct investment to Africa?
2. What are the institutional factors that militate against capital market development in Africa?
3. What are the impacts of institutional framework on the attractiveness of Africa to inflow of FDI?

1.5 Research objectives

The main objective of this research was to establish the relationship between Africa's capital market development and the attractiveness of the continent to inflow of foreign direct investment. The research sub-objectives are as stated below:

- To analyse the causal relationship between Africa's capital market development and inflow of foreign direct investment to the continent,
- To analyse the causal relationship between institutional framework and capital market development in Africa,
- To analyse the causal effect of institutional framework on the attractiveness of Africa to inflow of FDI.

1.6 Motivation for the study

Previous studies that specifically focus on the relationship between capital market development and inflow of FDI to Africa are limited. For instance, in the study conducted by Jeffus (2004) on the relationship between stock market development and FDI inflow, the focus was on four Latin American countries. In a similar study conducted by Chousa, Vadlamannati, and Tamazian (2008), they investigated the implications of capital market growth and quality on firm level FDI in emerging economies with firm level mergers and acquisition bias. In that study, only South Africa was included in the nine most-emerging economies studied. Vladimir, Tomislav and Irena (2013) investigated the impact of stock development and inflow of FDI to Croatia.

In addition, Baker, Foley and Wurgler (2009) investigated the impact of stock valuation in the United States as a determinant of inflow of FDI from the OECD countries, where the impact of stock market was found to be significant. Hailu (2010) focussed his study on the relationship between capital market development and inflow of FDI to Africa between 1980 and 2007 in cross-country fixed effect estimation. The study included all African countries but nine in the estimation.

The fact that the study included countries that do not have stock markets suggests a serious estimation bias. Further, the two equations estimated in that study (on page 110 of that study) is susceptible to endogeneity problem given that all the explanatory variables were entered into the regression together. The endogeneity problem was not discussed in the study and no attempt was made to investigate individual effects of the variables used in the study. These methodological weaknesses that are inherent in that study ultimately subject the findings of the study to validity and stability questions.

Vladimir, Tomislav and Irena (2013) investigated the relationship between stock market development and the attractiveness of Croatia to inflow of FDI. Using VAR and cointegration techniques, these authors were able to establish the statistical significance of stock market development on the attractiveness of Croatia to inflow of FDI. However, that study was restricted to stock market, and the other capital market components were ignored.

From the on-going, this study departs from previous studies as its novelty contributes to our understanding of salient issues on capital market development in Africa. This contribution is achieved by presenting new perspectives that combine recent aggregate data that covers the six oldest capital markets on the continent in a panel environment, and analysing them using some of the recent econometric instruments. In addition, this study explores the regional effects in a comparative manner that has not been done before in any documented literature.

1.7 Limitations of the study

This study focuses on the relationship between capital market development and inflow of FDI to Africa. The study further investigates the possible role of institutional framework on capital market development as well as the attractiveness of the continent to inflow of FDI using dataset from 1980 to 2012. One of the major limitations of this study is the sample size. The study only covers the six oldest (and by extension, the largest) capital markets in Africa. Although, two of the six countries in our sample (South Africa and Nigeria) account for more than 60 per cent of Africa's GDP, the fact still remains that countries are different and a larger sample size might have changed the findings of the study.

Further, data limitation is an important consideration in this study. Our inability to generate usable dataset for more than the period covered (32 years) is of concern. The result might have been different if a wider period is covered. More importantly, some of the variables that should have been used (variables such as improvement in FDI regulatory framework, institutional reforms to improve capital market development, improved business environment and economic reforms) are very difficult to measure and finding adequate proxies for them is also problematic.

1.8 Organisation of the study

The next chapter (chapter 2) reviews the existing literature on the conceptual framework of capital market development and presents various viewpoints on the theories of capital market development. The chapter also presents material on the capital market components namely the equity and banking sector with specific reference to the selected countries, and a special focus on African dynamics in general. Chapter three contains literature on the conceptual appraisal of FDI, as well as the determinants of its direction. The chapter looks at the impact of institutional framework on the attractiveness of countries to inflow of FDI, and it incorporates African dynamic into the discourse. The chapter concludes by drawing on the relationship between capital market development and inflow of FDI.

Chapter four contains the methodology that is used in the research. It states the research hypotheses, and it explains the methodology used in the specification of the models. This chapter also defines the variables used in this research, and it describes the type of data as well as the sources of the data used. The chapter also presents information on the sample size and the motivation for the sampling method. The justification for the econometric techniques that were applied in this research is also stated. The chapter concludes with the explanation of error correction techniques that were applied to ensure reliability of the findings.

Chapter five contains the estimation processes and outputs. The econometric models specified in chapter four are estimated using the methods described in chapter four. The findings of the analyses are presented, and brief explanations of the analyses are given. The chapter concludes with the recap of the findings of the study, as they relate to research questions, objectives and the stated hypotheses. The last chapter of the study (chapter six) recapitulates the findings of the study, presents the policy implications and summarises the study. In conclusion, possible recommendations were also suggested as informed by the findings of the study and the limitations of the study were further highlighted.

Chapter two
The conceptual appraisal of capital market development

2.1 Introduction

Most of the countries in Africa are struggling to emancipate from the devastation of poverty, and its antecedent social maladies. Studies suggest that shortfall in capital supply is the main culprit for low economic growth in Africa (Allen & Ndikumana, 2000; Asiedu, 2002; Adams, 2009). Although, portfolio investment is an important component of the stock of foreign capital flow, the fact that it is easily reversible negates its appropriateness for long-term investment that is needed to grow an economy in a sustainable manner, as compared to long-term capital commitment in the form of FDI. This motivates the preference for FDI over foreign portfolio investment (FPI) in most developing countries (Meyer, 2004; Hill, 2013).

The realisation that domestic economy is not viable enough to generate the requisite funds to grow the economy in a manner that reduces poverty level, lends credence to the strategic interventions of African leaders. For decades, African leaders have continuously initiated regulatory reforms to attract more inflow of foreign capital, especially in the form of FDI. However, this effort has not yielded the anticipated results mainly due to poor local capital market development as the case in other developing countries (Chousa, Vadlamannati &Tamazian, 2008; Hailu, 2010; Vladimir, Tomislav & Irena, 2013), and institutional deficiency on the other (Bénassy-Quéré, Coupet & Mayer, 2007; Ayaydin & Baltaci, 2013).

After committing the initial capital in establishing an overseas subsidiary, multinational corporations (MNCs) would prefer an offshore location that is viable enough to raise requisite funds for the subsidiary's sustainability and future expansion (Meyer, 2004; Jeffus, 2004; Baker, Foley & Wurgler, 2009). To that extent, the capability (level of development) of the local capital market becomes an important determinant of the attractiveness of a country to inflow of FDI. It thus becomes important to investigate the roles played by African capital market as a determinant of FDI inflow to the continent.

This study is underpinned by the theory of investment behaviour of firms (Caves, 1974; 2007). According to Caves, investors' motives in offshore locations are primarily to reap location specific advantages (with specific emphasis on shareholders wealth maximisation). Further, Caves (2007) argues that offshore expansion strategies of multinational corporations are always influenced by two considerations – the cost of capital and expected cash flows from the offshore project.

In the first hand, Caves observes that the cost of capital to multinational corporations is influenced mainly by the efficiency of the capital market. From an earlier study conducted by Townsend (1979), it was observed that supervision of the capital market aids its efficiency (state-verification model) and lowers the cost of capital. According to Townsend's state-verification model (1979), information on the financial instruments will be more easily accessible (at a lower cost) in an efficient capital market, as compared to a less efficient one. Townsend's model further proposes that the problems associated with inefficient capital market (moral hazard and information asymmetry) have the tendency of raising the cost of capital in the domestic market.

On the other hand, Caves (2007) observes that the expected cash flow from a foreign subsidiary may also be influenced by the efficiency of the capital market. For example, an efficient capital market is deemed capable of steering wealth creation through efficient allocation of funds, thereby enhancing the purchasing power of the people through economic growth. Where the possibility of wealth creation is limited in an offshore market, the competitiveness of such a market to attract inflow of FDI will be limited. To that extent, it could be argued that the efficiency of a capital market (which is an important indicator of capital market development), is an important pull factor for multinational corporations to invest in a foreign country.

According to Caves (2007:170), "Foreign investors borrow heavily from host national banks. Offsetting exchange rate risks provides an obvious explanation...if the developing financial system can only provide a limited supply of funds; local borrowers may be inefficiently excluded". This quote gives credence to the postulation that the efficiency of the host country's capital market is an important determinant of the attractiveness of the country to inflow of FDI. Caves' (2007) emphasis on the role of capital market as a determinant of FDI destination was also buttressed by Jeffus (2004) who proposes that the strength of host country's capital market is a major determinant on whether or not a multinational corporation will be able to achieve its portfolio risk-diversification target in the host market.

Portes and Ray (2001) employed a gravity model to explain investment behaviour of United States originated multinational corporations and found that the 'distance' term in the estimation, which accounted for information cost was significant. In that study, the authors were able to establish that market capitalisation of the stock market (in the host European countries) plays a significant role in determining the location of foreign subsidiaries by the American multinational corporations. In a related study, Baker, Foley and Wurgler (2009) investigated the role of stock market valuation in the United States on the decision of multinational corporations from the OECD countries to invest in the United States. In that study, the role of stock market was found to be significant.

The rest of this chapter is arranged as follows: section 2.2 presents a review of capital market system, followed by section 2.3 that presents the synopsis of capital market development. Section 2.4 looks at the capital market environment in Africa, where the trend in capital market development is presented. Section 2.5 surveys available literature on the capital market development in the selected African countries, while section 2.6 looks at the determinants of capital market development, from the market imperfection perspective. The last section (section 2.7) summarises the chapter.

2.2 A review of capital market system

2.1.1 Introduction

As stated earlier, the components of a capital market can be many and diverse depending on the country under investigation, as well as the purpose of the study. However, the main components of a country's capital market have been identified by various authors as the equity market (stock exchanges, investment banks, and other related equity markets) and the credit market (banks, bond markets, insurance houses, and other financial intermediaries) (Frankel, Montgomery, Friedman, & Gertler, 1991; Levine & Zervos, 1998; Levine, Loayza & Beck, 2000; Madura, 2001; Barrucci, 2003).

To that extent, this study focuses primarily on stock markets and banks, and their role in influencing Africa's attractiveness to inflow of FDI. This choice of the capital market institutions is premised on the fact that banks and equity markets dominate the bulk of institutions that channel capital flows to production units essentially in Africa (Levine & Zervos, 1998; Ito, 1999; Allen & Ndikumana, 2000; Kok & Ersoy, 2009, UNCTAD, 2009).

While a few factors (such as the number of listed firms, the stocks turnover rate and the capitalisation of the stock market) are used to measure the efficiency of a stock market, the efficiency of banks on the other hand, are measured through capital adequacy ratio and credit turnover rate (Allen, 1995; Black & Gilson, 1998). Contextually, bank loans can be channelled to two deficit units in the economy, namely the nonfinancial private sector of the economy or the public sector.

Arguably, channelling credit to the public sector or state-owned enterprises reduces the pool of capital funds accessible to the private sector that are regarded as being more productive and efficient. Research suggests that correlation between capital market development and economic growth have been significantly high in countries where funds are channelled to the nonfinancial private sector of the economy (Crowley, 2008; Demirgüç-Kunt & Levine, 2008).

2.1.2 The bank as a component of the capital market

Early economists such as Schumpeter (1934) identified the role of banks in enhancing technological capacity through their intermediation role in the economy. He postulated that technological diffusion is achieved through efficient allocation of savings by identifying and funding entrepreneurs with a high possible success rate in implementing innovative products, and by improving production processes. Several empirical tests (McKinnon, 1973; Shaw, 1973; Fry, 1988; King & Levine, 1993a), which were conducted to ascertain the validity of Schumpeter's postulation, have been in the affirmative. Giving that low (or lack of) economic growth is the primary culprit for the lack of socio-political and human development in African countries, the overarching importance of capital allocation and productivity becomes imperative.

2.1.2.1 The strategic importance of banks in an economy

According to Mayer (1974:236), "a banker is a man that makes a living loaning other people's money". This author contends that the primary role of a bank is to provide credit flow from lenders to borrowers at agreed terms (repayment condition and the interest rates). Crossley and Blandford (1975) buttress this viewpoint as they identified intermediation as the cardinal success factor of the Barclays bank[1] and other banks in the same era as Barclays bank. These authors noted that the need for Barclays bank to expand overseas was borne out of the predictive ability of the then managers of the bank to foresee the need to generate

[1] The then Barclays bank contained the Dominion, Colonial and Overseas branches. All these international branches conducted their respective businesses purely through the Barclays office in United Kingdom.

additional credit to finance the post-war industrial activities in Great Britain. In specific, these authors observe that: “In the coming struggle for the markets of the world, the manufacturers of Great Britain will look to their bankers to assist them to a greater extent than hitherto” (Crossley & Blandford, 1975:1).

The roles played by banks in modern economy have evolved through the same historical path as suggested by Crossley and Blandford (1975). According to Boyd and Prescott (1986:1), financial intermediates[2] are known for five major roles in a real economy. These roles are identified as follows:

- Financial intermediaries borrow from one subset of agents in the economy and lend to another. This role helps to bridge the capital gap between lenders and the borrowers and nurtures national wealth creation in the process.
- Both subsets (borrowers and lenders) are typically large. Thus, to the extent that numbers represent diversification, culminating in a situation whereby financial intermediaries are generally well-diversified on both sides of the balance sheets.
- Financial intermediaries deal with borrowers whose information set may be different from theirs. In practical terms, this means that would-be borrowers often have better information concerning their own credit risk than do the intermediaries.
- Financial intermediaries produce costly information on the attributes of would-be borrowers. This information is used to allocate loans and set terms.
- Financial intermediaries issue claims that have state contingent payoffs different from claims issued by ultimate borrowers.

According to Boyd and Prescott (1986), the importance of banks and related institutions in any economy is to provide credit facility to borrowers (individuals, government or corporate entities/bodies) efficiently and profitably, in accordance with necessary state regulatory provisions. For the banks to be able to play these roles efficiently and effectively, they should be capable of “ameliorating asymmetries and facilitating transactions” (Levine, Loayza & Beck, 2000:32). This expectation presupposes that banks as institutional lenders are expected to militate against principal-agent problems such as moral hazards and adverse selection

[2] The authors define financial intermediaries as institutions that source funds from excess owners and lend same fund to interested borrowers at a pre-determined terms and conditions. These institutions include commercial banks, thrift institutions, loan companies, consumer finance companies – all of which they termed as asset transformers.

(Lucas, 1990) – all that may result in inefficient capital allocation, and ultimately, lower capital productivity gains.

Various studies further lend credence to the role of banks identified above. For example**,** La Porta, *et al*. (2000) observe that privately owned commercial banks, especially in Germany, play important roles in channelling funds to industries. Riding on the findings of Gerschenkron (1962), La Porta *et al.* (2000) contend that banks in the developing economies play crucial roles in the economic development of such countries. These authors further postulate that governments of developing countries intervene in banking through its institutions, to jump-start both the economic and financial development of the country.

Banks, especially state-owned banks, are popularly known for inefficient allocation of credit. This has been documented not only by the most recent evidence, but historical as well. Citing the specific example of Russia, Gerschenkron (1962) observes that low savings and moral hazards hinder the capability of banks to attract the required level of funding that may influence economic performance. The impact of government intervention in a way that breeds corruption, opportunistic behaviour and inefficiency in the management and appropriation of financial resources was observed by Gerschenkron (1962) as the main reasons why banks in the developing economies are less developed and incapacitated to perform their expected growth-driven roles.

This argument was further emphasised by Mookerjee and Yu (1995). These authors contend that inefficient allocation of credit, which was conspicuous in China (and other emerging economies) at the time of their study, led to economic crises like budget deficit, inflation pressure, and macroeconomic instability. They contend that by inefficiently directing credit to state-owned enterprises (SOEs), the central bank and other sectoral banks pacify the political agenda of the political rulership, at the expense of national economic interests. To avert the inefficiency that characterised the banking sector as a way of achieving stability in the capital market, the Chinese government in 1994 adopted capital market reform. The most prominent aspect of the reform was the establishment of the stock market as an additional source of capital to SOEs, but with a more sophisticated market discipline and supervisory mechanisms.

2.1.3 The equity market

Equity markets are generally regarded as organised process through which stocks are traded, on exchanges and over-the-counter. Those markets consist of both the primary markets[3] and the secondary markets[4]. The origin of the modern equity market can be traced to medieval Italy, specifically the city states of Venice, Genoa, and Florence. Specific reference is made by Ranald (2006) to the forced loan that Venice imposed on its inhabitants in 1171–1172 in attempt to raise funds to finance an on-going war at the time.

In return for the transferable compulsory loan, the government promised to pay interest on the amount borrowed until such money is redeemed, and creditors were allowed to convert the bonds to cash with any other interested 'buyer' of the security. During that period, according to Ranald (2006:17), "Advances [in capital market development] included such developments as deposit banking, marine insurance, bills of exchange, joint stock companies, and transferable securities". As economic activities gained momentum between countries in the Eastern and the Western countries, the earlier financial system becomes modernised to accommodate various corporate activities.

Largely, the stock markets are developed to address the inherent shortfalls in the process of credit allocation. Banks are known to be biased in credit allocation, especially in situations where the government exercises a tight control over the ownership of banks. Research indicates that a well-organised and efficient stock market stimulates investment opportunities, especially in developing economies, by identifying and channelling funds into growth-inducing economic activities (Mookerjee & Yu, 1995; Caporale, Howells & Soliman, 2005).

Levine (1997) also identifies channels through which stock markets induce economic growth. According to Levine (1997), in an ideal economy with efficient access to information, stock markets provide individuals with the opportunity to choose less risky and liquid productive

[3] Primary markets are financial markets where enterprises issue debt and equity securities (Initial Public Offering – IPO) if for the first time, directly to the general public/investors for subscription. While the newly issued shares go directly to the subscribers/investors, the fund generated from the process goes directly to the underlying company/entity that offers the bonds/shares for sale. This market offers the issuing company/entity the only moment to receive cash proceeds in exchange for selling securities to the general public/investors.

[4] Secondary markets are financial markets where securities are traded after they have been offered initially in the primary market. Evidence suggests that most trading is done in the secondary market, and with the advent of the Internet, most trading in the secondary markets are conducted electronically. In any secondary market trade, the cash proceeds go to an investor directly rather than to the underlying company/entity.

investments, given that adequate information are made available and well communicated to investors at lower costs, as compared to banks.

The information asymmetry thesis, as contained in the work of Roberts (1959) and Fama (1965), introduces the economic concept of 'efficient stock market', to justify the importance of ‘communication efficiency’ as a measure of the quality and effectiveness of communication that is made available to investors. According to Philippatos and Wilson (1973), communication theory, which is often used synonymously with information theory, provides us with a collective appraisal of the overall effectiveness of communication.

That is, this theory espouses the quality of information or uncertainty that characterise the entropy of the source of a message, the channel of communication, and the capacity of both noiseless and noisy channels, and the efficient encoding of messages so as to approach an error-free transmission. According to these authors, “The probabilistic approach used in measuring the effectiveness of information, captures the content of the message sent as opposed to the message received, and the amount of information lost in the transmission process” (Philippatos & Wilson, 1973:525).

Holmstrom and Tirole (1998) reinforced the information adequacy hypothesis, and established a link between information efficiency and growth. They corroborated earlier studies (such as Theil, 1967; Philippatos & Wilson, 1973; Philippatos & Nawrocki, 1973), as they contend that investors respond (both positively and negatively) to movements in the headline index of a firm. According to these authors, investors respond positively if the headline index of the firm improves and they respond negatively if the headlines index regresses.

This vacillation portends a monitoring mechanism of the firm’s managerial performance, because the stock price incorporates performance information that cannot be extracted from a firm’s current or future data. Therefore, the poor or potentially poor performance of the management may hurt the profitability of the firm, thereby making the firm susceptible to takeover. In essence, the share price of a firm provides the basis for determining managerial incentives, corporate governance and reporting, thereby fostering corporate productivity and the overall economic growth.

In line with the foregoing, Mishkin (2010) suggests that efficient stock markets are capable of diversifying portfolio risks and facilitating exchange of goods and services in a better way than banks. Moreover, Vazakidis and Adamopoulos (2009) argue that stock markets facilitate the mobilisation of domestic savings as they expose investors to alternative financial instruments thereby providing investors with the opportunity to diversify portfolio risks. They argue that, by so doing, stock markets provide an important source of long-term capital at a comparatively low cost. These authors further observe that efficient stock markets enhance the liberalisation (privatisation) policies of governments by providing appropriate guidelines as regards the issuance and repurchase of government securities.

Furthermore, Nieuwerburg, Buelens and Cuyvers (2006) identify some crucial roles played by the stock market towards fostering economic growth. According to them, a well-functioning stock market is capable of identifying and financing productive projects that lead to the overall national economic gains. Given that bank credits in most developing countries are the sole province of a few privileged individuals and government (Shahbaz, Ahmed & Ali, 2008), the stock market provides alternative source of funding for long-term projects. These authors further observe that stock markets are more capable as agents of the capital market, to mobilise domestic savings. They argue that this objective is achieved when issuers provide adequate information that motivates investors to commit financially to share purchase, thereby supporting an identified project financially.

Likewise, the equity market helps investors to diversify portfolio risks and it facilitates asset allocation in ways that ameliorate systemic risk, especially those attributed to bank failures. While bank failures are more rampant in the developing world, recent experience suggests that these developing economies are at the same time, not immune to the contagion effects of market failures that originate from the advanced economies. The frequency and the ultimate effect of bank failures have been identified as a prime factor that discourages savings in developing economies, especially given the weak regulatory and supervisory mechanisms in these economies (Black & Gilson, 1998; Khamfula, 2005; Enisan & Olufisayo, 2009).

Shahbaz, Ahmed and Ali (2008:183) sum up the roles of the equity market in economic growth as follows:

- Stock markets increase economic growth by increasing the liquidity of the financial assets. These they accomplish by pooling long-term capital from investors, and managing such capital in a way that maximises investors' interests. The pool of long-term investible capital allows for necessary liquidity (at minimal transaction costs) that oils the wheels of productivity and the overall economic growth.

- Promote wiser investment decisions by providing not only alternative investment portfolios, but also useful information to guide the investors in making their choices.
- Enhance the compliance of corporate bodies to corporate governance and social responsibility. By publishing information about the activities of a firm, the equity market provides investors with the basis to adjudge the responsiveness of the organisation to social and environmental issues, thereby influencing their investment decisions.

It is worth noting that equity markets are not a panacea for economic development. This is so because equity markets have demonstrated its exposure to market failures over time. Research suggests that equity markets as financing platforms, are capable of harming economic development because of their susceptibility to market failure (Bhide, 1993; Singh, 1997; Naceur & Ghazouani, 2007). This occurs because of volatility that characterises share prices, especially in the less developed stock markets. Given this incidence of volatility in share prices, stock markets may reduce the incentives for savings by artificially increasing investment returns through speculation (Theil, 1967; Philippatos & Wilson, 1973; Mishkin, 2010). This has resulted in boom and burst (and in some cases, crashes or swindles) of the financial/economic cycles in the past.

The preceding discourse focussed on the role of each of the components of capital market in line with the objectives of this research. It is now considered important to establish the link between capital market as a whole and economic growth. That discussion is presented in the following paragraphs.

2.3 Synopsis of capital market development

Following from the importance of capital market that is identified in the preceding paragraphs, it is arguably logical to suggest that the need for capital markets is premised on the roles they perform in facilitating the growth of a country’s economy. For analytical purposes, it is considered important to re-examine the issue of causality that is synopsised in the preceding paragraphs. A few factors have been identified as the drivers of capital market development, of which more emphasis has been placed on the market mechanisms of demand and supply. According to Patrick (1966), the direction of causality is best observed through the twin aisles of supply-leading and demand-following hypothesis. Mckinnon (1988) buttressed this postulation.

Expressed in the context of dominant relative activity between the real economy and the national financial market, Patrick (1966) suggests that, when causal relationship runs from financial development to growth, it is termed supply-leading causality. This is based on the premise that the activities of financial institution increase the supply of financial services, which in turn creates economic growth (Mishkin, 2010). Conversely, when the growth within the economy results in increase in the demand for financial services and this leads to financial development, then it is regarded as demand-following hypothesis. However, some scholars are of the opinion that causality can run in both directions simultaneously instead of being unidirectional at different stages of the economy (Demetriades & Hussein, 1996; Shan & Jianhong, 2006).

According to research, the formation and development of financial markets hinge mainly on the demand for such markets. This school of thought sees demand as the "prime driver of financial development" (Rajan & Zingales, 2003:6). Demand in this context is viewed as the level of a nation's industrial or economic development at large; that is, the level of positive change in the entire national production capacity. The relevance of demand may be viewed from the simple economic principle that espouses demand as the predictor of supply. In this regard, service providers act on available demand to create supply, whose utility is expected to satisfy specific customers' expectations (Hope, 1999; Todaro & Smith, 2009).

However, the theory of demand alone is inadequate to explain low capital market development across-board. This position is based on the premise that demand itself is a function of supply. For the deficit units to access funds, there must be surplus units. In essence, for effective demand for capital to take place there must be a source that is capable of effecting the required supply (Hope, 1999). The argument advanced to counter the demand-inclined supposition is further reinforced by the argument that some countries, such as United States and France, which have been experiencing the same level of economic development since 1913, differ widely in capital market development (Rajan & Zingales, 2003). As a result, a further search is required to unearth a fuller explanation of determinants of capital market development, especially in the African context. Being the focus of this study, the dynamics of capital market development in African context will be discussed in the following paragraphs.

2.4 Capital market development and institutional framework in Africa

The issue of capital market development is very important in every economy, be it developed or developing. Capital market plays a critical role in the functioning of a country's economy (Adjasi & Biekpe, 2006; Baker, Foley & Wurgler, 2009; Ayaydin & Baltaci, 2013). As a channel through which investible funds are generated and disbursed, its viability and efficiency become important as a source of confidence building for both investors and borrowers (Atje and Jovanic, 1993; Jeffus, 2004). This section looks at the trend of capital market development in Africa, in order to analyse the development of capital market, and to investigate the major challenges that hinder the advancement of Africa capital market.

The focus on Africa capital market has been receiving intensive attention over the past few decades. The continued realisation of the importance of capital market development have prompted sustained efforts by political leadership of many African countries to initiate policy reforms towards creating new capital market platforms or to develop existing ones (Alfaro, et al, 2004). Noticeably, these efforts have been successful in improving the dynamics of capital market in some parts of the continent. For instance, from as little as nine stock markets in 1992, the number of stock markets in Africa has grown to 29 domestic and two regional exchanges by 2013 (The African Business Review, 2013). In sub-Saharan Africa alone, the number of active stock exchanges has increased from five (South Africa, Zimbabwe, Kenya, Nigeria and Uganda) to seventeen between 1989 and 2013 (MFW4A, 2013).

Further, the performance of these stock markets (in terms of year return) has been improving over the past years. For example, Ghana Stock Exchange topped the global list of top yield-to-date performer in 2004 with percentage return of 144 per cent, which was far beyond the performance of leading Stock Markets in the advanced economies (Adjasi and Biekpe, 2006:145). In addition, the four best performer stock markets in 2012 were all from Africa. Venture Africa (2013) reports that the Egyptian stock market was the most appreciating stock market in the world in 2012. According to this source, the Egyptian Exchange (EGX) rewarded investors with 49.56 per cent yield-to-date in dollar returns during the 2012 financial year. The Kenyan stock market came second with 39.32 per cent yield-to-date return, followed by Nigeria and Ghana bourses that recorded 35.45 per cent appreciation respectively.

Although, stock markets in Africa has been outperforming the more resourced Western markets in recent years, various problems have been identified as creating hindrances to Africa capital market and thus preventing it from fully exploiting its potentials. According to Adetunji (1997: 21-22) the major problem that inhibit investment in African capital markets is the negative perception of the continent by the outside world as a haven of instabilities, such as “conflicts, wars, coups, disease and poverty”. This author further contend that the continent is less attractive to inflow of foreign capital given that less is known about the occurrences on the continent and investors’ decisions were based on perception. As stated in chapter one, Africa has recorded significant improvement on democratisation and the poverty level on the continent is reducing.

According to the African Development Bank (2011:1), the number of people in the middle class category on the continent had risen to 34 per cent of Africa’s population. The source contends that “nearly 350 million people - up from about 220 million people or 27 per cent in 2000” have risen to the affluent middle class category on the continent as at 2011. The growth rate of about 3.1 per cent in middle class growth is observed to be higher than the 2.6 population growth on the continent (African Development Bank, 2011:1).

Deloitte (2012:1) further corroborates this proposition as it observes, “Africa’s middle class has tripled over the last 30 years, with one in three people now considered to be living above the poverty line - but not among the wealthy”. The source further forecasts that “African middle class will grow to 1.1 billion (42 per cent) in 2060” (Deloitte, 2012:1). According to this source, the trickling down effect of GDP growth of between 7 and 10 per cent in most African economies results in Africa now having the fastest growing middle class in the world.

Another hindrance to the development of stock market on the continent is small market size. The size of most of the stock markets on the continent is small. According to Dahou, Omar and Pfister (2009), the size of Africa’s stock market remains about the smallest globally. For instance, the market capitalisation of the leading stock market in Africa (JSE) is about US$ $887billion (The Johannesburg Stock Exchange, 2013), which is less than two per cent of global equity market capitalisation (The World Federation of Exchanges, 2013). In addition, a good number of stock markets in Africa only boast few listed firms. For instance, the Rwanda bourse has only three listed firms on its platform and trading is rarely conducted.

The situation is worse in the Central African stock exchange that contains no single listed firm on its platform (The African Business Review, 2013).

According to Adetunji (1997), the legal and regulatory environments in many markets are still very weak and lack transparency. Except for the JSE that is regarded as the best regulated and supervised stock market in the world (The World Economic Forum, 2013), other capital markets on the continent remain poorly regulated. Some of the main weaknesses in the regulatory environment are poor policy formulation capacity, weak legal framework and insufficient capacity to implement judicial proclamations (Yartey and Adjasi, 2007).

Because of weak institutional framework, it becomes challenging to build confidence in both domestic and foreign investors. Further, the inherent weaknesses in the regulatory framework arguably, culminate in corrupt practices that further unnerve skittish investors. According to Transparency International (2012:7), more than 90 per cent of sub-Saharan African countries score less than 50 on corruption perception index. This low score normally suggests that most of the countries in the region are very corrupt.

Additionally, the macroeconomic environment of most African countries remains largely unstable. For instance, “high inflation and exchange rates as well as unpredictable interest rate regimes have tended to expose capital investments to unmanageable risks, as real returns are usually heavily eroded by these factors” (Adetunji, 1997:23). Dupasquier and Osakwe (2006), further reinforces the negative impact of macroeconomic instability, especially high inflation and exchange rates, as well as unstable interest rates regimes. According to Dupasquier and Osakwe (2006), macroeconomic instabilities unnerve investors as negative market behaviour reduces (and sometimes erode) incentives for investments.

Further to the problems identified above, Audu and Apere (2013) observe that transactions costs on African stock exchanges are among the highest in the world. According to these authors, the variety of fees charged which include stock flotation costs, stamp duties, brokerage fees, stock exchange fees, regulatory fees and compensation fund fees, all culminate in making Africa capital market less attractive to foreign investors.

Aside the stock markets on the continent, the banking sector have also witnessed considerable improvement over the past decades. Since the 1990s, financial sector reforms initiated in many sub-Saharan African countries have contributed significantly to the development and efficiency of the financial - and particularly banking systems (European Investment Bank, 2013). Consequently, according to this source, “commercial banks’ capital bases have strengthened and their risk management practices have improved; credit to the private sector has risen, albeit from a low base; and most of the sub-Saharan African banking systems have proven resilient to the recent events of global financial stress” (European Investment Bank, 2013: 5). However, there remain substantial challenges to achieve the full viability of this sector on the continent.

One of the major challenges identified by the United Nations Economic Commission for Africa (2012) is infrastructural inefficiency. This source observes that it would require an estimated US$ 93 billion per year in order to address infrastructural challenges on the continent (United Nations Economic Commission for Africa, 2012:57). This source further identified telecommunication technology and energy as the main hindrances to banking development on the continent. Given that these technologies are critical for automated banking systems; their inefficiency would dampen the effectiveness and development of the banking system.

Although, mobile phone penetration rates have increased substantially from less than two per cent in 2000 to more than 60 per cent in 2013 (UNDP, 2013:33), problems of accessibility to telephone lines still persists in many African countries, and the financial cost of access to mobile telephones still ranks amongst the highest in the world. The same report further observes that transportation remains a major deterrent to economic growth on the continent. According to the report, “more than 70 per cent of sub-Saharan Africa’s rural population, for instance, lives more than two kilometres away from an all-season road”. These challenges rank African as one of the least attractive investment destinations even among the developing nations.

The development of these infrastructures requires long-term commitments that may span in excess of many years. Recent efforts to promote public private partnership (PPP) are an attempt to address these problems (such as BOT that was adopted by the South African government to build the Gautrain, the railways refurbishment policy in Nigeria and Uganda, to mention a few). These form of agreement between the government and private sectors are beginning to reshape the infrastructure development in Africa, and because the projects are financed through the capital market, they are promoting long-term and sustainable economic growth. For example, the recent telecommunication development in Africa such as MTN, Vodacom, Glo (to mention a few) have substantially improved telecommunication throughout the major cities on the continent.

It is observed in the literature survey presented in the preceding sections that African countries lack the ability to mobilise domestic funding in order to provide necessary facilities and infrastructures needed by related and supporting industries to function (facilities such as power generation, good road network, communication technology, amongst others). This capital gap in the African economies needs to be complimented by the attraction of foreign investment. Foreign investment in the form of FDI is therefore, crucial in this regard, for countries and regions that are not able to mobile domestic resources (such as Africa).

It must be pointed out, however, that recent policy reforms on the African continent have starts to generate investor confidence in Africa's capital market. For instance, the Dangote Group recently signed a US $3.3 billion financing deal in Nigeria to build one of the biggest refineries in Southern hemisphere. The funding arrangement is co-ordinated globally by Standard Chartered, and in Nigeria by Guaranty Trust Bank (Financial Times, 2013). In addition, Total Exploration & Production Nigeria Ltd. and Total Upstream Nigeria Ltd (subsidiaries of TOTAL South Africa Petroleum and Oil Company) are in the process of raising US$ 7.5 billion from eight lenders within the domestic capital market to finance their expansion strategy in sub-Saharan Africa (Business Day, 2013).

These examples are clear indications of the continued confidence in the ability of the African capital market to provide funding for investments with small short-to-medium term returns. These investment opportunities would not have been possible without the support of the capital market, and these capital formations are deemed capable of improving the investment environment of Africa, and ultimately the continents attractiveness to inflow of FDI.

Another major hindrance to the viability of the banking sector on the continent is the weak regulatory environment. According to Mihasonirina and Yartey (2009), supervisory capacity is weak in many countries, because of poor resourcing of supervision activities and deficient legislative arrangements. Most of the specific institutional weaknesses are weak creditor rights, and judicial enforcement mechanisms (Khamfula, 2005). Where capital market supervisory laws exist, their application is poor and the administration of judicial processes or judgements is ineffectual (Audu and Apere, 2013). It could then be reasonably suggested that the challenges that hinder capital market development in Africa applies in similar dimension to both the stock and banking sectors and the other measurable indicators of capital market that are used in this study.

One more important hindrance to capital market development in Africa is market liberalisation. According to Bekaert, Harvey and Lundblad (2001), the initiation of regulatory reform towards affording foreign investors the opportunity to invest in domestic capital market is an important motivation for foreign investors to penetrate the domestic market as the reforms enshrines investors' rights and protection. This protection therefore, engendered their interest to transact in foreign equity securities. These authors cite the examples of Brazil. According to the authors, Brazil amended its capital market-related laws in 1991 not only to liberalise the market but also to reinforce investors' protection.

With regulatory intervention that allows about 49 per cent voting ownership and as much as 100 per cent arms-length investment, the country was able to improve its attractiveness to inflow of foreign capital. The same regulatory reform was embraced by South Korea in 1992, and its impact on the stock market development was noticeable. Bekaert and Harvey (1995) investigate the impact of market integration on capital market development. According to these authors, foreign investors will be motivated to venture into an offshore market if the market is liberalised and foreign ownership of equity stake is permissible. This proposition is also buttressed by Han and Vijay (2000). In a study of 20 emerging countries including Nigeria and Zimbabwe (the two African countries in the study), these authors found that stock returns increases immediately after the sampled economies were liberalised, especially because none of the countries at the time were susceptible to contagion effects. These authors conclude that the efficiency of stock markets will improve if the markets are liberalised.

However, contrary to the good impact of financial market liberalisation that has been proposed above, capital market liberalisation can be counterproductive. In a study of Indonesia between 2002 and 2007, Rhee and Wang (2009) investigate the relationship between inflow of FDI and stock market liquidity. Empirically, they find that even after controlling for stock market characteristics such as trading, the ownership structure of the market was found to be negatively related to stock market development. That is, the liberalisation of the market was found to be counterproductive in Indonesia over the period studied.

As indicated in section 2.5, most of the capital markets in Africa have passed through various stages of liberalisation, essentially in conformity with the requirements of becoming members of global capital market associations. Bekaert, Harvey and Lundblad (2001:54) document the implementation dates of capital market reforms in some of the capital markets in the world (including some African countries). According to the illustration provided by these authors, all the capital markets sampled in this study have initiated liberalisation reforms at one point or another. Further, there is evidence of foreign ownership (and in some cases, controlling voting stakes) in all the capital markets sampled in this study. As such, this variable will not be considered in the estimation.

2.5 Capital Market Development in the Selected African Countries

As stated in the preceding paragraphs, this study covers six countries in Africa. To understand the intricacies of capital market development in the sampled countries, it is considered important to review existing literature on the dynamics of capital market development in the countries. In the paragraphs that follow, the review will be done in alphabetical order (Egypt, Kenya, Morocco, Nigeria, South Africa and Tunisia).

2.5.1 Capital market development in Egypt

The Egyptian capital market is considered to be among the oldest capital markets in the world, and about the oldest in the North Africa region. The development of the capital markets (both securities and exchange markets, and the banking sector) date back to the 19th century in Egypt. More precisely, the securities and exchange markets in Egypt dates back to 1888, when Alexandria Exchange platform was established. This was closely followed by the establishment of Cairo Exchange in 1903. Since their inception, these two securities exchanges platforms were actively utilised by investors that continued to grow in number and capitalisation.

The continued growth in the number of listed firms on the platforms, coupled with the increasing capitalisation, eventually led to these platforms being ranked in the top five global exchanges in the 1940s. However, government intervention in the form of market regulation introduced in the mid-1950s hindered the functionality of the platforms, thereby rendering the platforms redundant until new forms of reforms were adopted in the 1990s. The reforms of the 1990s precipitated the rejuvenation of activities on the platforms and that growth continued until 2011 when the “Arab Spring” debacle offshoot the present instability that pervades the country.

The most important policy intervention in the stock and exchanges markets in 2007 was the amalgamation of the two previously distinct exchanges (Alexandria Exchange and the Cairo Exchange) into a single platform (called the Egyptian Exchange - EGX), which becomes the only registered securities exchange in Egypt. As a result of the amalgamation, a body tagged the capital market regulator was established. The functions of this body include:

> *"promoting and underwriting in securities, securities brokerage, portfolio management, mutual funds, fund management, venture capital, advisory services in relation to securities, management services in relation to mutual funds, settlement and set-off services in relation to securities transactions, margin trading services and intraday trading services" (Abbas & Hazzaa, 2012:57).*

According to the brief of the Stock market and Exchanges regulatory body, efforts were required to ameliorate the increasing scepticism of investors in the volatile Egyptian equity market. It must be said, however, that the reform has not been able to convince new investors to list on the platform. For instance, the number of listed firms on the Egyptian Exchange reduced from 595 in 2006 to 435 in 2007, 373 in 2008, 306 in 2009 and 232 in 2011 and 203 in 2012.

The development of banking sector in Egypt slightly precedes the establishment of the securities and exchange markets platforms. The first bank ever to be established in Egypt (The Bank of Egypt) was established in 1856 with its headquarters in London. The bank established its main office in Alexandria, and it also had a branch office in Cairo for easy banking activities. This bank was established to perform the principal role of a Central Bank, especially given the intensive commercial activities between Egypt and the Western countries, which was dominated by cotton production and sales. The establishment of the Bank of Egypt was later followed by the establishment of National Bank of Egypt (NBE), which is largely regarded as the oldest commercial bank in Egypt. It was established on June 25, 1898.

The full-fledged Egyptian Central Bank was established in 1961 with its headquarters in Cairo (Central Bank of Egypt, 2014). Although, there were so many commercial banks that perform various capital market intermediary and capital deepening roles, the establishment of a regulatory body in the form of an apex bank becomes inevitable after political independence. The Law 117/ 1961 that established the Central bank also provided for the nationalisation of all banks in Egypt.

The Egyptian banking sector expanded markedly in the mid-1970s. This remarkable improvement in the functionality and capacity of the banking sector was facilitated by the policy reforms initiated by the government, especially the banking reforms tagged the "open door policy" (El-Shazly, 2000). Under the auspice of the Law 43/1974, capital market liberalisation was adopted by the government in contrast to the 1961 nationalisation of capital markets agenda. This policy was aimed at startling the private sector, especially the commercial banks, to actively participate in economic activities as a way of driving sustainable economic growth. The initiative was outward-looking as it crafted specific roles for the commercial banks, which are growth-inducive. To ensure adequate participation of the banking sector in the new policy, banking law was enacted in 1975 (Law 120/1975). The law clearly enumerates the nature and mode of operations for all banks. It identified three types of banks:

(i) Commercial banks, which usually accept deposits and provide funding for a wide variety of transactions.

(ii) Business and investment banks, which carry out medium- and long-term operations such as the promotion of new businesses and financing of fixed asset investments. They may also accept deposits and finance foreign-trade operations.

(iii) Specialised banks, which carry out operations serving a specific type of economic activity. They may accept demand deposits.

Banks operating in Egypt can also be classified as public sector, private and joint venture, or foreign-owned, depending on the ownership structure. It must be pointed out, however, that all specialised banks are state-owned and are assigned the task of providing long-term financial supports for some sectors that are identified as growth-drivers. Such sectors include real estate, agricultural, and industrial development. The continued drive to further capital market development led to additional reforms in 1996 that allowed for more than 49 per cent equity stake by foreign investors in the banking sector. Further reforms include the Electronic Signature Law 15/2004 and the Unified Tax Law 91/2005, all that were aimed at making banking more accessible to the people by simplifying the operational processes of the sector.

The capital markets in Egypt are regulated by the Egyptian Financial Supervisory Authority (EFSA). The EFSA officially began operations on 1 July 2009 when it replaced the Capital Market Authority (CMA) - the former capital markets regulator that was established in 1992 under the Capital Markets Law No. 95 of 1992.

2.5.2 Capital market development in Kenya

Kenya has witnessed noticeable level of capital market development over the past decades. Being the oldest, largest and most vibrant capital market in East Africa, equity trading began in Kenya since 1920s when the country was still under the British rule (Nairobi Securities Exchange, 2014). To formally coordinate all trading activities, the Nairobi Securities Exchange (NSE) was established in 1954 as a voluntary association of stockbrokers. Although, various equity trading activities began before Kenya's independence in 1963, these activities were restricted to the residents of the European community.

The government intervened in various ways to dispel the scepticism of traders on the platform with little success until in 1988 when 20 per cent of government stakes in the country's commercial banks took effect. This process did not only increase the capitalisation of the NSE, but also increased trading activities on the platform (Ngugi, Amanja & Maana, 2009). The government recognised the need to improve economic growth through capital market efficiency, especially by imbibing thrift culture in the Kenyans. To that effect, the government established the Capital Markets Authority (CMA) in 1988. This body was charged with complementary responsibility (with the Central Bank) to provide an enabling environment necessary to improve the capital efficiency in the country. Despite this intervention, activities on the stock market remained low.

To further address the inefficiency that characterised the equity market, the government amended the Capital Markets Act in 2000 (The Capital Markets Act, 2000). This amendment was aimed at encouraging a culture of thrift among the Kenyans and to improve access to finance. The amendment further provides for alternative source of long term financing for the economy, particularly as the commercial banks were incapacitated to garner requisite funding to galvanise desirable level of economic development. This Act was further amended in 2003 to charge both the Capital Markets Authority (CMA) and the Nairobi Stock Exchange (NSE) towards creating a robust regulatory environment that depicts the NSE as a key equity market in the region, Africa and the world at large.

These series of policy interventions have increasingly yielded dividend. For instance, the capitalisation of the equity market as a percentage of GDP increased from about 32 per cent in 2005 to about 56 per cent in 2013. So also was the number of listed firms that increased from 48 in 2005 to 61 in 2013 (African Securities and Exchanges Association). The viability of the equity trading platform has also been bolstered by the privatisation of various government interests, such as the Kenyan Airways that was privatised in 1996, which saw the KLM acquiring 25 per cent stake in the company while a whopping 51 per cent went to the general public.

Further to improving the equity trading platform of the NSE, the automated trading system (ATS) was adopted in 2006 and the trading hours was increased from two to three (from 10 am till 1 pm), coupled with cross listing agreement between the NSE and Uganda Securities Exchange. Further, the Complaints Handling Unit (CHU) was introduced in 2009 to facilitate arbitration processes between the market participants and, also to create a communication channel through which aggrieved persons can lay official complaints with the regulatory authority. The most recent reform to the platform was the change of name that took place in 2011 when the Nairobi Stock Exchange Limited was renamed as the Nairobi Securities Exchange Limited. This change of name was intended to reflect the new dimension of the NSE by incorporating service securities exchange business line that supports trading, clearing and settlement of equities, debt, derivatives and other associated instruments (Nairobi Security Exchange Limited, 2014).

The other component of capital market in Kenya (the banking sector) is also the most developed in East Africa. Banking activities in Kenya dates back to 1863 when the National Bank of India set up an offshore office in Zanzibar. This offshore office was meant to provide banking services for the entire East African Protectorate under the British rule. The first commercial bank in Kenya, the Kenya Commercial Bank was established in 1896. The bank’s Kenyan branch opened in Nairobi in 1904 in order to cater for the growing needs of banking services in the country.

The drive to achieve better financial deepening through capitalisation necessitated the merger agreement with Grindlays bank in 1957 (The Kenya Commercial Bank, 2004) and the government acquired controlling shares in the bank in 1970, which led to the name being changed from the National Bank of India to Kenya Commercial Bank. Quite a number of other commercial banks also sprang up in the 1900s. For instance, Standard Chartered Bank Kenya Limited was established in 1911, closely followed by the establishment of Barclays bank of England, which established its Kenya branch in 1917.

The need to strategically and centrally coordinate the activities of financial institutions in Kenya led to the establishment of the Central bank of Kenya in 1966 under the Central bank of Kenya Act of 1966 (Central Bank of Kenya, 2014). The Central Bank of Kenya, alongside the Capital Markets Authority, jointly regulates the operational environment of the capital market in Kenya and, creating an enabling environment to facilitate capital market efficiency is constitutionally central to their roles.

2.5.3 Capital market development in Morocco

Capital markets in Morocco have gone through a series of reforms over the past decades. While some of the efforts to improve the efficiency of the market have been successful, quite a lot other interventions have faltered on the platter of institutional inadequacies and regulatory weakness.

The banking sector in Morocco is highly diversified and extensive in its intermediation functions. According to Echchabi and Abdul Aziz (2012:850), “eight commercial banks (Attijariwafa Bank (AWB), Banque Populaire du Maroc (BPM), Banque Marocaine du Commerce Exterieur (BMCE), Banque Marocaine du Commerce et de l’Industrie (BMCI), Societe Generale Maroc (SGM), Credit Agricole du Maroc (CAM), Credit Du Maroc (CDM) and Credit Immobilier et Hotelier (CIH) dominate the banking sector in Morocco”. These banks collectively account for more than three quarter of the capitalisation of the entire commercial banking sector in the country (Reille & Lyman, 2005).

Apart from these large commercial banks, various other financial institutions that perform commercial banking roles are in existence and functional. According to Reille and Lyman (2005:3), there are five specialised financial institutions owned by the government and other 44 nonbank financial companies owned by shareholding interests. The impact of Barid-al-Maghreb, the state-owned postal parastatal, in enhancing financial deepening in the country is also of significance. The postal service operates in every nooks and crannies of the country to complement the financial activities of the commercial banks – in additional to its conventional postal services brief (Reille & Lyman, 2005). This form of extensive diversification in the banking sector enhances financial deepening and relative inclusiveness that purportedly bolsters access to banking for the larger part of the market agents, essentially the deficit units.

The first commercial bank in Morocco was established in 1904. Having gained notable commercial grounds in Algeria, the French international bank, Compagnie Française de Crédit et de Banque, extended its Algerian footprint to Morocco as the first commercial bank in the North Africa country, under the trading name of Compagnie Algerienne de Crédit et de Banque (CACB) (Financial Times, 2014). Another commercial bank was established in Morocco in the same year that Attijariwafa bank was established. As a result of the increasing demand for banking services, the Banque Commerciale du Maroc or B.C.M. was founded in Morocco in 1911, with its headquarters in Casablanca. Riding on the laurel of its success in household banking in the country, the B.C.M eventually acquired control and effective ownership of Wafabank in 2003, and the new amalgamation began to trade as Attijariwafa bank in January 2004 (MENAFN Press, 2014). Today, Attijariwafa bank is the largest commercial bank in Morocco and the third largest bank in Africa (Financial Times, 2014).

The establishment of the State Bank of Morocco manifested in 1906 as the outcome of a world reformation conference that was held in Casablanca between January and April of that year. However, the Bank only attained issuance status in 1911 shortly before the commemoration of the Protectorate Treaty in 1912, which eventually curtailed the functionality of the Bank as a national central Bank. However, the central banking system was rejuvenated in 1959 after the political independence of Morocco, and the central Bank was then renamed as Bank Al-Maghrib.

According to a World Bank Report (2000), the post-colonial independent Morocco has witnessed various financial sector reforms. The report suggests that the World Bank backed a series of capital market reforms (essentially in the 1990s) to ensure greater capital market liberalisation at various sectors of the capital market. The process of capital market reform began with the banking sector (1991-1995), through to savings institutions such as insurance and pension funds in 1998. As a part of these reforms, the government divested from the leading banks in the country thereby allowing for their listing on the stock market. The World Bank report (2000) further suggests that the banking sector accounts for nearly half of the capitalisation of the stock market, suggesting a high degree of interdependence between the banking sector and the equity market.

The developmental process of equity market in Morocco follows the same trend as the other North African countries. The Casablanca Bourse was established in 1929 under the auspice of "Office de Compensation des Valeurs Mobilières", which is translated as the Office for Clearing of Transferable Securities (The Casablanca S.E, 2014). Given that the banking sector has been well-established before the equity market platform, the growing need for risk diversification and exploitation of an alternative source of funding culminated a wide-spread reception of the equity market. The attractiveness of the equity platform to the domestic investors and the growing interest in the stock market investment precipitated the 1967 capital market reforms that become essential to reinforce the legal and technical frameworks of the market (The Casablanca S.E, 2014).

The inherent shortcomings in the 1967 reforms culminated the privatisation and economic liberalisation program of 1989. These sets of reforms were aimed at improving the functional efficiency of the capital market towards reducing the operating costs on the platform and revise the ownership structure of the market. In specific, according to Ghysels and Cherkaouithe (2003:172), the capital market reforms of 1989 focussed on (1) The liberalisation of interest rates, (2) changes in monetary policy, (3) a decrease in the government access to credit, (4) major regulatory changes of the banking sector, and (5) a fundamental change in the operations of the stock market. These reforms proved effective as the privatisation efforts boosted the capitalisation of the equity market through the I.P.O offerings on previously-owned state assets. The equity market becomes essentially appealing to investors as a result of the 50% tax break on equity returns that accompanied the over-subscribed I.P.Os that ensued from the privatisation process.

The drive to continuously make the platform competitive and appealing led to further reforms in 1993. The 1993 reforms (amongst other things) established the independence of the CSE from the Ministry of Finance by establishing the securities commission (Conseil Déontologique des Valeurs Mobilières or CDVM) (The Casablanca S.E, 2014). This commission serves as the watchdog for the equity market and its brief includes the possible imposition of disciplinary sanctions on market agents that flout the regulations of the platform, especially the public disclosure provisions. The severity of the disciplinary action could be as much as ultimate de-listing.

However, the series of reforms adopted by the Moroccan government failed to yield the anticipated dividend as a result of institutional weaknesses. According to Gentzoglanis (2007), corruption, disorganisation and lack of respect for the rule of law are the main culprits for the lingering inefficiencies in the Moroccan equity market.

2.5.4 Capital Market Development in Nigeria

Nigeria’s capital market is one of the biggest in Africa. Owing to the country’s history of political and institutional instabilities, the capital market has undergone some notable reforms albeit with minimal accolade of success. The first commercial bank (The African Banking Corporation) was established in Nigeria in 1892 with its headquarters in Lagos (National Bureau of Statistics, 2014). In 1894, the Bank of British West Africa took over the Africa Banking Corporation. The Bank of British West Africa remained the only bank in Nigeria until 1912 when Barclays Bank (now Union Bank) was set up.

Given that the country was still under colonial tutelage at the time, a number of capital market activities were regarded as the sole province of the colonial masters. For example, local investments of currency reserves were prohibited, access to banking by indigenous locals were prevented and the entire monetary policies were determined in England (Uzoage, 1962). To ensure efficiency of the growing banking needs in the country, the British colonial government established the West African Currency Board in 1912 (Central Bank of Nigeria, 2014). The establishment of the Board was mainly intended to further facilitate exports financing by empowering the Board to issue a West African currency that is convertible to the British pounds sterling.

The establishment of the Board and the introduction of the local currency led to rapid expansion of banking activities in the country, which culminated the creation of more foreign banks in the country. By 1952, three foreign banks (the Bank of British West Africa, Barclays Bank, and the British and French Bank) and two locally-owned banks (the National Bank of Nigeria and the African Continental Bank) were in operation (Bureau of statistics, 2014). The increasing agitation by the growing number of elites in the country for active participation in the banking activities as well as the increasing need to coordinate the activities of the growing numbers of commercial banks eventually led to the introduction of the first set of banking regulations in the country by 1952 (Uzoage, 1962).

The banking sector ordinance of 1952 was promulgated to regulate some of the critical activities in the banking sector, such as the establishment of operational standards, the setting of cash reserve ratio and the creation of banking supervisory platforms (Austin & Uche, 2007). More importantly, the ordinance accorded the indigenes the privilege to participate in banking activities.

To redress the inherent laxities in the 1958 ordinance, the Central Bank Act was promulgated in 1958. The Act was fully implemented on 1 July, 1959 to accord the Bank a full institutional status (Central Bank of Nigeria, 2014). The Bank was established in a mirror image of the North American and Western European Central Banks. The Bank was charged with the responsibility of issuing the Nigerian currency that is convertible to other major currencies in the global capital market. The Bank was also charged with the responsibility of controlling, regulating and supervising the banking system in the country, serve as banker to other banks in Nigeria, and implement relevant government economic policies through complementary monetary initiatives (Austin & Uche, 2007).

The efficiency of the banking sector in Nigeria was highly affected by the indigenisation Decrees of 1973 (which required 40 per cent state-ownership of foreign investments in the country), as well as the Nigerian Enterprises Promotion Decree of 1976 that required state-ownership of 60 per cent of foreign investments in Nigeria (Austin & Uche, 2007). These sets of policy initiatives affected not only the capital structure of the banks but their operational processes as well. To forestall the possible effects of market failure on the banking sector, the Nigerian Deposit Insurance Corporation (NDIC) was established in 1988. The corporation was created to advance investor confidence in the banking industry, in order to improve domestic savings.

Evidence (Austin & Uche, 2007) suggests that various regulatory reforms adopted by the government have contributed to the popularity of banking activities in the country. For example, apart from the commercial banks that are more than 20, there are also a number of government-owned specialised development banks that targets strategic government business interests. These banks include the Nigerian Industrial Development Bank, the Nigerian Bank for Commerce and Industry, the Nigerian Agricultural Bank, the Federal Savings Banks and the Federal Mortgage Bank. Also active in Nigeria were numerous insurance companies, pension funds, and finance and leasing companies.

The establishment of equity trading platform began in the country in 1960 when the Lagos Stock Exchange was established. The bourse changed its name to Nigeria Stock Exchange (NSE) in 1977. After its inception, the Central Bank of Nigeria (CBN) immediately established the Capital Issue Committee in 1962. The committee was established as an advisory body to the CBN on the listing process and the supervision of the functionality of the equity market - aimed at aiding the viability of the market (Securities and Exchange Commission, 2014). The Committee was given an extended statutory backing by the Capital Issue Decree No. 14 of 1973, which amongst other things, changed the status of the committee to a commission – the Capital Issues Commission (Olowe, 1999; Adelegan, 2004).

The growing increase in capital market activities and the renewed government commitment to improve the market's efficiency necessitated the establishment of a more robust institutional framework to supervise the entire capital market. To that extent, the Securities and Exchange Commission was established in 1979 under the Securities and Exchange Commission (SEC) Decree No. 71 of 1979. This major regulatory intervention pivoted the accession of Nigerian equity market to the International Organisation of Securities Commissions (IOSCO) in June 1985 (Securities and Exchange Commission, 2014). The SEC Decree was amended in 1988 to ensure further protection of investors and to promote capital market growth and development in the country (Adelegan, 2004).

The inherent weaknesses in the regulatory environment of the capital market as espoused by the SEC Decree necessitated the promulgation of the Investment and Securities Act No. 45 of 1999. The new Act was expected to promote a more potent and sustainable capital market, which was in consonance with the economic growth and development agenda of the government at the time. The Investment and Securities Act has since witnessed a series of amendments, but the most current institutional regulatory instrument is the Investment and Securities Act (ISA) 29 of 2007. Currently, the ISA accords the Nigerian Securities and Exchange Commission the power to regulate and supervise the entire capital market in the country.

It must be pointed out, however, that the strength of the regulatory framework has been challenged on various occasions in recent time. For example, there were increasing allegations of insider trading in the Nigerian banking industry and low capitalisation that eventually prompted the recapitalisation agenda of the government in 2004. Further, there was a widespread allegation that the bank failure (that resulted in stock market collapsed by about 70 per cent in 2008-2009) (Sanusi, 2010) was orchestrated by opportunistic behaviour and fiduciary risks in the banking sector. The ousting of the Central Bank governor by the Nigerian President in February 2014 is a clear testimony that the regulatory environment of the capital market is precarious and its viability is at best in its infancy.

2.5.5 Capital market development in South Africa

The architecture of banking activities in South Africa revolves around various business interests, essentially between trading interests of caravan merchants from the East and the discovery of mining resources in the country. Bank formation also took a toll along the government colonial arrangements. Commercial banking activities in South Africa dates back to 1836 when the Cape of Good Hope bank was founded. Between 1836 and 1861 the total number of banks in Cape of Good Hope alone amounted to 30.

On another front, the Eastern Province bank was formed in Grahamstown in 1837 (Mostert, Oosthuizen, Smit & van der Vyver, 2007). The bank was established to intermediate in the business interests of Indian merchants that was premised on wool produce (First National Bank, 2014). Until about 1870, the economy of South Africa was almost entirely dominated by agriculture. Mining assumed prominence in the 19th century when minerals like gold and diamonds were discovered (Zeleza, 1993).

Wool exports faced various challenges during the 1870s in South Africa along with various institutional challenges, which culminated in the bank being acquired by an Indian commercial bank – the Oriental Bank Corporation (OBC) in 1974. The OBC was an overseas bank established in conjunction with the British colonial powers to facilitate currency exchanges and transfers between the West (mainly England) and the East (Nishimura, Suzuki & Michie, 2012). However, recession precipitated a shortage of good bills exchange being drawn between Britain and Asia and the bank's problems worsened with the drop in prices of silver and decline in Chilean government bonds. The increasing operational problems eventually forced Oriental Bank Corporation to withdraw from South Africa and thus the Bank of Africa was formed in 1879 to take over the OBC's business in South Africa (Nishimura, Suzuki & Michie, 2012).

In 1854, another commercial bank was formed in the Natal Colony - The Natal Bank. The bank was formed to intermediate in the sugar industry that was thriving in the colony at the time. The bank eventually becomes a major lender to sugar planters at exorbitantly high interest rates and investments of English capital boomed to entice other market participants to the banking sector (Theal, 2010). Some of the new entrants to the banking industry in the Colony were the Commercial and Agricultural Bank of Natal, which was established in 1862. In the same year, the Colonial bank of Natal was founded and the Standard Bank of British South Africa starts business in Port Elizabeth in 1863 (Standard Chartered, 2014).

Various other commercial banks, such as the London and South African Bank, Transvaal Imperial Bank, Netherlands Bank of South Africa, African Banking Corporation were established in the country. During that period, the government of the South African Republic founded a commercial bank - the National Bank of the South African Republic Limited to cater for the financial needs of the gold mines and the market agents in that sector. Series of bank failures necessitated the dominance of the government bank until when Barclays Bank entered the commercial banking industry in South Africa in 1925. The bank later becomes a purely local entity in 1987 when it transformed into the First National Bank of Southern Africa Limited, now First National Bank (Mostert, Oosthuizen, Smit & van der Vyver, 2007).

The first government bank in South Africa, the Lombard bank was founded in 1793, but the South African Reserve Bank was only established in 1922 (South African Reserve Bank, 2014). The Bank was established by Section 9 of the Currency and Banking Act No. 31 of 1920. The activities of the Bank are underpinned by the South African Reserve Bank Act, 1989 (Act No 90 of 1989), as amended (South African reserve bank, 2014). According to the Bank, the enabling Acts of the Bank has undergone series of amendments, the latest being the South African Reserve Bank Regulations 2010. These amendments were undertaken to enlarge the brief of the Bank as well as to strengthen the regulatory environment of banking in the country. As at 2014, South Africa boasts the most developed and sophisticated banking industry in Africa.

Apart from the well-functioning banking sector, South Africa has a highly developed and the most sophisticated equity market in Africa. The World Economic Forum's Global Competitiveness Survey for 2013-2014 adjudges the JSE as the best regulated securities exchanges in the world. Equity trading began in the country in 1887 when the Johannesburg Stock Exchange (JSE) was established as a stock exchange (Johannesburg Stock Exchange, 2014). According to Firer and Mcleod (1999), the impact of the mining sector on the equity market was substantial until 1926, and the listing of industrial companies did not add much capitalisation until the early 1930s.

The Import Substitution Industrialisation strategy of the government shortly after the Second World War spurs the participation of the manufacturing companies on the equity market. By 1946, the market capitalisation of financial, industrial and commercial shares has surpassed that of mining shares (Firer & Mcleod, 1999). This momentum was enhanced when the JSE-Actuaries Equity Indices was established in 1960. Further integrative initiatives of the JSE include the joining of the World Federation of Exchanges in 1963, and the demutualising of the bourse in 2005, and ultimately, the listing of the JSE on its own Main Board in 2006.

Although, the equity market platform afforded the fledgling mining sector and the market agents to raise requisite operational funds at the time, the efficiency of the market was a concern. For instance, there were as many as 754 listed companies on the JSE platform in 1988 but the number reduced to 472 in 2004 and 425 in 2008 (African Development Indicators, 2014). As a result of various instabilities that pervade capital markets, there is always a need to regulate and continuously strengthen the regulations that governs the operations of every capital market.

Some notable reforms to the South African regulatory environment include the transferring of supervision of banking activities from the Department of Finance (National Treasury) to the South African Reserve Bank in 1987 and the establishment of the Financial Services Board in 1989. Further reforms include the enactment of the Financial Services Board Act 97 of 1990 and the establishment of the Policy Board for Financial Services and Regulation by Act of Parliament in 1993 (Falkena, Bamber, Llewellyn & Store, 2001).

2.5.6 Capital market development in Tunisia

An evaluation of material on capital market development in Tunisia is a bit problematic for a student that is only proficient in the use of English Language given that most of the valuable resources are only available in French and in some cases, Arabic Language. Because of these challenges, effort will be made to review some of the available resources in English Language.

Banking activities in Tunisia dates back to the pre-political emancipation era of the country – just like in the other countries sampled in this study. In Tunisia, two types of commercial banks exist as informed by their capital structure. In most cases, banks are either state-controlled or personal/individually-owned. It is considered superfluous to deluge into this form of categorisation for the purpose of this study. The first commercial back was established in 1880 – the Société Centrale de Banque with its headquarters in Tunis.

The bank was (as at the time) a local subsidiary of a French commercial bank (Amen Bank, 2014). The bank changed its name to Crédit Foncier d'Algerie et de Tunisie in 1966. To further engender local participation, the Ben Yeder group took over the bank in 1970, and the bank later changed its name to Amen Bank in 1995. The bank benefited from its alignment to the French system as it becomes the first commercial bank in Tunisia to introduce innovative banking systems (such as telephone and Internet banking). The bank is now the second largest bank in the country (Amen Bank, 2014).

Another commercial bank (Banque de Tunisie) was established shortly after the Société Centrale de Banque. Banque de Tunisie is one of the oldest banks in Tunisia. The bank was established in 1884 with its headquarters in Tunis (Oxford Business Group, 2009). The bank is one of the most liquid banks in the country, and it maintains its strong historical ties with France, with CIC Group (one of the largest banking groups in France) having more than 20 per cent stake in the bank (Oxford Business Group, 2009). The bank differentiates itself from the other commercial banks as it focusses more on growing its market base in the corporate and institutional clientele rather than individual customers.

Tunisia gained political independence from France in 1957. The increasing need for the government to participate in the distribution of credit as a strategic way of achieving a better financial deepening in the new Tunisia necessitated the creation of two commercial banks in quick succession – the Société Tunisienne de Banque (1957) and the Banque Nationale Agricole (1959). Since their respective inception, these banks have been able to advance the intermediation agenda of the government by providing access to low-cost funding to the less-privileged section of the economy. Undoubtedly, these banks provided the government with the capability to advance its developmental and patronage agendas (Henry & Wilson, 2004).

Another commercial bank in Tunisia is Attijari Bank. This bank is a subsidiary of the Moroccan banking group - Attijariwafa Bank. The bank was established in 1968 with its headquarters in Tunis. This commercial bank has flourished in the Tunisian banking sector, especially given the strong backing it enjoys from the parent body in the form of various resources. The increasing capitalisation of the bank and its innovativeness suggest that the bank may soon become the second largest bank in Tunisia.

The merger between la Société Marseillaise de Crédit and the then British bank of the Middle East led to the establishment of Banque International Arabe de Tunisie in Tunisia in 1976. The bank has increasingly grown in its expanse and capitalisation and it is one of the leading commercial banks in North Africa. A joint venture between the Lebanese governments, Tunisia's Social Security Fund and the private sector led to the establishment of the Banque de l'Habitat in 1977. The bank is increasingly growing its market share in individual and peasant banking sectors.

The political independence of Tunisia raised the bar for the agitation for financial detachment from the colonial rulership. As a result of the agitation, the Central Bank of Tunisia was eventually established in 1958, and the Bank assumed immediate responsibility for currency control (Henry & Wilson, 2004). Towards the end of 1958, a new Tunisian currency – the Tunisian dinar was created, and the currency was disconnected from the French franc to ensure absolute financial autonomy.

Apart from the commercial banks in Tunisia, there is also a relatively efficient equity platform in the country. According to Calamanti (1979), the first trading platform in Tunisia (ctiambres de compensation) operated between 1937 and 1945, before it was later replaced with Tunisien de Cotation des Valeurs Mobilieres that operated between 1945 and 1970. These platforms were established to challenge the deliberate attempt of French colonial powers that were meant to prevent domestic trading in Tunisia. More specifically, the first platform was orchestrated to engage market participants in the trading of bank loans, while the latter was established to unify trading system in the country.

However, no serious trading occurred until the enactment of Law No. 69-13 of 28 February 1969. To address the fragmentation that pervades the previous trading arrangements in the country, the Bourse des Valeurs Mobilières de Tunis (BVMT) or Bourse de Tunis was established in 1969 in Tunis (Calamanti, 1979). The idea of the stock exchange was particularly driven by the desire of the government to improve domestic savings in the economy. To achieve the savings objectives, the government provided tax breaks to organisations that listed on the platform (Ben Ali & Sghaier, 2012).

Initially, the Bourse was controlled by the Minister of Finance through the Comite de la Bourse (the Bourse Committee). The Bourse has low market capitalisation and is dominated mainly by the banking sector (Hakimi, Dkhili and Khlaifia, 2012). The low capitalisation of the Bourse and its low trading turnover eventually precipitated some reforms, amongst other, the formation of the Financial Market Council in 1994. Since its inception, the Council has presided over a relatively stable capital market. The most recent initiative of the Council was the ascension of the Bourse to the International Organisation of Securities Commission (IOSCO) in March, 2014.

2.6 Capital market development and market imperfection

Apart from the specific challenges that confront capital market development in the selected African countries, various generic opinions have been expressed on the causes of low capital market development on the continent. One of the prominent arguments locates in the structural impediments that distort the equilibrium position of demand and supply of credit –

credit market imperfections (Matsuyama, 2007). Market imperfection refers to the inherent inefficiency in the capability of the market to channel credit to the necessary projects based on their envisaged returns on investment. It occurs when the forces of market imperfection distort the level of equilibrium in the process of capital allocation.

Some of the notable credit market imperfections are misplaced taxes and high transactions costs (agency problems) (DeGennaro, 2005). These factors influence capital market development in different ways. Taxes culminate in market imperfection as they influence not only the cost of capital but also the decision to trade financial securities (Matsuyama, 2007). These costs may not necessarily be monetary; they may take the form of compensation packages for corporate executives in order to mitigate agency incentives. In addition, the cost of unfair trading and forced regulatory conformity form a part of the tax considerations in capital investment (DeGennaro, 2005).

Transaction costs on the other hand, arise as market participants strive to balance demand against supply. In this process, the impact of social capital is vital for effective contracting which in turn increases the provision of financial products at minimal costs possible. To reduce transaction costs, it is essential to have the necessary level of social capital[5]. This is because; the availability or absence of social capital influences the level of costs associated with the operations of the capital market (Guiso, Sapienza & Zingales, 2004). A well-functioning financial sector is contingent on both the availability of social capital and strong institutional frameworks that foster enforcement of financial contracts – usually expressed via a high level of minority investor protection (Coffee, 2000; Holmén & Högfeldt, 2004).

Institutional frameworks in this regard refer to the appropriate underlying "legal, cultural or political system" (Rajan & Zingales, 2003:6). Evidence suggests that there is a strong correlation between a country's maturity of legal institutions and the level of its financial market development (Coffee, 2000; Stulz & Williamson, 2003). It is suggested that financial investment decisions are influenced not only by the opportunity costs of such an investment, but also by institutional protection of investments and assets (Kindleberger, 1993; Davies, 1994; Smith & Walter, 2003; Levi, 2009). It thus becomes imperative to ensure adequate

[5] Putman (1993:67) defines social capital as "features of social organisation such as networks, norms and social trust that facilitate coordination and cooperation for mutual benefit". These social institutions are regarded as instrumental within the capitalist framework as they can easily be transformed into a bundle of policy framework. The availability of strong social capital in a given society will ultimately lower transaction costs and the cost of default on an agreement within the social network, because the defaulter may be blacklisted.

protection of financial investments against market failures (which are mainly attributable to market imperfection) in order to stimulate investors' interest in committing to that market.

Tilly (1992:103) highlights the effect of financial infrastructure on the efficiency of capital markets. According to this author, the major explanation for the divergence of corporate share issues between Germany and Britain after 1990 was because of the "paucity of information and relatively weak financial controls of the operations of company founders and insiders" in Britain. Rajan and Zingales (2003:7) also reinforce the institutional hypothesis by observing, "the strength of political forces in favour of financial development is a major variable factor". They stress, in agreement with Tilly (1992), that a liberalised capital market will mute the rent seeking capability of incumbency, thereby promoting capital inflows and growth. Having presented the conceptual overview of capital market in chapter two, it becomes important to survey some of the leading previous studies on the concepts of foreign direct investment (FDI). The next chapter (chapter three) will contain that discourse.

2.7 Chapter summary

This chapter begins with the discourse on the theoretical underpinning of this study. Illustration was presented on the relevance of the theory of investment behaviour of firms as depicted in some of the leading works of Caves. In the work studied, Caves (2007) establishes a connection between the development of a country's capital market and its attraction to inflow of FDI, which is the focus of this study. The chapter also presents material on the overview of capital market system, with specific reference to the banking and equity markets.

The specific dynamics of the sampled African capital markets was presented. Efforts were made to appraise the trend and prospects of capital market development in Africa, as well as some of the challenges that inhibit its viability. According to the literature, considerable progress has been made in line with capital market development in Africa, and the role of the rising middle class on the continent in increasing the capitalisation of capital markets were also highlighted.

Despite the progress made so far, some hindrances to capital market development still persists on the continent, especially challenges that hinge on institutional inefficiency. Some of these challenges were presented in this chapter. The chapter concludes by presenting an envelope of these identified challenges using market imperfection perspectives, where the theoretical relationship between capital market and price mechanism was briefly discussed. This discussion sheds light on the implication of market imperfection as the principal determinant of market efficiency (or otherwise), upon which other considerations revolve. The next chapter will review some of the leading literature on the concept of FDI as well as the relationship between capital market development and inflow of FDI.

Chapter three
The conceptual overview of FDI

3.1 An introduction

Tomohara (2004), amongst other researchers (such as Schumpeter, 1934; Allen & Ndikumana, 2000; Hill, 2013), establishes a link between investment and economic growth. According to these authors, the openness of an economy enhances the internationalisation of domestic enterprises, and the resulting inflows of foreign investment improve the production capacity of the host nation, thereby leading to economic growth. Research suggests that FDI and foreign portfolio investments (FPI)[6] (both referred to as foreign capital flows) play crucial roles in economic growth of the receiving country. This effect manifests mainly in the increase of investment participation due to increased production in the receiving country. It is argued that the more an economy attracts inflow of foreign capital, the more its productivity frontiers expand, and the more the economy grows (Akinkugbe, 2005).

Further, economic liberalisation is generally seen as a catalyst for industrialisation. For example, Frankel and Romer (1999) indicate that investment plays an important role in achieving economic growth. They contend that aggregate investment in the real economy has a significant effect on GDP per capita. This rise in per capita income is achieved, in their opinion, as trade spurs the accumulation of physical and human capital; thereby increasing output for given levels of capital.

Considering its importance concerning financing local industrial projects, the significance of foreign capital inflow in enhancing credit growth has also been widely discussed in literature. For example, the study by Crowley (2008) finds that foreign capital inflows are significant for growth of credit in the Slovak Republic. Several previous studies support this finding (Ito, 1999; Arvai 2005; Duenwald, Gueorguiev & Schaechter, 2005). More so, studies have identified a theoretical basis to support the roles played by foreign capital inflows in economic development. Notable among these theories is the theory of direct investment.

[6] Foreign portfolio investment (FPI) is defined as the “purchases of foreign financial assets (stocks, bonds, and certificates of deposit) for a purpose other than control” (Griffin & Pustay, 2010:34). The main distinction between FPI and FDI is that investors tend to be more involved in the operations and management of their foreign investments, where their presence is physical and long lasting (FDI) as compared to a more distant and short-lived approach exhibited in FPI.

The theory of direct investment states that "a company investing abroad must have an advantage over companies in the host country; if such an advantage is missing, the foreign company...would be at a sizeable disadvantage against local competitors and would not be able to survive" (Kindleberger, 1993:259). As a result, MNEs' overseas expansion is usually strategic as they venture abroad to seek specific location advantages while at the same time increasing the industrial capacity of the host country (Dunning, 1993; Graham & Krugman, 1995; Asheghian, 2004; Griffin & Pustay, 2010).

For the purpose of this research, multinational corporations (or transnational corporations) are defined as "incorporated or unincorporated enterprises comprising parent enterprises and foreign affiliates" (UNCTAD, 2008:1). A parent enterprise is an enterprise that controls assets used in international production, merchandise trade, or service trade. A foreign affiliate is an incorporated or unincorporated enterprise in a (host) country in which an enterprise resident in another (home) country has a stake that permits a lasting interest in the management of that enterprise.

3.2 FDI defined

The International Monetary Fund (IMF, 1993:86) defines a direct investment as "the category of international investment that reflects the objective of a resident entity in one economy obtaining a lasting interest in an enterprise resident in another economy." The Fund regards the resident entity as the direct investor, while the enterprise is seen as the direct investment enterprise. According to the Organisation for Economic Co-operation and Development (OECD, 1996:7), foreign direct investment (FDI) "reflects the objective of obtaining a lasting interest by a resident entity in one economy ("direct investor") in an entity resident in an economy other than that of the investor ("'direct investment enterprise")." The organisation reiterates that the *lasting interest* signifies the existence of a long-term business relationship between the investor and the enterprise, especially a controlling stake by the investor in the investment.

Concurring with these definitions, the United Nations Conference on Trade and Development (UNCTAD, 1999:4**)** defines FDI as "an investment involving a long-term relationship and reflecting a lasting interest and control by a resident entity (the foreign investor or parent enterprise) of one country in an enterprise (foreign affiliate) resident in a country other than that of the foreign investor". In addition, the International Monetary Fund - IMF (1993) identifies the capital contents of FDI as the equity capital, reinvested earnings and other capital. The focus of this study is the equity capital and other direct investment capital. These forms of capital inflows are discussed below:

1. Equity capital - this is the currency value of a foreign investor's offshore investment in capital shares of an enterprise. An equity capital stake of 10 per cent or more of the ordinary shares or voting power in an incorporated business (or its equivalent in an unincorporated business) venture is normally considered a springboard to exercise control over the activities of the enterprise. This form includes mergers and acquisitions (M&A), 'greenfield' and brownfield investments.

2. Other direct investment capital (or intercompany debt transactions) - this refers to the short and long-term borrowing and lending of funds (including debt securities and suppliers' credits) between direct investors and their foreign affiliates, branches, and associates. To qualify as a FDI, "a foreign enterprise or an individual investor would have to bring into the host country some assets for a long-term business operation, which could be a production facility, a trading entity, or a service presence" (Li Hai-Qing, 2001:4).

3.3 The evolution and determinants of FDI destination

The major determinants of the host country's attractiveness to inflow of FDI are fiscal and monetary policies, political stability and domestic market size constraints (Dunning, 1993; Caves, 1996; De Mello, 1999) - *the political economy of the nation*[7]. These factors influence the decision of foreign investors (MNEs) on the possible choice of an investment location (Akinkugbe, 2005). Categorically, the more favourable a country ranks on the scalar chain of political economy, the more attractive the country is to inflow of FDI.

The concept of foreign direct investment evolves from the theory of the multinational enterprise (MNEs)[8]. The theory of MNE itself has evolved from two main economic

[7] The political economy of a country is aggregated at a country level as institutional framework. The variables identified here are some of the prominent variables that are widely used to measure the availability of regulatory instruments as well as their effectiveness. The overall favourableness of the investment environment of any country is informed by the ranking of the country on these measurable indicators.

[8] This theory was propounded to provide the economic justification for the strategic overseas expansion of MNEs. Naturally, firms are established to serve the overseas interest of the corporate body from its home base in order to forestall a series of uncertainties and risks that are associated with locating a production facility in a foreign country. The twin-aisles of this theory provide the economic springboard upon which the rationale for locating production facilities abroad was based.

perspectives. First, MNEs are observed to have developed through the location specific theory, which espouses the comparative advantage of certain business locations over another (Stopford & Wells, 1972; Vernon, 1974). This theory postulates that MNEs will locate an offshore production facility in a country that offers some specific location advantages that are not (absolutely or comparatively) available in the home market. Second, the industrial organisation theory relates to the benefits derivable from competition between domestic producers and foreign firms (Caves, 1996; Ghauri & Buckley, 2002; Hill, 2013). This theory advocates that domestic firms will reap advantages such as process reengineering and administrative expertise by competing against foreign firms, which by implication, are more advanced in these regards.

The internationalisation process of firms (as the location specific advantage theory is also known) as a determinant of the direction of FDI flow, gave credence to the geographical economic advantage that is derivable from production portfolio diversification rather than concentrating production facilities in the home country. This market-seeking approach was very popular amongst the early investors from the United States who ventured abroad to exploit this competitive advantage in the developing economies (Hill, 2013).

Prominent among the motivators for multinationals embarking on overseas expansion are the need to diversify production processes geographically and, to locate overseas markets for the final products. While some of the production resources (such as natural endowments) may be quite expensive to shift from their locale to the home country for manufacturing purposes, locating manufacturing facilities close to the source of these inputs appears to be an affordable option for MNEs. This may justify the reason why the growth of heavy industry in Europe in the 1950s took place around the coalfields (Hicks, 1969). In the latter case, the industrial organisation theory emphasises the existence of firm-specific advantages.

These advantages are important in conferring a superior competitive advantage on a foreign firm wishing to produce in competitive markets, both at home and abroad (Rugman, 1981; Dunning, 1981; Caves, 1982; Rivera-Batiz & Oliva, 2003). Some of the superior competitive capabilities that MNEs enjoy over domestic competitors include advanced technology, research and development capabilities, superior managerial and marketing skills, access to low-cost funding (either internal to the firm or because of the firm's better credit rating), and favourable interest- and exchange-rate differentials (Anderson, 2005; Steers & Nardon, 2006, Levi, 2009).

Large firms with opportunities for economies of scale and scope, and more extensive marketing and distribution networks, have demonstrated additional firm-specific advantages over domestic competitors (Asheghian, 2004; Meyer, 2004). As a result, MNEs venture abroad to reap associated benefits of not only profits, but also other competitive competencies that arise from synergistic overseas expansion.

The positive effects of investments by MNEs, especially in developing economies (such as in Africa) is contingent on a number of variables such as the amount of initial capital involved, foreign market conditions and the political economy of the host country, amongst other considerations (Perez, 1983; Abramovitz, 1989; Shafaeddin, 2005). As suggested by studies, if integrated into a strategic concept of productive capacity building and upgrading, the direct impact of MNEs' offshore investments on the host-national income and capital formation has been substantial (Ngowi, 2001; UNCTAD, 2006).

Given the advantages of FDI to the host nation, evidence suggests that countries strive to attract as much of it as possible (Versi, 2003; Hill, 2013). Despite concerted efforts by governments of the developing countries to attract FDI, research indicates that the global flow of FDI remains highly skewed against the developing countries, especially African countries. Chakrabarti (2003:150) rightly observes that the top five per cent of the world economies receive 68 per cent of the global inflow of FDI, while the bottom five receives only one per cent.

The same situation occurs in Africa. For example, during the period 1998-2002, only three countries (South Africa, Angola, and Nigeria) accounted for 55 per cent of the total FDI inflows to Africa. The top fifth (10 out of 48 countries) account for 80 per cent, and the bottom half account for less than five per cent (Adjasi, Abor, Osei, & Nyavor-Foli, 2009:3). These authors further observe that the trend has held for at least the last three decades, with the top 10 countries accounting for more than 75 per cent of the continent's total FDI inflows. The World Economic Report published by the United Nations Conference on Trade and Development further buttresses this observation (UNCTAD, 2013: xiv) as presented in Figure 3.1:

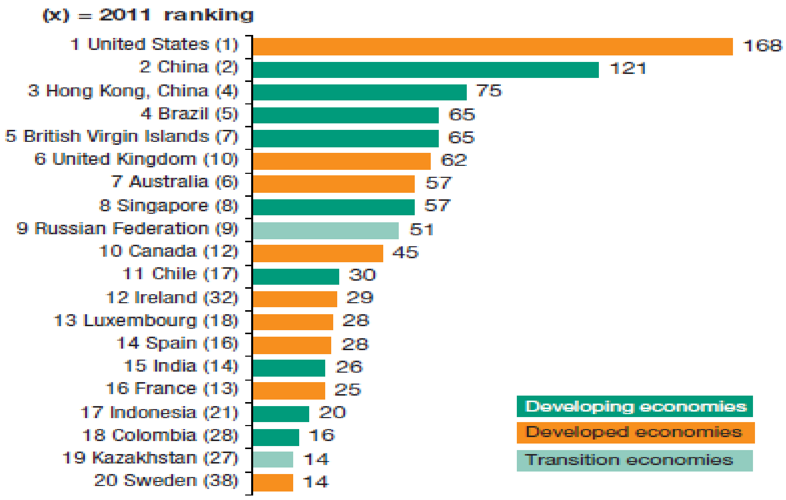

Figure 3.1: Top 20 FDI Host Economies – 2012 (UNCTAD, 2013: xiv)

From Figure 3.1, it is very clear that United States alone still account for roughly 18 per cent of the global stock of FDI, closely followed by China that accounts for about 13 per cent. Although this situation is gradually changing, especially because of the impact of the 2008 global financial crisis, which had a more devastating effects on the advanced economies. The same report suggests further that the developing countries attracted more FDI inflow than the developed world for the first time ever in 2012. During 2012, FDI inflow to the developing countries grows to 57 per cent, although the stock was lower than in 2011. The situation is not different in 2013. Global foreign direct investment inflows rose by 11 per cent in 2013, to an estimated US$1.46 trillion (United Nations Conference on Trade and Development - UNCTAD, 2014:1).

Out of the global FDI stock of US$ 1.3 trillion in 2013, the developing world attracted an estimated stock of US$759 billion, which pushed the share of the developing world to a record 52 per cent of global FDI inflows in 2013. Africa's stock grows from US$ 44 billion in 2010 to US$ 50 billion in 2012 and US$ 56 billion in 2013. The report however observes that most of the increase in FDI flow to Africa went to resources. The tabular presentation of the recent trend in global and Africa regional FDI inflow (up till 2012) is depicted below in Table 3.1.

Table 3.1: Shares of African sub-regions in global FDI inflows, 1970-2012 (per cent)

Sub-region	1970-1979	1980-1989	1990-1999	2000-2005	2010-2012
Central Africa	0.7	0.4	0.2	0.5	0.2
East Africa	0.5	0.2	0.2	0.2	0.7
North Africa	0.8	1.0	0.5	0.7	0.6
Southern Africa	0.5	0.1	0.3	0.4	0.4
West Africa	2.1	0.8	0.5	0.4	1.1
Total African share in global FDI inflows	4.6	1.5	1.7	2.2	3.2
Total FDI inflows to Africa (US$ billion)	11.2	22.1	67.4	110.6	340.9

Source: UNCTAD, FDI/TNC database (www.unctad.org/fdistatistics)

From Table 3.1, the flow of FDI into Africa has been disappointing. Although, the stock of FDI inflow amounted to US$ 50 billion in 2012 alone (UNCTAD, 2013: xiii), it is comparatively very low in the global context. Further, inflow of FDI to Africa differs significantly across sub-regions especially given their divergent resource-orientations. As depicted in Table 3.1, North Africa was the traditional favourite location for inflow of FDI to Africa as compared to the rest of the regions. The unequal attractiveness of North Africa was demonstrated between 1970 and 2010 in Table 3.1[9].

During the period depicted in the Table, North Africa accounted for about one-third of all inflow of FDI to the entire African continent (UNCTAD, 2012). As a result of political unrest and social uprising that have recently characterised the region, Western Africa has become the leading recipient of FDI inflow to the continent since then as the region acclaims about 1.1 per cent of total inflow of FDI to the continent. East Africa closely follows West Africa with 0.7 per cent of global inflow of FDI to Africa.

Moreover, it is important to notice that West Africa experienced sharp decline in FDI inflow from the early 1970s up until sometime in 2005. The decline in the attractiveness of the region may not be unconnected to the series of political unrest and macroeconomic instability that pervaded the region at the time. The question that now arises from figures 3.1 and 3.2 is why this conspicuous disparities in the attractiveness of countries to inflow of FDI. Some of the reasons identified in literature will be discussed in the following paragraphs.

3.4 Decision criteria for locating an offshore subsidiary

Various authors (Blonigen & Wang, 2004; Kolstad & Villanger, 2008) have proposed and adopted different measures to explain the basic criteria adopted by MNCs to choose the

[9] It must be pointed out that Arab Spring began in the region in 2010.

location of their offshore subsidiaries. While the divergence in methodologies applied has also yielded divergent results, there is a general understanding that the determinants of national competitive advantage varies across industries. Despite the incongruence in decision making criteria, there is however, a convergence that factors that foster capital productivity gains are positively significant in determining a country's attractiveness for inflow of FDI (Kumar, 1984; Asiedu; 2002; Chakrabarti, 2003; Akinkugbe, 2005; Kok & Ersoy, 2009).

Akinkugbe (2005) observes that since foreign investors are primarily interested in satisfying their commercial motives, they will only choose such countries where higher returns on investments can be achieved, and where they will not have to commit so much of their capital to infrastructural upgrading. Kumar (1984) observes that the viability of local capital market is of great importance, as this facilitates easy intermediation and capital efficiency, thereby providing foreign investors with the opportunity to diversify portfolio risks.

Chung (2001) suggests that MNEs act strategically when it comes to overseas expansion. Evidence of this strategic approach to FDI is located in a few previous studies (Bruce & Chang, 1991; Walter, 1999; Robert & Papanastassiou, 1999) where it was found that investment motives are functions of industry conditions. This strategic behaviour by MNEs is informed mainly by the level of uncertainty that characterises foreign investment, especially the volatility of capital market and industry condition (Allen, 1995; Davis, 2004; Peng, 2009). This may require investors to seek overseas finance, as a way of diversifying risk portfolio (King & Levine; 1993a).

3.5 Capital market development and FDI inflow: a conceptual discourse

As stated in chapter two, capital market play essential roles in the functioning of national economies. Capital market is observed to be capable of "facilitat*ing* the flow of long-term funds from surplus units to deficit units" (Madura, 2001:3) within the economy. To that extent, an efficient capital market is capable of enhancing wealth creation within an economy through efficient sourcing and allocation of financial resources.

In a situation whereby the domestic capital market is unable to fulfil this role, the capital gap is expected to be filled by inflow of foreign capital. Foreign funding in the form of FDI is therefore, crucial in this regard, for countries and regions that are not able to mobilise domestic resources. Due to limited savings and inadequate depth of local capital markets in the developing world (Ojah & Pillay, 2009), improved capital inflow will be required to cater for the surplus domestic demand for capital (Ito, 1999); especially within an expansionary macroeconomic regime.

Hence, the argument in support of foreign capital flows is premised on the cyclical effect of capital formation, in that, the rate of capital formation in a country contributes to determining capital market development, thereby furthering the attractiveness of a country to inflow of capital, especially FDI (De Long & Summers, 1991; Levine & Renelt, 1992; Graham & Krugman, 1995). This process therefore, enhances the efficiency of intermediation; thus, capital market development.

Greenwood and Smith (1997:146) underpin this proposition as they observe, "market formation is an endogenous process. Arranging and effecting trades requires resource expenditures. Bankers, stockbrokers, insurance agents, realtors, replacement agencies, and agents who enforce the terms of contracts make a living doing precisely this". This implies that market participants channel productive investments through economic agents in order to create utility, whose rental costs accrues through financial intermediation. One may argue, therefore, that the efficiency of capital productivity and the rate of investment gains influence the destination of capital flow, especially investments in the form of FDI.

It must be acknowledged that there are fundamental differences in the characteristics of foreign portfolio investments (FPI) and FDI, not only in terms of the motivating factors that are discussed in 3.3 and 3.4 above, but also their resilience to market failures as well. This divergence makes it extremely challenging to draw a clear interrelationship or linkage between them, not to delve on causal effects (Vladimir, Tomislav & Irena, 2013). It must be noted, however, that these terminologies are largely used in policy documents as synonyms and the practise is also not uncommon in academic discourse.

Conceptually, there are limited documented evidence on the relationships between capital market development and inflow of FDI. However in the face of this challenge, efforts will be made to position the theoretical interaction of these variables but the discourse will be specifically focused on the banking sector and the equity platform based on their specific relevance to this study. According to Claessens, Dooley and Warner (1995), portfolio investors are largely not motivated to commit funds to long-term projects. To achieve their investment targets, they commit to high-yielding stock markets that offer not only risk diversification opportunities and short-term capital gains, but macroeconomic stability as well. Portfolio investors are arms-length investors with limited interest in the fund's administration. As such, the assurance to invest in any stock market is an automatic impulse to motivate for inflow of FDI (Hausmman & Fernández-Arias, 2000).

Further on their characteristics, portfolio investments are characterised by frequent changes of ownership and investment platforms. Portfolio investors are quick to respond to headlines performance indices and this kind of investment is characterised by high volatility and reversibility. The impact of investors' speculative expectation is strong and foreign investors in portfolios are highly susceptible to moral hazard debacles as driven by their appetite for immediate gains. Although, the negative effects of 'market speculation' increases the volatility of the stock market, a liquid stock market with high turnover rate will motivate inflow of FDI to the country (Claessens, Dooley & Warner, 1995; Hausmman & Fernández-Arias, 2000; Agbloyor, Abor, Adjasi & Yawson, 2013).

Oyama (1997) enumerated the stock market dynamics in Venezuela, Jordan and Pakistan. She also observes that capital market liberalisation, especially the liberalisation that targets foreign participation in the stock market, reduces investment risk premiums in the country. This author opined that inflow of FDI to these countries was particularly higher during the periods of investment rapture on the stock market when the headlines stock indices appreciated the most. The argument goes further to suggest that the growth in stock values serves as assurance on macroeconomic stability of the country, thereby motivating investors to commit investments in the form of FDI, which are riskier in nature and not as easily reversible.

In addition, after detailed analyses of the linkages between FDI and FPI between Germany and the major economies, De Santis and Ething (2007) conclude that the movements of stock prices on the equity trading platform are the major determinants to the attractiveness of a country to foreign investment in the form of FDI. These authors suggest that the volatility of stock valuation on the equity platform serves as critical indicators to foreign direct investors on the attractiveness of the country to inflow of FDI. The argument goes on to suggest that the more appreciative the headlines indices, the more attractive the country becomes for FDI.

In the African context, Adam and Tweneboah (2008) also investigated this linkage in Ghana. According to these authors, by liberalising the equity platform, both domestic and foreign investors, as well as institutional investors are allowed to be active participants on the stock market platforms. According to these authors, as a result of the increase in stock turnover rate and increasing stock market capitalisation, Ghana is observed to be more attractive to inflow of FDI.

While all the studies cited above emphasised unidirectional causal relationship between stock market development and inflow of FDI, Soumaré and Tchana Tchana (2011) found bidirectional causal relationships. In their study of 29 emerging markets, these authors found simultaneous and bidirectional causal relationship between capital market development and inflow of FDI. One of the major explanations expressed by these authors is the fact that capital market viability play crucial roles in facilitating mergers and acquisitions, which are important components of FDI. Agbloyor, Abor, Adjasi and Yawson (2013) also emphasise the bidirectional causal effects between capital market efficiency and inflow of FDI.

Soumaré and Tchana Tchana (2011) further suggest that liquid and well-supervised equity market encourage foreign investors to take up equity stake in the host economy, especially through the mergers and acquisition arrangements. This result corroborates the findings of Chousa, Tamazian and Vadlamannati (2008) where a strong relationship between stock market development and inflow of FDI via merger and acquisition nexus were established.

These authors also corroborate the arguments advanced by Adam and Tweneboah (2008) on the spillover hypothesis on the absorptive capacity of local financial market; of which the relationship between the development of local financial market and benefits from inflow of FDI was evaluated. However, Chousa, Tamazian and Vadlamannati (2008) investigated spillover effects from another dimension. They observe that the spillover effects of FDI on the domestic economy translate into stock market development through the listing of multinational companies on the domestic equity platform. As a result of the listing, the capitalisation of the stock increases and the size of the stock market are deemed large enough to absorb further foreign capital injection, which was the position advanced by Adam and Twaneboah (2008).

Still on the spillover effects, Choong, Yusop and Soo (2004) study the relationship between FDI and economic growth in Malaysia through the capital market nexus. Using domestic capital market data that springs across 33 years, these authors contend that the benefits of FDI to economic growth become stronger as the domestic capital market develops. That is, inflow of FDI translates into higher growth as the domestic capital market develops to absorb the benefits of FDI. These authors particularly observe that inflow of FDI will be more meaningful to the host country when domestic credit to the private sector as a percentage of GDP is developed enough to certain level.

Soumaré and Tchana Tchana (2011) further observe that the presence of multinational companies in the host country motivates the policy makers to liberalise the equity market, thereby encouraging wider participation on the equity platforms. Notable among those regulations are investor protection, and equity trading regulations that ultimately catalyse the development of the stock market.

Apart from stock market effects on inflow of FDI, we also observe some relationships between the development of local banking system and inflow of FDI to the country. Evidence suggests that developed banking sectors do not only serve as source of funding to foreign direct investors (Caves, 2007), but actually attract investment directly (Goldberg, 2007).

Hailu (2010) reinforces the hypothesis of viable banking sector as an important determinant of inflow of FDI. Just as indicated by Caves (2007), although bank charges are generally very high in the developing countries and access to funding could be frustrating, the capacity and depth of a host country's commercial banks is a strong assurance to foreign investors that the economy is healthy and the possibility of market failure is low. This proposition is also supported by Agbloyor, Abor, Adjasi and Yawson (2013). According to these authors, given that the initial capital transfers from the home country is facilitated through the banking sector in the host country, the actualisation of financial resource transfer may be challenging if the banking sector in the host country is less developed.

Klein, Peek and Rosengren (2002) support the hypothesis of strong linkage between banking sector development and inflow of FDI. These authors argued that the development of banking sector enhances the attractiveness of the host country to inflow of FDI. The argument goes further to emphasise the importance of social capital between the MNCs and the domestic banks. These authors specifically argued that the strength of this social capital determines the choice of offshore subsidiary location of the MNC.

Although, growth in financial sector FDI is a new dynamics in cross border investment, it has gained momentum in the past few years (Goldberg, 2007). However, this form of investment is only possible if the banking sector is well-developed. This form of FDI occurs when conglomerate banks in the developed world acquire equity stake (and sometimes controlling stake) in an offshore bank. Good examples of this form of acquisition in the banking sector include Barclays bank, Standard Chartered bank, ICBC bank, and a host others. To achieve this form of cross border investment, there is need for capital market liberalisation in the host country.

Unite and Sullivan (2001) investigate the impact of capital market liberalisation on the Philippines' banking sector and observe that this liberalisation promotes foreign ownership in local banking system. Such inflow of capital into the banking sector does not only serve the interests of foreign investors, but domestic investors as well. Further, the increasing capitalisation of the banking sector as a result of the liberalisation also accords the host country the necessary capital market stability status that is important to attract FDI inflow. Goldberg (2007) also corroborate this argument by observing that the financial crises of the mid-to-late 1990s in Latin America provided additional opportunities for the entry of foreign banks into the region, as Latin American countries sought to recapitalise their banks and improve the efficiency of their financial systems.

In his study of 37 developing economies, Zakaria (2007) adopted multivariate methods to uncover the causal linkage between capital market development and inflow of FDI. In that study, the author found no conclusive evidence in support of causal flow from inflow of FDI to the banking sector. However, the author was able to establish a causal relationship between inflow of FDI and stock market development. It must be pointed out that the causal link flowing from capital market development to inflow of FDI was not investigated by the author.

Further, Kholdy and Sohrabian (2008) conducted a study to investigate the linkage between inflow of FDI and capital market development. Covering a period between 1976 and 2003 in a cross-section analysis of 22 developing countries, these authors dissected the dichotomy between political influence on business and capital market development. These authors were able to uncover a strong bidirectional causal link between capital market development and inflow of FDI in 10 of the 22 countries sampled. They further observe that the impact of FDI inflow on capital market development will be stronger in the short run.

In a similar study conducted by Dutta and Roy (2008), these authors investigate the relationship between financial market development, inflow of FDI and political risks. In a panel analysis that covers 97 countries over a period of 20 years, the authors were able to establish a short-run relationship between financial market development and inflow of FDI. The threshold analysis indicates that the statistical importance of capital market development on inflow of FDI is reasonably strong up to certain threshold, after which the effect becomes negative.

However, the introduction of political satiability indicator to the system reverses the negative impact to strong positive relationship. From the analysis, Dutta and Roy (2008) also investigate the spillover benefits of FDI to capital market development. Their result suggests that political stability, which stimulates capital market development, would ultimately enhance the benefits derivable from inflow of FDI by the host country.

Choong, Baharumshah, Yuzop and Habibullah (2010) investigate the impact of capital market variables (especially portfolio flows and debt market equity) on economic growth between 1988 and 2002 in a sample of 51 countries. In that study, the authors investigate the spillover effects FDI inflow on economic growth through the capital market development nexus, especially stock market efficiency.

These authors found, in the first instance, that portfolio investment and foreign debt are negatively related to growth. However, they were able to establish a strong relationship between the stock market development and growth when these variables were interacted. These authors therefore concluded that a developed stock market up to certain threshold of development is capable of transforming the negative effect of debt and portfolio flows into a positive, thereby enhancing growth in the process.

In a study of Malaysia between 1965 and 2004, Ang (2009) examines the relationship between financial market development and inflow of FDI, with specific attention on the role of financial market development on growth. In that study, various capital market variables (especially banking variables) were used. In their result, they were able to establish a strong link between capital formation (through capital market development and inflow of FDI) and real economic output. These authors further contend that the influence of FDI inflow to the economy becomes stronger as the banking sector develops.

From the literature review presented above, two views on the relationship between capital market development and inflow of FDI can be observed. In the first instance, the direction of causality flows from inflow of FDI to capital market development. According to this view, inflow of FDI helps to develop domestic capital market through the spillover effects. More specifically, foreign investors normally use their financial powers and administrative skills to impress on the government of the host country to strengthen regulatory framework of the country in order to improve the attractiveness of the country to inflow of investment and also, as a panacea for attracting new ones.

Such regulatory frameworks will normally include investor protection, judicial efficiency, infrastructure development, improvement in the polity stance and stable nation building that are capable of translating into sustainable economic growth. By the very nature of its resilience to market failure, inflow of FDI to countries with weak institutional development and poor infrastructures may be higher as compared to inflow of FPI. Good examples are Asian and South American countries that are regarded as prime destinations for inflow of FDI, but their attractiveness to capital market investments has been very poor.

As argued earlier in this chapter, inability of many countries in the developing world to raise funding for development initiatives through the global capital market have prompted these countries to initiate policies that are capable of attracting FDI. In this view, foreign investors may be motivated to invest (FDI) in countries with less developed capital market in lieu of flowing capital into underdeveloped capital market that are susceptible to market failure.

In specific, Claessens, Dooley and Warner (1995) suggest that FDI flows more to countries that are risky for investment as this form of investment is seen as a launchpad to circumvent the inherent challenges of investing in risky capital markets. Jeffus (2004) also supports this viewpoint. The findings of Adam and Tweneboah (2009) that one per cent innovations shock on inflow of FDI culminated in about 1.5 per cent increase in the stock market capitalisation of Ghana stock exchange further buttresses the spillover effects hypothesis.

The second view on the relationship between capital market development and inflow of FDI suggests that capital market development leads to the attractiveness of a country to inflow of FDI. According to Jeffus (2004), a developed capital market will be attractive to FDI as the capital market platform provides multinational companies the opportunity of matching their foreign currency assets to foreign currency liabilities in order to offset foreign exchange exposures that are particularly high in developing countries.

Further, Agbloyor, Abor, Adjasi and Yawson (2013) suggest that Jeffus (2004) opinion holds more prominently in a situation where foreign investors finance part of their investment with external capital or sell equity in the domestic capital markets. The cardinal theoretical underpinning of this study that rests on Caves (2007) behaviour of multinational corporations reinforces this hypothesis. According to Caves (2007), countries with developed capital markets are more attractive to inflow of FDI because they provide foreign investors the opportunity to raise capital through the local capital market. Looking at it from a complementary angle, the fact that multinational corporations get listed on the domestic equity market of the hoist country to raise capital further suggests that only developed capital market with good fluidity will be attractive to inflow of FDI.

In Africa, and specifically in the sampled African countries, it may be suggested that the forms of linkage are possible. This proposition ensues from the practical realisation that the effect of capital market development on inflow of FDI has been noticeable over time. However, it must be pointed out that the strength of this relationship and the direction of causality of this relationship will only be examined in the data analysis chapter – chapter five. In the meantime, the interaction between capital market development and inflow of FDI to the selected African countries is presented in Figure 3.2. While the *y* axis denotes the countries and year, the *x* axis depicts currency denominated (US$ million) response of the variables under study.

According to this Figure, the performance of these markets on both capital market development and inflow of FDI is shown and the extremes of the performances (minimum and maximum) are also indicated. The Figure also indicates that although South Africa is a clear leader in equity market capitalisation, inflow of FDI to the country has not been substantial. However, the same cannot be said of Egypt, Nigeria and Morocco. This analysis feeds into the pooled descriptive statistics that is presented in Table 5.2.

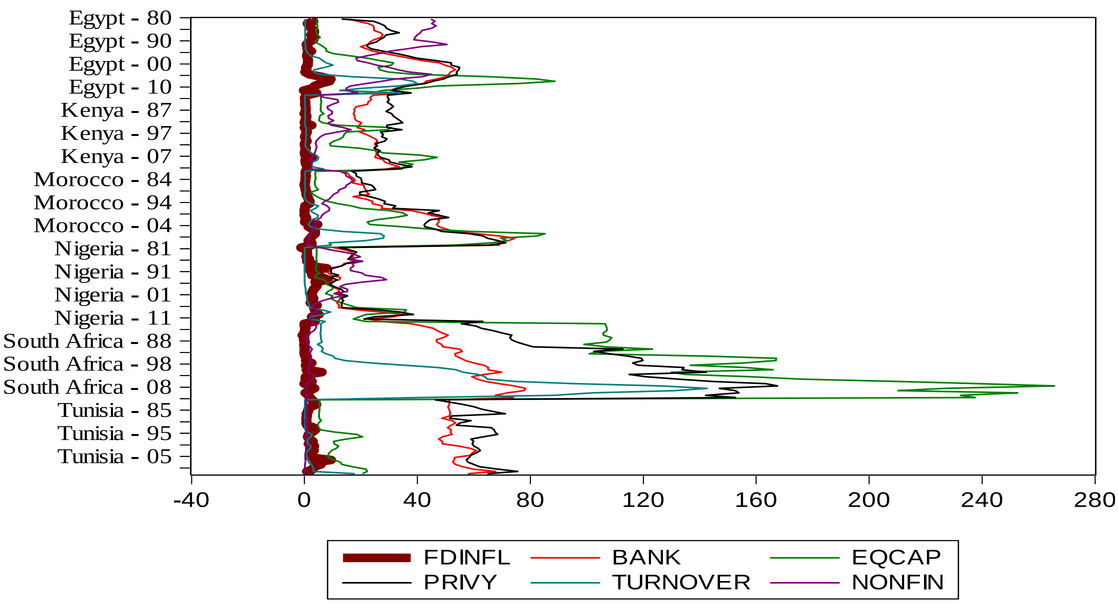

Figure 3.2: Capital Market Development and FDI Stock in Selected African Countries

3.6 Lessons from the literature

Most of the studies surveyed in chapters two and three of this study have suggested links between capital market development and economic growth while a few others have also investigated the relationship between capital market development and FDI inflow. However, the focus of this thesis differs from those of the earlier studies. To start with, most of the earlier studies focus on the developed economies. For example, Schumpeter, (1934) examined the relationship between bank finances and innovation in the advancement of economic growth. In that study, Schumpeter (1934) did a classical analysis of capitalist society where he was able to establish a link between capital market efficiency and economic growth through innovative entrepreneurship financing.

Further, Desai, Foley and Hines (2006) studied the multinational firms of US origin and their efficiency in developed capital markets. Xu (2000) conducted similar study on the US firms. In addition, Kok and Ersoy (2009) only included Egypt, Tunisia and Morocco in their list of the 24 developing countries considered in their cross-section study on the determinants of FDI direction. In that study, the impact of capital market development as FDI determinant was not examined. In some of the studies that covered developing economies, Kholdy and Sohrabian (2008) only included Egypt and Kenya in their cross section study of 25 countries.

Asiedu (2002) investigates the determinants of the direction of FDI to the developing countries, with specific reference to the sub-Saharan African countries. In her study, she observes, "infrastructure development and a higher return on capital promote FDI to non-SSA countries. This indicates that there is an adverse regional effect for SSA: a country in SSA will receive less FDI by virtue of its geographical location. These results suggest that Africa is different" (Asiedu, 2002:116). Asiedu's study did not investigate capital market development as a determinant of FDI inflow to the sub-Saharan African countries. However, Asiedu (2002) emphasised that the policy that enhances FDI flow to the other regions may not achieve the same result in Africa. This further buttresses the uniqueness of African countries and the need to conduct a study that covers the major capital markets across Africa.

Other studies on the developing countries such as the work of Alfaro, Chandab, Kalemli-Ozcanc, and Sayek (2004) used time series to estimate the link between FDI and economic growth, through the capital market development nexus in 50 economies from 1980 to 1995.

In that study, the authors included 15 African countries. However, the study included some African countries that do not have stock markets.

For example, countries such as Gambia, Congo, Niger and Senegal were included in the sample (Alfaro et al, 2004: 108-109), while excluding big stock markets like Nigeria stock exchange (NSE) and Casablanca stock exchange (CasaSE), amongst others. The exclusion of some of the leading capital markets from that study is deemed erroneous, as their inclusion would arguably have influenced the result of the study. The same logic holds for the inclusion of countries without capital markets in the estimation.

Quite a few other studies were either regional or country-specific. For example, Allen and Ndikumana (2000) look at the relationship between economic growth and the level of financial market development, using cross-country time series data between 1970 and 1996. In that study, the authors only focussed on bank credit in eight southern African countries to estimate the entire financial sector. In addition, Adam and Tweneboah (2009) were country-specific. In their study, these authors look at the spillover effects of FDI on the economy of Ghana, through the absorptive capacity of the stock market. Frimpong and Oteng-Abayie (2006) focus their study on the relationship between FDI and economic growth in Ghana using bivariate causality analysis, and they did not investigate the role played by capital market development in that regard.

Although a few studies specifically looked at the development of local capital market as a pull factor for inflow of FDI, they are either non-African orientated or firm level biased. For instance, Jeffus (2004) studied this relationship in four Latin American context, while Chousa, Valdlamannati and Tamazian (2008) investigated the relationship at firm level in nine emerging economies that included South Africa as the only African country in their estimation. The closest to this study is the work of Hailu (2010) that covers 45 African countries between 1980 and 2007. However, that study suffers from endogeneity bias, which was not discussed or diagnosed in the estimation. Further, the obvious implication of including more countries without stock markets than those with stock markets negates the validity of the findings of that study.

In addition, most of the studies surveyed above suggest that instabilities, wars and political turmoil pervade African countries. These aspects are becoming history as instability in African countries has reduced substantially over the past decade (Miller and Holmes, 2011). The free transfer of political powers through democratic processes has taken place in quite a number of countries that were unstable (such as in Nigeria, Chad, Sierra Leone, Liberia, Côte d'Ivoire and so on), and the demise of apartheid era in South Africa has also yielded noticeable socio-political and economic improvement.

As such, predictability and stability are becoming evident in African countries. To that extent, African countries are fast becoming more attractive to foreign capital inflows, especially in the form of FDI. It is thus important to study and analyse available (updated) data in order to capture the impact of these new events as they influence the attractiveness of Africa to inflow of FDI, especially by investigating the role of domestic capital market in that instance.

Furthermore, this study is different from previous studies as it incorporates institutional consideration in the investigation of capital market development in African countries. The institutional dynamic has rarely been reported in studies that investigated the role of capital market development on inflow of foreign direct investment. More importantly, this study estimates the relationship between capital market development and inflow of FDI with specific focus on the six largest capital markets on the continent. The study also draws inferences on the similarities or otherwise on regional effects.

More importantly, the study investigates the relationship between the institutional efficiency in Africa and the development of capital market on the continent as well as the role of institutional framework on the attractiveness of the continent to inflow of FDI. The literature review presented in chapters two and three shed lights on the relationship between capital market development and the attraction of a country to inflow of foreign direct investment. The roles of institutional framework on capital market development as well as inflow of FDI as highlighted in those chapters are marginally documented.

3.6.1 Determinants of capital market development

Various researchers have adopted different variables to estimate capital market development. Notable amongst these studies are the work of Allen and Ndikumama (2000), who used: (1) credit provided to the private sector, (2) the volume of credit provided by banks and, (3) liquid liabilities of the financial system (represented by *M3*) in their study of capital market development in Southern Africa. According to these authors, the greater the credit provided to the private nonfinancial sector as a percentage of the overall credit, the greater the possibility of capital efficiency and the greater the potential for economic growth. They argued that these proxies of financial development are good measures of the efficiency with which the financial system allocates resources to economic sectors (with more emphasis on the private sector), as a way of stimulating growth.

King and Levine (1993c) constructed four empirical indicators of capital market development that are designed to measure the level of services provided by financial intermediaries for achieving economic growth. These authors used the following proxies in their estimation:

- the traditional method of financial depth, which is measured by the ratio of liquid liabilities of the financial system to GDP that is labelled *LLY*.
- the ratio of domestic assets acquired through bank deposits, as compared to those acquired through the central bank – the importance of banks, which is labelled *BANK*.
- the percentage of credit allocated to private firms, i.e. the ratio of claims on the nonfinancial private sector to the total available domestic credit, which they labelled *PRIVATE,* and
- the ratio of credits issued to private firms in relation to the GDP, i.e. the ratio of total claims on the nonfinancial private sector to GDP, which they labelled *PRIVY*.

According to the study, *LLY* is used to capture the depth of the financial intermediation, thereby indicating the ability of financial institutions to provide financial services to deficit units. These authors regarded the variable "*BANK"* as rather controversial, in that although banks are better managers of financial risks, they are not the only institutions that provide risk management and other related financial services. The limitation of this proxy is further highlighted by the fact that *BANK* does not accurately measure the beneficiary of the credit facility provided by surplus units in the economy. However, this variable is included in our estimation because it forms a major component of the capital market in Africa.

Furthermore, *PRIVATE* is derived as a proxy for the dispersion of financial allocation to various sectors of the economy, along the public/private dichotomy. To achieve financial efficiency, King & Levine (1993c) argue, funds must not only be directed to government/public sectors and state-owned-enterprises, but also to the private sector. This fact is reinforced on the premise that private sectors are more averse to inefficiency when it comes to financial management, thereby making the private sector a more attractive and growth-inclined sector to channel credit facility (Mookerjee & Yu, 1995).

More specifically, empirical evidence suggests that credits channelled to the public sector are less likely to generate growth within the economy mainly due to institutional inefficiencies.

Most public sectors are susceptible to waste, corruption and politically-motivated investments that may not be able to deliver the financial incentives required to galvanise growth (Levin, Loayza & Beck, 2000; Naceur, Ghazouani & Omran, 2007).

King and Levine (1993c: 721) also justify their inclusion of various capital market indicators in their estimation as a gauge for financial efficiency: “we include this broad array of financial indicators to maximise the information on financial development in our study”. They are of the opinion that the inclusion of *PRIVATE*, which measures the percentage of public/private allocation of credit, as well as *PRIVY*, which measures the ratio of credit to the GDP, will provide opportunity to maximise information on financial development in relation to growth. These authors are however mindful of the fact that these variables may not measure accurately or more specifically, the depth of financial services that are provided to various sectors of the economy.

A few other studies adopted stock market indicators to assess financial development in advanced economies. For instance, Davis (2004) constructed four variables as indicators of financial development; namely stock market capitalisation, stock market turnover, listed companies and bank credit. This author is of the opinion that financial development is best measured through the twin aisles of the financial market components (stock market and credit market). More so, Oura (2008) adopted the ratio of external (bank) finance to total firm finance as a measure of financial development. This author shares the same line of thoughts with previously mentioned researchers that performances of the agents of intermediation (banks) are the main determinants of the depth of the capital market (King & Levine 1993c; Davis, 2004; Naceur, Ghazouani & Omran, 2007).

In summary, Table 3.2 recaps the findings of some of the major literature reviewed on the determinants of capital market development as presented in chapter two and as summarised in this section (3.6.1):

Table 3.2: Summary of Key Empirical Literature on the Determinants of Capital Market Development

Author and year	Title of article	Data coverage	Methodology	Key findings
Bosworth, Collins and Reinhart, 1999	Capital Flows to Developing Economies: Implications for Saving and Investment.	Unspecified	Exploratory	Positive: the book chapter emphasised the positive effect of domestic capital market on the attractiveness of a country to inflow of foreign investment.
Levine, Loayza and Beck, 2000	Financial Intermediation and Growth: causality and causes.	1960}1995	GMM dynamic panel estimators and Time series regressions	Positive: the authors find both direct and reverse causality between financial intermediation and growth.
Portes and Ray, 2001	Information and Capital Flows: The Determinants of Transactions in Financial Assets	1988–1998	Time series (OLS)	Positive: the authors found positive relationship (both short and long run) between information and asset pricing, as well as the flow of capital. The role of institutional framework was also found to be significant.
Rajan and Zingales, 2003	The Great Reversals: the Politics of Financial Development in the Twentieth Century.	1913–1999	GMM	Mixed: the authors found causation from growth to capital market development, especially in the long run. The impact of institutional framework is also found to be significant.
Jeffus, 2004	FDI And Stock Market Development In Selected Latin American Countries	1960 to 2002	Time series	Positive: Sock market development was found to be an important driver of FDI inflow.
Caves, 2007	Multinational Enterprise and Economic Analysis	unspecified	exploratory	Positive: the book chapter clearly emphasised the role of capital market, especially the banking sector, on the attractiveness of a country to inflow of FDI.
De Santis and Ething (2007)	Do International Portfolio Investors Follow Firm's Foreign Investment Decisions?	1980 to 1998	2SLS and GMM	Mixed: a strong positive relationship was only found between investors' decisions and the location of foreign subsidiaries of MNCs.
Demirgüç-Kunt and Levine, 2008	Finance, Financial Sector Policies and Long Run Growth.	1960 to 1995	GMM	Positive: the relationship between institutional framework and capital market development were found to be positively strong, and they all culminate growth in the long run.
Chousa, Valdlamannati, and Tamazian, 2008	Does Growth and Quality of Markets Drive Foreign Capital? The Case of Cross-border Mergers and Acquisitions from leading Emerging Economies.	1987 to 2006	Time series	Positive: developed capital markets were found to be more attractive to inflow of FDI. The positive impacts on growth (in the long run) were also established.
Choong, Baharumshah, Yuzop and Habibullah, 2010	Private Capital Flows, Stock Market and Economic Growth in Developed and Developing Countries: a comparative analysis.	1988 - 2002	GMM	Negative: the impact of foreign capital flow on stock market development was found to be negative. Foreign capital flows were also found to retard growth.

As indicated in Table 3.2, quite a number of the studies surveyed in chapter two and the synopsis presented in this section clearly suggest positive relationship between capital market development and the attractiveness of an economy to inflow of FDI. Although, the Table did not represent all the citations used on these discourse, it does, however, present and recap the findings of some of the major literature reviewed and the methodology used in those studies. As the second major focus area of this study, we now proceed to evaluate some of the identified measurable indicators of the attractiveness of a country to inflow of FDI.

3.6.2 Determinants of FDI destination

As discussed earlier in one of the preceding sections (specifically, section 3.4), FDI determinants vary not only according to the strength of the explanatory variables, but also as informed by the availability of suitable data (Froot & Stein, 1991; Asiedu; 2002; Chakrabarti, 2003). While data availability may not pose any significant challenge when dealing with advanced countries like the United States and the Great Britain, data availability is always problematic in the developing world, especially African countries. Except for a few countries such South Africa and Nigeria that have relatively good databases, data on other African countries is problematic, essentially due to poor record keeping. This explains why intuitive proxies, which are not adequate representatives of variables, are used to capture the effects of certain explanatory variables (Asiedu; 2002; Alfaro, Chanda, Kalemli-Ozcan & Sayek, 2004; Kok & Ersoy, 2009).

Apart from the problem posed by availability of data, there is also a challenge on the significance of some of the FDI variables that are commonly used by authors, and the overall explanatory power of each of the variables that is included in the econometric models. Studies suggest that while some of the explanatory variables of FDI behaviour emanate from formal hypotheses or theories of FDI, authors, based on personal judgement and scientific relevance (Kok & Ersoy, 2009), have included other variables intuitively. For example, Durham (2004:286) hypothesised that institutional variables, such as “legal codes and corporate governance structures” play a role in explaining capital flows (FDI or FPI) to the developing world, while similar variables play an insignificant role when dealing with advanced countries.

Bekaert and Harvey (2000) suggest that institutional-backed economic liberalisation is an important determinant of capital flow to developing economies. This highlights the significance of institutional adequacy as an explanatory variable of capital flow to a country, especially developing countries. One of the intuitive justifications for the high explanatory power of this variable may be the ‘fears of unknown’ and risk-aversion tendencies of investors.

While institutional incapacitation may act as a deterrent to capital flow to the developing world, portfolio theory, which is generally exemplified by the Capital Asset Price Model (CAPM) as proposed by Markowitz (1952), establishes a strong relationship between portfolio risk and investment. Campbell, Lo and MacKinlay (1997) reinforce this hypothesis as they suggest that investors are only prepared to commit funds to high-risk zones if the opportunity cost of the returns on investment is low. In essence, high-risk investments are expected to yield above-average returns.

Bénassy-Quéré, Coupet and Mayer (2007) further this argument. These authors contend that institutions play a vital role as a determinant of the destination of FDI. The role of domestic capital formation as a determinant of FDI destination is also emphasised by the authors. Given that capital formation is a function of capital productivity, returns on capital is reliant on yield. This proposition falls in line with Caves (2007) theory of investment behaviour of firms, wherein the importance of cost of capital and long-run capital productivity gains are identified as important determinants for choosing the location of the foreign subsidiary of an MNC.

As done in the previous section, we conclude section 3.6.2 with a tabular recap of some of the major studies used in this chapter, their major findings and the methodology employed to arrive at those findings. Those pieces of information are contained in Table 3.3:

Table 3.3: Summary of Key Empirical Literature on the Determinants of the direction of FDI flow

Author and year	Title of article	Data coverage	Methodology	Key findings
Modigliani and Miller, 1958	The Cost of Capital, Corporation Finance and the Theory of Investment.	1952 to 1953	Descriptive statistics and linear regression	Positive: capital market efficiency is found to enhance inflow of investment and more importantly, growth.
Froot and Stein, 1991	Exchange Rates and Foreign Direct Investment: An Imperfect Capital Markets Approach.	1973 to 1988	OLS	Mixed: Efficient capital market is found to positively attract inflow of FDI in the long run, as opposed to the negative relationship that subsists in the short run.
Levine and Zervos, 1998	Stock Markets, Banks, and Economic Growth	1976-1993	GMM	Positive: Stock markets, but more especially banks, are found to enhance growth and inflow of FDI.
Binswanger, 1999	Stock Markets, Speculative Bubbles and Economic Growth.	Unspecified	Unspecified	Positive: the imp-act of efficient capital market on investment, and ultimately growth, are established.
Allen and Ndikumana, 2000	Financial Intermediation and Economic Growth in Southern Africa.	1972 to 1996	GMM	Mixed: The role of capital market efficiency on investment, and ultimately growth are established. The results vary along capital market development dichotomy.
Alfaro, Chanda, Kalemli-Ozcan, and Sayek, 2004	FDI and Economic Growth: The Role of Local Financial Markets.	1975-1995	OLS	Mixed: the role of efficient capital market on inflow of FDI was established, but the effect on growth was found to be limited.
Acemoglu, Johnson, & Mitton, 2005	Determinants of Vertical Integration: Financial Development and Contracting Costs.	2002	OLS, GMM	Mixed: the role of institutional adequacy and capital market development on foreign investment were established but only in the long run.
Bénassy-Quéré, Coupet and Mayer 2007	Institutional Determinants of Foreign Direct Investment.	1985 to 2000	Gravity Model	Mixed: The result suggests that FDI will flow more to politically-matured economies than to those countries with fledgling institutions.
Chousa, Vadlamannati and Tamazian, 2008	Does Growth and Quality of Markets Drive Foreign Capital? The Case of Cross-border Mergers and Acquisitions from leading Emerging Economies.	1987 to 2006	GMM	Positive: The impact of efficient capital market on the attractiveness of countries to inflow of FDI was found to be positive. The impact of growth in this regards is also found to be significant.
Baker, Foley and Wurgler, 2009	Multinationals as Arbitrageurs: The Effect of Stock Market Valuations on Foreign Direct Investment.	1975 to 2001	GMM	Positive: The impact of efficient stock market on the attractiveness of countries to inflow of FDI was found to be significant.
Vladimir, Tomislav and Irena, 2013	The Relationship between the Stock Market and Foreign Direct Investment in Croatia: Evidence from VAR and Cointegration Analysis.	2001:Q1–2011:Q4	VAR and Cointegration Analysis	Mixed: the relationship between efficient stock market and inflow of FDI was found to be weak in the short run, but positively strong in the long run.

The literature survey that was presented in chapter three on inflow of FDI as well as the précis of the determinants as contained in Table 3.3 suggest that quite a number of variables influence the direction of FDI destination. Although, the significance of these variables in determining the attractiveness of a country to inflow of FDI are largely country dependent, there is a prima facie asseveration that investor motive is a paramount consideration in that regard. As observed from the ongoing, location specific advantage is considered the prime determinant of the ability of an offshore location to deliver an envisaged investor motive. Out of all the identified location specific advantages, the availability of viable capital market is considered very crucial.

3.7 Chapter summary

The literature review conducted in this chapter corroborates the thesis of an existing relationship between capital market development and the attractiveness of a country to inflow of FDI. It was argued that a developed capital market would serve as a pull-factor for inflow of FDI. It was observed that certain conditions must be met to achieve capital market development. While some studies identified economic fundamentals as prerequisites, a few others pointed to institutional adequacy as an important precondition in this regard, especially in the developing economies.

It must be said, however, that none of these studies looked at the relationship between capital market development and the attractiveness of African countries to FDI inflows (as clarified in chapter one), especially the regional dynamics. Although, the Southern African regional component was introduced to the study conducted by Allen and Ndikumana (2000) where the relationship between capital market efficiency (financial intermediation) and economic growth in Southern Africa are investigated, the study did not investigate the other regions that are covered in this study.

While the study of Agbloyor, Abor, Adjasi and Yawson (2013) investigated the possible impact of financial market development and economic growth on the continent, this study differs from the previous one largely on methodology and more importantly, regional dynamics. Further, the impact of institutional efficiency on capital market development, as well as the impact of institution framework on inflow of FDI to Africa was not investigated in that study. These focus areas and the difference in methodology applied, are the contribution of this research to the current body of knowledge.

Having reviewed a series of previous studies on the dynamics of capital market development and conceptual discourse of FDI, attention is now turned to the research methodology. The next chapter (chapter four) will focus on the methodology used in this study.

Chapter four
Research methodology

4.1 Introduction

This chapter focuses on the methodology that is applied to analyse available data in order to answer the research questions, as a way of achieving the research objectives. This chapter will focus on four important issues. The first area of focus centres on the measurable indicators of capital market development. Various estimation opinions on the forces/issues that influence capital market development are raised. The same approach is applied to evaluate the determinants of the direction of FDI flow. The chapter goes on to reiterate the research questions, and it states the research hypotheses. The specification of research models also forms part of the issues raised.

Secondly, the source of data and the kind of data that is used will be discussed. In addition, the variables to be used in the estimation are identified and discussed. We also present material on the sample size of the research and the justification for the sample selection. Furthermore, the econometric techniques used in estimating the models specified in the earlier part of the chapter are indicated and justified. Towards the concluding end, issue of endogeneity and estimation diagnostics that are applied in this study are discussed. This chapter concludes with a chapter summary.

4.2 Research hypotheses and models

This section begins by stating the research hypotheses, and proceeds to model specification. For the sake of easy analysis, the model specification process is divided into three parts, namely Parts A, B and C. Part A (the relationship between capital market development and inflow of FDI) contains two econometric equations that was transposed into one, while Part B (capital market development and institutional framework) contains five equations. The last part (Part C) contains only one equation that measures the relationship between institutional framework of a country and the attractiveness of the country to inflow of FDI.

4.2.1 Research hypotheses

This study intends to test the following hypotheses, whose formulation is informed by the research questions. The research questions were raised in order to achieve the research objectives. Further, these hypotheses were informed by the findings of a series of previous studies as suggested by the literature survey conducted in chapters two and three.

Table 4.1: Proposed Research Hypotheses

Model Specification	Determinants	Hypothesised effects
PART A:	**Capital market development (CMD)**	Positive
Dependent variable **Foreign Direct Investment (*FDINFL*)**	Stock market capitalisation to GDP (%) (*EQCAP*)	Positive
	Stocks traded, total value (% of GDP) (*TURNOVER*)	Positive
	Domestic credit provided by banking sector (% of GDP) (*BANK*)	Positive
	Domestic credit to private sector (% of GDP) (*PRIVY*)	Positive
	The ratio of total claims on the nonfinancial private sector (% of GDP) (*NONFIN*)	Positive
PART B:	**Institutional variables**	
Dependent variables **Capital Market Development (*EQCAP; TURNOVER; BANK; PRIVY; NONFIN*)**	Rule of Law (estimate) (*LAWRULE*)	Positive
	Combined polity score (*POLITY*)	Positive
	Inflation, consumer prices (annual %) (*INFLATION*)	Negative
	Regulatory Quality (estimate) (*QLEGAL*)	Positive
	Corruption Perceptions Index (score) (*CORRUPTION*)	Negative
PART C	**Institutional variables**	
Dependent variable ***FDINFL***	Rule of Law (estimate) (*LAWRULE*)	Positive
	Combined polity score (*POLITY*)	Positive
	Inflation, consumer prices (annual %) (*INFLATION*)	Negative
	Regulatory Quality (estimate) (*QLEGAL*)	Positive
	Corruption Perceptions Index (score) (*CORRUPTION*)	Negative

Adapted from similar study conducted by Chousa, Valdlamannati and Tamazian (2008:12)

Following from Table 4.1, the following hypotheses are proposed:

1 There is a direct positive relationship between inflow of FDI and capital market development variables such as:

1.1 Bank private credit as a percentage of GDP (*BANK*),

1.2 Claims on domestic real nonfinancial sector by the Central Bank as a percentage of GDP (*NONFIN*),

1.3 Domestic credit to private sector as a percentage of GDP (*PRIVY*),

1.4 Stock market capitalisation as a percentage of GDP (*EQCAP*),

1.5 Total value of all traded shares in a stock market exchange as a percentage of GDP (*TURNOVER*).

2 There is a direct positive relationship between capital market development and variables of institutional framework (except for inflation and corruption that are expected to bear negative coefficients) such as:

2.1 Rule of law (estimate) (*LAWRULE*),
2.2 Combined polity score (*POLITY*),
2.3 Regulatory Quality (estimate) (*QLEGAL*).

3 There is a direct positive relationship between inflow of FDI and the variables of institutional framework (except for inflation and corruption that are expected to bear negative coefficients) such as:

3.1 Rule of law (estimate) (*LAWRULE*),
3.2 Combined polity score (*POLITY*),
3.3 Regulatory Quality (estimate) (*QLEGAL*).

Multinational organisations, the main agents of FDI inflows, react in various ways to the level of capital market development in a potential host nation (Caves, 1974; 82; 2007). The fact that financial resources are transferred across geographies through the mechanisms of capital market further reinforces the significance of the efficiency of capital market in offshore investments.

Meanwhile, literature suggests that attracting FDI is capable of catalysing the economic growth of the host nation as these multinational corporations penetrate host countries with advanced technology, managerial knowhow, much improved operational processes and investible capital – all of which improves the level of productivity, and precipitates economic growth.

Although the assumption is that a developed capital market will attract inflow of FDI, the attractiveness of the countries in our sample is expected to vary due to the variation in the macroeconomic fundamentals. Further, the variations in the quality of institutional infrastructures that underlie these markets (such as the efficiency of capital market supervision, the legal, political and social frameworks) also play a significant role. This justifies the need for the regional effects intervention that is introduced in this study.

4.2.2 Models specification

The research hypotheses and questions, as informed by the purpose statement and objectives of this research, necessitate dividing the model specification into different parts (as indicated in section 4.3.1). First, the focus of this research is to establish a possible relationship between capital market development and inflow of FDI. However, having established earlier that institutional framework plays a significant role in the determination of capital market development as well as inflow of FDI; it becomes important to look at the roles of institutional framework on both capital market development and inflow of FDI to the sampled countries.

The model specification that captures the relationship between capital market development and FDI inflow will be specified in Part A. Part B will contain the model specifications that examine the relationship between capital market development and institution framework. The last part (Part C) will contain the model specification on the effects of institutional adequacy on the attractiveness of sampled countries to inflow of FDI.

4.2.3 Part A: Models specification on the impact of capital market development on inflow of FDI

The choice of appropriate models for this study poses some challenges. As stated earlier in chapters two and three, the amount of existing literature in this study area is limited. As a result, we will examine some of the models that have been used previously and then make a decision on the most suitable model that could be adapted. To start with, we consider the model used in the study of Chousa, Vadlamannati and Tamazian (2008:7). In that study, the authors analyse the importance of growth and capital market development on the attractiveness of countries to inflow of FDI.

However, the model used in that study focused more on debt than equity market, which makes the application of that model inappropriate in this study. Also, the models used in the work of Jeffus (2004) where the relationship between stock market development and inflow of FDI were estimated are also considered. In that study, Jeffus (2004) used a linear equation to model this form of relationship. However, some of the major weaknesses in those models (models 1 and 2; page 41) are the possible endogeneity problems between economic liberalisation and FDI, as well as between stock market liquidity and transparency/disclosure that are combined together in the same equation.

However, there are documented evidence (Khan & Senhadji, 2000; Adjasi & Biekpe, 2006) to suggest that Levine and Zervos (1998) finance-growth linkage model has been adjudged as one of the most efficient basic models to investigate macroeconomic issues, especially macroeconomic issues with capital market component. The model is depicted as follows:

$$LogY_{it} = \alpha_1 + \alpha_2 CMT_{it} + \alpha_3 X_{it} + e_{it} \qquad (1)$$

From the model above:

Y_{it} is economic growth measured as the log of: ($GDPC_t/GDPC_{t-1}$) in country i and at time t. As observed, the proxy for economic growth is averaged for a test of robustness in the growth model.

CMT_{it} is the capital market indicators for country i at time t;

X_{it} contains control variables and e_{it} is the error term.

Given that this study focusses on investigating possible relationships between capital market development (*CMT*) and inflow of FDI (*FDINFL*), there is the need to reconstruct the model of Levine and Zervos (1998). The reconstructed basic model will substitute inflow of FDI for growth while retaining the capital market component. The new model is presented in equation 2 below:

$$FDINFL_{it} = \alpha_1 + \alpha_2 CMT_{it} + \alpha_3 X_{it} + e_{it} \qquad (2)$$

From the equation above, $FDINFL_{it}$ represents inflow of FDI, while CMT_{it} is the capital market indicators. As in equation 1, X_{it} contains the control variables while e_{it} is the error term. This equation (equation 2) satisfies the first research hypothesis and answers the first research question.

The components of the model (equation 2) require some deeper exaptation. From model 2, the dependent variable is FDI inflow (*FDIFL*), which is measured by net FDI inflow as a percentage of GDP. The various capital market development variables used as independent variables are entered separately into the equation. These variables include the two measures of equity market development (market capitalisation of listed companies as a percentage of GDP – *EQCAP;* stocks traded, total value as a percentage of GDP - *TURNOVER)*. The two variables that capture the development of stock market are used in this study to capture their individual effects on inflow of FDI as contained in the study of Jeffus (2004).

This novelty is considered essentially necessary given that stock market capitalisation and trading may have different pull effects on inflow of FDI (Adjasi & Biekpe, 2006; Baker, Foley & Wurgler, 2009). As demonstrated in chapter two, while a market may be well capitalised, the competitiveness of stock-holding laws in the country may significantly influence the market's viability. Other capital market variables used in the estimations are available bank credit as a percentage of total credit (*BANK*), the ratio of credit to the private sector credit, i.e. the credit directed to the private sector as a percentage of the total available credit (*PRIVY*), and the ratio of total claims on the nonfinancial private sector, i.e. the nonfinancial private sector claims divided by the GDP (*NONFIN*).

As shown in equation 2 above, control variables are introduced into the equations. Control variables are used to accommodate other variables that are likely to affect the outcome of the estimation aside the identified variables. The control variables used in this equation (as informed by theory) are carefully chosen because capital market variables are not the only determinants of the attractiveness of an economy to inflow of FDI. In estimating financial market development, Alfaro et al (2004) followed the lead of Levine and Zervos (1998).

In the study conducted by Levine and Zervos (1998) that investigates capital market as growth nexus, control variables such as legal origin, black market premium, inflation and trade volume were adopted. These control variables have also been used in similar studies (Beck & Levine, 2002; Beck, Demirgüç-Kunt & Levine, 2003). To ensure comparability and due to availability of relevant data, trade volume and inflation will be used in this study. These variables are chosen based on their scientific appropriateness, in that, they are not subject to reverse causality as explained above.

Inflation is depicted as annual percentage increase in consumer prices. It measures the purchasing power of a currency relative to price adjustments of a basket of household items over a year (Hill, 2013). The inclusion of this variable in this study helps to accommodate the possible negative effects of financial exposures in the reported capital market figures that do not necessarily translate into an increase in the real capital base of these firms (Levine, Loaya & Beck, 2000; Hailu, 2010). The use of this control variable in capital market estimation is a general practice as indicated in the previous paragraphs.

Further, the introduction of trade volume as a control variable in this regard is also premised on the fact that an increase in trade volume would culminate in an increase in inflow of revenue from abroad (Jeffus, 2004; Bénassy-Quéré, Coupet, and Mayer, 2007). This increase in foreign earnings may change the structure of the capital market, but not necessarily increasing the efficiency of any of the capital market components. Using measures of countries' trade volume in capital market estimation helps to reduce autocorrelation bias because developing countries generally adopt free-market trade policies to improve domestic quality of life by encouraging competition in the domestic market (Sala-i-Martin, 1991; Hill, 2013). Further explanation on the remaining variables will be presented in sections 4 and 5. For now, we proceed to Part B where models on institutional framework will be presented.

4.2.4 Part B: Model specification for institutional framework and capital market development

The importance of institutional efficiency on capital market development is well documented in literature. Biekpe (2002:178) summarised the determinants of capital market efficiency under five headings:

- Improved environment - trade liberalisation, strengthening the rule of law, improved regulatory mechanism, better governance, transparency in government affairs, efficient transport and technological development.
- Economic reform – reduction in inflation, devaluation of overvalued currency, reduction of government deficits, raising education standards, upgrading of human capital and technological resources.
- Private sector encouragement – privatisation of state-owned enterprises.
- Better FDI regulatory framework – encourage profit repatriation, tax incentives, establishment of promotion agencies.
- Venture capital provision – encourage FDI to operate in SMEs, access to credit facility, allocate a portion of official development assistance (ODA) to the informal sector.

Biekpe's view was buttressed by a host of other authors such as Atje & Jovanovic (1993), Ito (1999), Levine, Loaya, & Beck (2000), and La Porta, Lopez-de-Silanes, Shleifer & Vishny (2000). As suggested in the literature, the variables documented above provide the platform to measure institutional efficiency. The choice of which variables to be included in the estimation will be based on the African specific dynamics, essentially, availability of data and historical experience of these countries as indicated by the literature (Allen & Ndikumana, 2000; Biekpe, 2002). To ensure the robustness of the estimation, a few other variables, such as the strength of legal framework, cost of contract enforcement will also be used as informed by the literature (Ojah, Gwatidzo & Kaniki, 2009; Laeven & Majnoni, 2004; La Porta, Lopez-de-Silanes, Shleifer & Vishney, 1998).

Evidently, data is not available for some of the variables identified above (such as strengthening the rule of law, improved regulatory mechanism, and better governance), thereby making them difficult to measure accurately. As such, the econometric equation takes a lead from Biekpe (2002) and applies the variables that are available on the databases used in this study. It must be pointed out that the model specified in equation 2 (Part A) will be modified to suit the proposed objectives of this section of the study. Given that this section of the study focusses on investigating possible relationships between capital market development (*CMT*) and institutional efficiency (*INST*), there is the need to remodel the equation presented in equation 2 (Part A) above.

In the remodelled basic equation, we substitute capital market variables for inflow of FDI. Further, institutional variables (*INST*) will be introduced as substitutes for capital market variables. In specific, five models will be specified to determine the relationship between capital market development and institutional efficiency, and each of the models will be capturing the relationship between the identified institutional variables and each of the five capital market variables (in this case, as the dependent variables). These model specifications are depicted in equations 3 to 7. They satisfy the third research hypothesis and answer the third and fourth research questions.

$$BANK_{it} = \alpha_1 + \alpha_2 INST_{it} + \alpha_3 X_{it} + e_{it} \quad (3)$$

$$PRIVY_{it} = \alpha_1 + \alpha_2 INST_{it} + \alpha_3 X_{it} + e_{it} \quad (4)$$

$$NONFIN_{it} = \alpha_1 + \alpha_2 INST_{it} + \alpha_3 X_{it} + e_{it} \quad (5)$$

$$EQCAP_{it} = \alpha_1 + \alpha_2 INST_{it} + \alpha_3 X_{it} + e_{it} \quad (6)$$

$$TURNOVER_{it} = \alpha_1 + \alpha_2 INST_{it} + \alpha_3 X_{it} + e_{it} \quad (7)$$

In equations 3 to 7, CMT_{it} captures the capital market indicators for country *i* at time *t*. These variables are the same set of variables used in equation 2. *INST* proxies the institutional variables, while X_{it} contains control variables and e_{it} is the error term.

From equations 3 to 7, the five dependent variables are represented by the financial resources provided to the private sector by domestic money banks as a percentage of GDP, which is depicted as *BANK*. In addition, *PRIVY* depicts the domestic credit to private sector as a share of GDP. The other three dependent variables in this section include claims on domestic real nonfinancial sector by the Central Bank as a share of GDP (*NONFIN*) and the market capitalisation of listed companies, that is, the total value of all listed shares in a stock market as a percentage of GDP (*EQCAP)*. The last dependent variable is the total value of all traded shares in a stock market exchange as a percentage of GDP, which is represented as *TURNOVER*.

The independent variables (*INST*) include the rule of law (*LAWRULE*), the combined polity score (*POLITY*), which espouses the dynamics of the political economy. Other variables include the annual percentage change in consumer prices (*INFLATION*), the quality of legal system (*QLEGAL*), and the prevalence and depth of corruption that is measured through corruption perception index (*CORRUPTION*).

As observed in equations 3 to 7, control variables are introduced into the estimation. According to La Porta et al. (2000), per capita income (GNI per capita at constant prices) plays a major controlling role in estimating institutional dynamics of capital market. For the sake of potential endogeneity, this variable will not be used in this study. Furthermore, the control variable adopted by Bosworth, Collins & Reinhart (1999) is considered unsuitable in this study, especially because in the regional analysis, North Africa contains more than one country, whereas the other regions are represented by only one country each.

To that effect, the fixed effects technique will be applied in the estimation alongside regional effects dummy. Also, control variables such as the cost of enforcing a contract (*ENFORCE*), which is a proxy for the cost of seeking a contractual redress in the cause of a breach will be used as done is the study of Rousseau and Wachtel (2000).

4.2.5 Part C: Model specification for institutional framework and inflow of FDI

Several studies have investigated the relationship between institutional framework and the attractiveness of a country to inflow of FDI. One of the early attempts in that regard was the study of Wheeler and Mody (1992). The study examined the role of country risk factors such as quality of legal framework, bureaucratic processes, political instability and corruption, using a principal component model and found inconclusive evidence. However, Kaufmann, Kraay and Zoido-Lobatón (1999) suggest that the rule of law, political stability, violence, corruption, efficiency of government institutions and regulatory burden are significant institutional determinants of inflow of FDI into a country.

From the on-going, it becomes evident that some institutional variables are clearly efficient in determining the attractiveness of a country to inflow of FDI more than others do. To that extent, the model used in this section takes a lead from the work of Bénassy-Quéré, Coupet, and Mayer (2007:770). In that study, a gravity model was used to investigate the deterministic role of institutions as a pull factor for inflow of FDI. The use of gravity model by these authors necessitates modification to suit our study. Having provided the theoretical justification for the relevance of the model developed by Levine and Zervos (1998), the application of a remodelled equation is considered appropriate in estimating the relationship between inflow of FDI and institutional framework. The revised model is stated as follows:

$$FDINFL_{it} = \alpha_1 + \alpha_2 INST_{it} + \alpha_3 X_{it} + e_{it} \qquad (8)$$

The variables used in this equation are the same as those used in the previous equations (1 to 7) for the sake of consistency. As done in the previous equations, control variables are also introduced here to absorb estimation bias. Following the lead provided by the study of Bénassy-Quéré, Coupet, and Mayer (2007), the latitude and longitude of the countries in our sample are used as the control variables. These variables are favoured more importantly because there is no documented evidence that they can serve as direct determinants of inflow of FDI. The use of religion and monotheism dummy (Bénassy-Quéré, Coupet, and Mayer, 2007) are considered inappropriate in this study due to unavailability of data and more importantly, because of the complexity of religion classification in many countries in Africa. However, given that country fixed effects will be applied in the estimations, the introduction of these dummies may be obnoxious.

4.3 Motivation for variables used in Parts A, B and C

As discussed under each equation, and as influenced by literature survey in chapters two and three, the determination of appropriate variables to be used in this research is examined. In this section, attempts are made to further justify the appropriateness of the variables used in this study. It should be said, however, that some of the variables used in literature are not readily measurable through available data, thereby prompting the modifications in the equations and the application of relevant proxies.

4.3.1 Dependent variables

Six dependent variables are used in this research, flowing from equations 2 to 8, namely the proxy for foreign direct investment (*FDIFL*), and the capital market variables (*EQCAP, TURNOVER, BANK, PRIVY and NONFIN*). The components of the dependent variables adopted in this research have previously been used by authors in various studies, although in varying combinations (King & Levine, 1993c; Allen & Ndikumana, 2000; Rousseau & Wachtel, 2000; Akhter & Daly, 2009); although, other authors have used fairly different measures to estimate capital market development (Alfaro, *et al*., 2004; Davis, 2004).

In this research, inflow of FDI is measured through net inflow as a percentage of GDP (net inflows - % of GDP). Similar data has been used in the previous studies (Asiedu, 2002; Chakrabarti, 2003, Chousa, Vadlamannati and Tamazian, 2008; Hailu, 2010). The capital market development is measured through the proxies for capital market efficiency and financial deepening as suggested by King and Levine (1993c); Allen and Ndikumana (2000); Levine, Loayza & Beck (2000); Beck and Levine (2002); Beck, Demirgüç-Kunt and Levine (2003).

As indicated earlier, the choice of these dependent variables is reinforced by literature favoured by their relevance to African dynamic, and this study in particular. In addition, it is considered easier to generate or access relevant data for the purpose of analysis. The choice of panel estimation is informed by the inherent weaknesses in a purely time series analysis. It should be emphasised that the main concern in time series analysis is the robustness of the tests and the explanatory power of the estimators that may possibly arise from the natural temporal ordering of time series data. Some authors have emphasised similar concerns in the past (Dufrenot, Mignon & Peguin-Feissolle, 2010). This research intends to conciliate this concern by exploring the panel environment.

4.3.2 Independent variables

The theoretical and policy expanses of capital market development, institutional framework and inflow of FDI suggests that various explanatory variables can be used for their measurement, depending on author's perspective as well as the research objectives. On the one hand, the measurement of FDI inflow may inform a series of possible regression models, as demonstrated by various authors (Baliamoune-Lutz, 2004; Alfaro, *et al*., 2004; Akinkugbe, 2005; Adams, 2009). More so, the variables for measuring capital market development could vary widely as suggested by several authors (King & Levine, 1993c; Beck, Demirgüç-Kunt & Levine, 2003; Alfaro, *et al*., 2004; Allen & Ndikumana, 2004). However, Biekpe (2002) combined both qualitative and quantitative variables to demonstrate possible relationship between capital market development and institutional efficiency.

4.4 Explanation of independent variables

The explanation of independent variables used in this research will be categorised into three Parts, as they appear in each of the estimation groupings. While each of the independent variables will be defined, any variable that feature in more than one group will be defined only where they first appear to avoid duplication. The definitions contained in this research largely take credence from previous studies as contained in chapters two and three. A synopsis of the definitions of these variables and the sources of data used are presented in Table 4.2:

Table 4.2: Definition of Variables and their Sources

Variable	Brief Description	Source of data
FDINFL	Foreign direct investment, net inflows (% of GDP)	World Development Indicators (WDI)
BANK	The financial resources provided to the private sector by domestic money banks as a share of GDP.	Global Financial Development (GFD)
PRIVY	Domestic credit to private sector (% of GDP)	World Development Indicators (WDI)
NONFIN	Claims on domestic real nonfinancial sector by the Central Bank as a share of GDP	Global Financial Development (GFD)
EQCAP	Total value of all listed shares in a stock market as a percentage of GDP	Global Financial Development (GFD)
TURNOVER	Total value of all traded shares in a stock market exchange as a percentage of GDP	Global Financial Development (GFD)
LAWRULE	Rule of Law (estimate)	Africa Development Indicators (ADI)
POLITY	Combined polity score	Africa Development Indicators (ADI)
INFLATION	Inflation, consumer prices (annual percentage change)	Africa Development Indicators (ADI)
QLEGAL	Regulatory Quality (estimate)	World Development Indicators (WDI)
CORRUPTION	Corruption Perceptions Index (score)	Africa Development Indicators (ADI)
ENFORCE	Legal enforcement of contracts	Global Economic Freedom (GEF)
TRADE	Merchandise trade as a percentage of GDP	Africa Development Indicator (ADI)

4.4.1 Part A: The impact of capital market development on FDI inflow

Equation 2: capital market development and inflow of FDI

In equation 2, the relationships between capital market development and inflow of FDI are estimated. The capital market components used in estimating the relationship between capital market development and inflow of FDI follows the lead provided by various authors, but more specifically the work of King & Levine, 1993c, as modified in the study conducted by Chousa, Vadlamannati and Tamazian (2008).

As suggested by these authors, the main measurable indicators of capital market development are the equity market capitalisation, turnover rate, bank credit, credit provided to private sector and nonfinancial private sector claim. The capitalisation of equity market is measured through the market capitalisation of firms listed on the stock market of the economy concerned. The inclusion of the stock turnover rate of listed firms is also not uncommon in studies of this relevance (Jefus, 2004; Baker, Foley & Wurgler, 2009; Chousa, Vadlamannati & Tamazian, 2008; Hailu, 2010; Vladimir, Tomislav and Irena, 2013).

Further, bank credit can be measured in two ways: first, through the total bank credit available in the economy or second, by adding the credits directed to both private and public sectors. However, we are interested in the credit directed to the private sector because this fund is considered more efficient than those directed to the public sector are. Credit provided to the private sector is easily generated through available databases. The use of credit provided to private sector is well supported in literature as the most efficient indication of productive fund (King & Levine, 1993c; Beck & Levine, 2002; Beck, Demirgüç-Kunt & Levine, 2003). The nonfinancial private sector claim is used as a measure of funds made available by banks to institutions outside the financial sector. All these variables are accessed from the databases used in this study.

4.4.2 Part B: Institutional efficiency and capital market development

Equations 3 to 7: Institutional efficiency and capital market development

For equations 3 to 7, six explanatory variables of institutional adequacy are included in the regression analyses, apart from the control variables that have been discussed above. These variables are chosen from a pool of variables suggested in literature (chapters two and three), and they include the following: the rule of law (*LAWRULE*), polity score (*POLITY*), real inflation (*INFLATION*), quality of legal framework (*QLEGAL*), and corruption (*CORRUPTION*). These variables have been used in the past studies (Lamont, 1997; La Porta, Lopez-de-Silanes, Shleifer & Vishney, 1998; Ito, 1999; Rajan & Zingales, 2003; Laeven & Majnoni, 2004; Lee & Chang, 2009; Ojah, Gwatidzo & Kaniki, 2009; Ayaydin & Baltaci, 2013), albeit in varying combination.

The combination of these variables, as used in this study is not only informed by the previous studies, but also by theories as well. For instance, some of the variables used in the costly-state-verification models of Townsend (1979) that tests the correlation between market efficiency and cost of capital were modified to suit the objectives of this study. Availability of suitable data also contributes to the choice of the variables used in this study. In addition, Laeven and Majnoni (2005) investigated the strength of legal framework concerning the protection of investors and the efficiency of the judicial system to investors' protection across 106 countries, and they only use four of these variables in their estimation. Ojah et al (2009) also used similar variables to investigate the role of legal environment on the use of financial resources in East Africa.

4.4.3 Part C: Institutional efficiency and inflow of FDI

Equation 8: Institutional adequacy and inflow of FDI

The variables used in equation 8 have been used in the previous equations. In specific, *FDINFL* is the dependent variable used in the capital market model in equation 2. The same data is used for *FDINFL* in all the estimations where this variable appears. Further, the institutional variables used in equation 8 (Part C) is the same as the one used in equations 3 to 7.

The only difference between equations 3 to 7 and equation 8 is the transposition of the dependent variables, as well as the variation in the dummy variables used. As suggested in the preceding paragraphs under each Part of the model specification, the motivation for using various control variables in specific models were highlighted, and these postulations were supported by literature.

Having explained the dependent and independent variables used in this study in the previous paragraphs, attention will now be directed towards explaining the source of data and the sample size

4.5 Discussion on source of data and sample size

Sample selection on African studies is a common practice. In a study of market efficiency and stock return behaviour in Africa's emerging equity markets, Alagidede (2008) focused on six largest African stock markets. In a similar study, Kodongo (2011) sampled seven capital markets. Taking a lead from the previous studies, this study will investigate six countries and these countries are subdivided into four regions (North, Southern, West and East). The sampling coverage focuses on the oldest six African stock markets[10] in order to ensure a wider data coverage. Appendix A contains the list of stock markets in Africa, the date of their establishment and the sampled countries. The top oldest six stock markets are then categorised into four regions in Africa, namely North (Egypt, Morocco and Tunisia), Southern (South Africa), West (Nigeria), and East (Kenya).

Apart from North Africa that has more than one country in the regional analysis, the other three regions contain only one country in each. In the case of the three regions that were represented by single countries, each of these countries is a clear regional economic leader. For instance, South Africa accounts for more than two-third of the GDP of Southern Africa region (World Bank, 2013). Nigeria is also the economic super house of West Africa accounting for more than 60 per cent of West Africa's GDP (World Bank, 2013), while Kenya also boasts the same prowess in East Africa. It thus makes sense to represent these regions with the chosen countries, especially given that they are the only countries that qualify for inclusion in our sample based on the ages of their stock markets.

Although, data on FDI inflow can be generated for most of the African countries, however data on capital market[11] is sparse, especially given that most of the stock markets (in exception of the chosen ones) were established barely two decades ago. Another challenge is that data collection and capturing process in most developing countries (including most of the countries in Africa) is less efficient and sometimes inadequate. To that effect, the data used in this research are obtained from the Africa Development Indicators (ADI), the World Development Indicators (WDI), the Global Development Finance (GDF) – all of which are World Bank databases and the Economic Freedom Network (EFN).

Data for the capital market estimations were generated from the GDF and WDI (and in some cases, ADI). Some of the data relating to institutional frameworks are generated from the EFN; although the other two sources are also used as complementary. For instance, most of the institutional variables such as the rule of law, polity score and quality of legal framework appear in the two databases (ADI and WFN). However, variables such as the index of legal enforcement of contracts are only available on the AFN, where they are gleaned for this

[10] These stock markets have been established by 1960.

[11] As indicated in chapter two, the study focuses on the two major components of capital market namely bank and equity.

study. Where the variables are available on more than one database, the most comprehensive source is used in order to reduce the number of missing units. Consistency in the data arrangement is also considered.

Data for all the variables used in the models are generated directly from these databases. One of the major limitations of this study is that the dataset for capital market variables only covered the period between 1980 and 2012, while the dataset for FDI inflow as well as measures of institutional framework (relating to both capital market development and inflow of FDI) were also restricted to that period.

It must be stated that it was easy to obtain data for all the variables used in this estimation except for instances where we experience missing units for some of the variables in the time series. For example, institution variables for most of the sampled countries were only available around early 1990s. In specific, data on the rule of law (*LAWRULE*), corruption index (*CORRUPTION*) and quality of legal framework (*QLEGAL*) only become available on the ADI database in 1996 for Nigeria and Kenya and, in 1998 for South Africa. The dataset for North Africa is even more problematic with a lot of missing units in-between the period covered.

More importantly, data for equity market (such as equity capitalisation and turnover rate) only become available for most of the countries much later after their establishment. For instance, these equity market data are only available for all the sampled countries from 1989 onward, with missing units in-between the period covered. In addition, none of the sources used in this study have a comprehensive capital market data that covers the period under investigation. Although, the use of unbalanced panel is a common practice in empirical studies (such as in Asiedu, 2002; Alfaro et al, 2004; Adjasi and Biekpe, 2006; Adjasi, Abor, Osei & Nyavor-Foli, 2009), imbalance in the years covered for different variables and across the sampled countries may trigger some estimation biases.

Also, estimating an equation with missing units in the dependent variable may trigger instability and a series of sensitivity issues in the estimation (Baltagi & Song, 2004). In addition, balanced panels have been observed to always have estimation superiority over unbalanced panels (Redwood & Tudela, 2004; Wilder, 2009). To avoid these shortcomings, data will be generated for the missing units using five-year moving average going backward. In addition, data will be generated for those countries that do not have data for 2012 using the forecasting tools that is built in E-views 8.

Further to the explanation offered in the previous paragraphs, it should be noted that some of the previous studies have establish relationships between local capital market and inflow of FDI. For example, Alfaro, *et al.* (2004) studied the extent to which local capital market enhances the absorptive capacity of an economy to leverage FDI benefits in Southern Africa. Ang (2009) conducted a similar research on Malaysia. To investigate the importance of absorptive capacity of stock market on FDI flow, Adam and Tweneboah (2009) conducted a research on Ghana, where the importance of domestic stock market was established. Baker, Foley and Wurgler (2009) conducted similar study where they investigated the attractiveness of United States to inflow of FDI from the OECD countries and they were able to establish that stock market valuation helps to attract inflow of FDI to the United States.

This research takes a step further by looking at different issues/forces that may possibly determine the direction of FDI inflow; specifically by examining the effects of capital market components in this regard[12]. This research further emphasises the role of institutional framework on capital market development as well as on inflow of FDI. While various studies have examined a variety of possible determinants of inflow of FDI, the role of capital market, which facilitates capital transfer, allocation, and appropriation, remains marginally researched especially in Africa; hence the interest in this study. The regional effects of these dynamics are also yet to be documented in academic literature.

4.6 Estimation techniques

In this section, the econometric technique used in estimating the model specified in section 4.4.2 of this chapter is discussed. In this research, given that a series of explanatory variables are considered as possible determinants of (1) FDI inflows and (2) capital market development, for a period over three decades across six African countries, a panel approach is considered appropriate. This approach is popular in capital market studies, especially those studies that focus on the developing countries (such as in Allen & Ndikumana, 2000; Asiedu, 2002; Alfaro, et al., 2004; Adjasi & Biekpe, 2006; Demirgüç-Kunt & Levine, 2008).

The understanding is that this technique helps to ascertain some degree of precision as it augments the number of observations in the estimation (Wooldridge, 2001; Baltagi, 2008). By pooling several periods of data for each of the variables, the number of observations is increased. In addition, the multiplicity of such variables across countries over a long period of

[12] This study does not only cover the stock market but the banking sector as well.

time will ultimately increase the number of observations, thereby enhancing the degree of precision that is obtained from the estimation (Bhargava, Franzini & Narendranathan, 1982).

Further, this method enhances the possibility of consistent estimation of the fixed effects model, thereby allowing for unobserved individual heterogeneity that may be correlated with regressors (Arellano & Bover, 1995; Hsiao, 2003). Such unobserved heterogeneity normally lead to omitted variable bias (this will be discussed in 4.10.1). Further motivations for adopting the dynamic panel approach will be presented in sections 4.8.1 and 4.8.2 below, as well as in chapter five where the dynamic panel technique is applied.

4.6.1 The causal relationship between the model variables

Causality is summarised as "a useful way of describing the relationship between two (or more) variables when one is causing the other(s)" (Granger, 1969:428). In essence, causal relationship depicts the direction of relationship that exists between variables under consideration. In econometric estimation, causality is said to exist if a variable causes a change in the behaviour of another variable. In this research, the causal relationship between models specified in section 4.3 will be examined. It is important to point out, however, that despite careful selection of variables (as informed by theories), the relationship between the dependent and independent variables in all the six models may be uni-directional or bi-directional (as indicated in chapters two and three). To that extent, an explanation of the estimation technique that accommodates endogeneity will be presented below.

Although, Ordinary Least Squares and Weighted Least Squares approaches can easily be used to determine the level of relationship between variables, their power is limited as they merely suggest relationship and not specific causality. To this extent, the most popular causality test (Granger causality test) will be used. According to Granger (1969), causality is established between two variables (x and y) if the historical behaviour of a variable (x) can be predicted by the present behaviour of the other variable (y); i.e. $x\ (t_1) = f\ [y\ (t_2)]$.

4.7 Diagnostic techniques

For the sake of reliability, a series of error correction/diagnostic techniques will be adopted in this study. One of the widely used diagnostic techniques is the Durbin-Watson statistics that is contained in the Ordinary Least Squares regression. This application is used to test for first order autocorrelation/ serial correlation in variables. In the dynamic panel environment

(Arellano & Bond, 1991) the Arellano and Bond serial correlation test should have been appropriate, but the test is not robust against temporal heteroskedasticity.

Further, the test is only applicable to estimation done in first difference, which is less efficient to orthogonal deviation that is applied in this study (Arellano & Bover, 1995; Hayakawa, 2009). To that extent, this study relies on fixed effects error correction technique to treat higher order serial correlation. The White period standard errors and covariance matrix tests were also conducted to test for covariance and standard errors in the estimation. This test has been modified in the package used for this analysis (E-views 8) to accommodate autocorrelation in series if they exist.

In ordinary time series data, two diagnostic unit root tests are identified to be very popular, namely the Dickey-Fuller Generalised Least Square (DF-GLS) and Phillips-Perron tests. The DF-GLS test, which is also referred to as a de-trending test, was developed by Elliot, Rothenberg and Stock (1996). This test was developed to enhance the power of ADF tests for small sample sizes. However, given that, the data used in this research is primarily in the panel form, the use of either DF-GLS or ADF tests are not practicable. To that extent, the Lindeberg–Levy central limit theorem (LLC) (Levin, Lin & Chu, 2002) is used to test for the presence of unit root in the cross-section or time dimensions of variables. This pre-estimation diagnostic is conducted on each of the variables used in this study.

4.7 Sensitivity analysis

According to Archer, Saltelli and Sobol (1997:100), "sensitivity analysis estimates the sensitivity of a function f (X) with respect to different variables or subgroups of variables". These authors further illustrates the praxis of this analysis by depicting it as a functional relationship where Y = f (X) is used to represent the (possibly vector valued) output variable, while the *X* are used to represent the input variables. To ensure the robustness of the findings in this research, sensitivity analysis is considered important. As indicated in the preceding paragraph, there is always a concern about the quality of the data used in the analyses. As such, this study adopts techniques that are helpful to determine over what range and under what conditions the components of the results obtained would remain unchanged.

The sensitivity analysis helps to uncover various errors in econometric modelling. For example, it might be that the predictors of inflow of FDI (one of the dependent variables used in this study) are not well-specified. Although, the primary issue is not to attain the most appropriate combination of predictors, but to investigate what additional explanatory variables should be acquired to predict, for instance, the effects of capital market development on the attractiveness of the countries in the analysis to inflow of FDI. The same could be said of the relationship between institution infrastructure and the development of capital market, as well as the impact of institutional framework on inflow of FDI. Sensitivity analysis has been proven to be capable of providing an invaluable tool for addressing such issues (Archer, Saltelli & Sobol, 1997).

4.7.1 Omitted variables

The problem of omitted variables is a serious one in econometrics. To that extent, it is considered essential to control for other variables that are also qualified to be used as determinants of inflow of FDI, capital market development as well as institutional framework but omitted in this study for various reasons as explained earlier.

Documented evidence in econometric estimation suggests that we use cross-section fixed effects if there are omitted variables that vary across entities or variables that cannot be estimated due to absence of data (Baltagi, 2008; Keller, 2012). These authors further suggest that period fixed effects are used if there are omitted variables that are the same for each entity in the sampled countries, but vary over time (such as equity capitalisation or equity turnover rates). To identify the most appropriate technique to be used, Hausman test is conducted. Prior to estimating the equations, stepwise estimation technique is used to check whether the inclusion or exclusion of any variable from the model makes any statistical difference to the predictive ability of the models.

4.7.2 The issue of endogeneity

In previous studies (such as in King and Levine, 1993a; Filer, Hanousek & Campos, 1999; Chousa, Vadlamannati & Tamazian, 2008), the issue of endogeneity was discussed and the attempts made to accommodate this unique problem in estimations were suggested. In this study, the problem of endogeneity is addressed by using various techniques. As suggested in previous studies (King and Levine, 1993a; Temple, 1999; Schich and Pelgrin, 2002; Vazakidis and Adamopoulos, 2009; Lee and Chang, 2009), endogeneity bias may arise due to the potential correlation of variables used as proxy for inflow of FDI or institution framework determinants with omitted variables that are eventually treated as error terms.

To address these errors, correlation statistics (not reported) is conducted for the variables used in this study. The analyses of the correlation statistics suggest low possibility of autocorrelation. In specific, bank credit and inflation are the two variables that show some degree of autocorrelation (-0.38) and the Correlogram-Q-statistics (CQS) test for autocorrelation up to the lag of 16 that is reported in the descriptive statistics allays the fear of autocorrelation among the variables up to the lag of 16. Further, the instrumental variables are restricted to one in analysing the models in Parts A, B and C (as done by Filer, Hanousek & Campos, 1999).

In addition, we apply the orthogonal deviation in the GMM environment as suggested by Arellano and Bover (1995). In a recent study, Hayakawa (2009) corroborates the opinion of these authors that unobserved individual effects are removed by the forward orthogonal deviation in dynamic panel analyses. This author further observes that the GMM estimator of the model transformed by the forward orthogonal deviation tends to work better than those transformed by the first difference in addressing autocorrelation/endogeneity in estimations. As such, the orthogonal deviation technique enhances the validity and suitability of the instruments used in the GMM estimation, thereby addressing the problem of endogeneity (Adjasi & Biekpe, 2006).

This study report results that are based on the generalised method of moments (GMM), and the results are orthogonalised for fixed and/or random effects. The GMM approach of Arellano and Bover (1995) and Blundell and Bond (1998) are used to control for endogeneity bias and unobserved country fixed/random effects. The GMM technique has been proven to be robust to weak instrument bias. The estimations in this study are instrumented by suitable lag levels and lagged first differences of the regressors. To minimise the number of GMM-style instruments used and due to concern of sample size, we restrict the maximum lags of dependent variables in the estimation. In accordance with GMM estimation techniques, Sargan test of over-identifying restrictions and the Arellano-Bond test that the average autocovariance of residuals of order two is zero are reported and all results are based on robust standard errors. The Sargan test of over-identifying restrictions helps to uncover possible autocorrelation between the instruments and the model residuals.

4.8 Chapter summary

This chapter began by stating the research hypotheses. Three research hypotheses were stated, in order to achieve the set research objectives. The research hypotheses laid a basis for the choice of estimation technique, as reflected in the model specification. In all, eight models were specified, of which one estimates the relationship between capital market development and inflow of FDI, five looks at the impact of institutional framework on capital market development and the remaining one equation estimates institutional framework and inflow of FDI.

To accommodate endogeneity, some control variables are used and the theoretical justification for the suitability of these variables is discussed. The chapter goes on to discuss the explanatory variables that were used as well as the theoretical underpinning of the variables. The sources of data and sample size were also discussed. The econometric techniques used in estimating the models were also discussed, as well as the error correction mechanisms used to minimise errors or biases. The next chapter (chapter five) contains the data analysis. It presents the estimation of the models specified and brief explanation of the contextual application.

Chapter five
Data analysis and interpretation

5.1 Introduction

Chapter four discussed the research hypotheses and restated the research questions. A tabular presentation of the research hypotheses that is contained in chapter four helps to deconstruct the kind of potential relationships that are proposed among the research variables. The relationship proposed in Table 4.1 suggests a causal relationship between: capital market development and inflow of FDI, institutional adequacy and capital market development and causality between institutional adequacy and inflow of FDI.

Having constructed econometric models to test the proclivity of these proposed hypotheses, this chapter (chapter five) contains the statistical analyses, ensuing from the econometric models presented in chapter four. The analyses of the econometric models are done in the order of their appearance in chapter four, as informed by the sequence of the research hypotheses. It is noteworthy that the regional effect estimation will be conducted for equations 2 to 8, covering the three Parts of the model specification. This is necessary in order to not only establish the intended relationships at "pooled" levels but at the regional levels as well. In all the estimations, the variables that are statistically significant and of relevance to this study will be highlighted in order to clearly distinguish them in the results.

5.2 Error correction model

Before commencing the estimation, a series of pre-estimation diagnostic tests were conducted as hinted in chapter four. This is essential in order to ensure that none of the estimation assumptions[i] is violated. As suggested in the literature (Jönsson, 2005; Baltagi, 2008; Keller, 2012), the violation of any of the estimation assumptions could generate a misleading result. According to these authors, the error correction model (ECM) is mostly applied in econometrics to diagnose possible errors in "pool" panel estimation. The ECM is applied in panel estimation to accommodate cross-sectional effects error components that are not included in the series (that is, cross-sectional error disturbances). The conventional ECM equation is depicted in equation 9:

$$y = \alpha iNT + X\beta + u = Z\delta + u \qquad 9$$

Where y is $NT*1$, X *is* $NT*K$, Z = *[iNT, X]*, $\delta' = \alpha'\beta'$ and *iNT* is a vector of one of the dimensions of *NT*. This equation can also be expressed as:

$$u = Z_{\mu}\mu + v \text{ is} \qquad 10$$

Where u' = $(uii \ldots\ldots uiT, u21 \ldots\ldots, u2T \ldots\ldots uN1 \ldots\ldots uNT)$

The transformation performed in this equation stacks the observation in such a way that the slower index is placed over the countries observed (cross-sectional effects), while the faster index is placed over time (time-specific effects). This is done given that country-specific dynamics generally leads to slow reaction as compared to time-specific effects, which could trigger unannounced turbulence. A good example was the political emancipation of South Africa. Although, foreign investors' response was noticeable, it was rather a gentle response rather than a sudden shock.

However, the news that Nigeria will rebase its economy has triggered spontaneous investor reaction. The situation becomes more meaningful when Nigerian economy was declared the biggest economy in Africa. The same spontaneous reaction was recorded by Ghana when the economy was rebased. As such, the transformation performed above is considered important because, if estimation errors follow an error components specification, the use of OLS can lead to biased standard errors and inaccurate test statistics (Scott & Holt, 1982; Moulton, 1986 & 1990). It is therefore important to test for the presence of error components in the model as a pre-estimation process before conducting the regression analyses.

To estimate equation 10 in this study, we estimate each model separately and their regional effects are also considered. In all cases, we estimate the vector error correction model (VECM) through the final prediction error (FPE) and Akaike's information criterion (AIC) under the rank restriction r = 1. We restrict the regression rank because such restrictions permit consistent estimation of the cointegration space within the limit of the restriction. Further, we include two lags of the differences of the variables being the optimal achievable lag length because of the small sample size. This approach has been used in previous study by Breitung, Brüggemann and Lütkepohl (2004). The vector error correction estimates will be presented for each of the equations as they appear in the study designation Parts, beginning with equation 2 in Part A.

5.3 Part A: Model of capital market development and inflow of FDI

Equation 2: Estimation of the relationship between capital market development and inflow of FDI

The model specified in this study will be estimated after presenting the general analysis, such as descriptive statistics and unit root test will be combined for models that fall in the same group or that contain the same set of variables. For instance, the descriptive statistics for Part B will be combined with the variable of interest in Part C, thereby making it unnecessary to prepare another descriptive statistics in Part C. As indicated in the introduction to this chapter, regional analyses will also be done for all the equations. For each of the Parts (A, B and C), vector error correction estimations will be presented after each of the descriptive statistics. Thereafter, unit root tests will be conducted and this will be followed by dynamic panel estimations. After the results of regression analyses, impulse response estimations will be presented. The impulse response estimation will be followed by cointegration tests, which are preludes to causality estimations. The estimations will be concluded with causality tests.

5.3.1 Descriptive statistics for equation 2

In the paragraphs that follow, the analyses begin with a descriptive statistics for equation 2 as contained in Table 5.1:

Table 5.1: Descriptive Statistics for Equation 2 (1980-2012): pooled data

	FDINFL	BANK	EQCAP	NONFIN	PRIVY	TURNOVER
Mean	1.799651	36.84061	40.32874	10.50296	48.85565	9.750868
Median	1.160749	32.60942	13.22464	4.711673	36.31355	1.260129
Maximum	9.424577	78.32955	265.6193	50.52455	167.5360	142.6287
Minimum	-1.150856	8.377203	2.288972	0.128763	8.934061	0.017788
Std. Dev.	1.863557	18.77094	57.46845	12.49453	35.24897	22.99928
Skewness	1.628432	0.268749	2.066418	1.541461	1.502632	3.630464
Kurtosis	6.378861	1.837831	6.703321	4.527061	4.866250	17.12316
Jarque-Bera	181.6969	13.52621	254.0581	97.64965	103.2447	2080.524
Probability	0.000000	0.001156	0.000000	0.000000	0.000000	0.000000
Sum	356.3310	7294.440	7985.091	2079.586	9673.420	1930.672
Sum Sq. Dev.	684.1507	69412.62	650616.6	30754.33	244770.5	104206.5
CQS		-0.1117**	-0.1089**	0.1638**	-0.1020**	-0.1293**
Observations	198	198	198	198	198	198

Std. Dev (Standard deviation), CQS* (Correlogram-Q-statistics) test statistic for autocorrelation up to the lag of 16. Result shows no autocorrelation up to the lag of 16. Correlations are asymptotically consistent approximations*
**** p<0.01, ** p<0.05, * p<0.1*

The descriptive statistics contained in Table 5.1 is interpreted in conjunction with regional-specific analysis that is contained in Table 5.2. That is, Table 5.1 is a summary of the detailed analysis contained in Table 5.2. According to Table 5.1, the highest increase in inflow of FDI as a percentage of GDP (*FDINFL*) was recorded by Tunisia in 2006 (9.4246), while the highest divestment as a percentage of GDP was recorded by Nigeria in 1980 (-1.1509). Although, the statistics for the skewness and the kurtosis do not support the assumption of normal distribution, the fact that our sample size is small (198) coupled with the statistically significant *p-value* (0.0000) favours our non-rejection of the null hypothesis of normal distribution at 1 per cent.

The descriptive statistics for *BANK* suggests that South Africa generates the highest level of bank credit as a percentage of total credit in 2008 (78.3295) than the other countries in our sample at any given year between 1980 and 2012. However, Nigeria recorded the lowest level (8.377) in this regard in 1991. The same rule of normal distribution hypothesis applies to *BANK*, as well as inflow of FDI as stated in the preceding paragraph. Considering the descriptive statistics for claims on domestic real nonfinancial sector by the Central Bank as a share of GDP (*NONFIN*), the highest credit was generated by Egypt in 1991 (50.5246), while the lowest credit was generated by Tunisia in 2011 (0.1288). The same rule of normal distribution hypothesis also applies in this context, as it does in the previous variables as stated in the preceding paragraphs. This same principle applies to the test of normal distribution hypothesis of the variables contained in Table 5.2.

Also, the descriptive statistics for the domestic credit provided to the private sector as a percentage of GDP (*PRIVY*) suggests that South Africa generated the highest credit (167.53) in 2007, as compared to the lowest credit generated by Nigeria (8.9341) in 1996. Regarding the descriptive statistics for the equity market indicators, South Africa recorded the highest level of the total value of all listed shares in a stock market as a percentage of GDP (*EQCAP)* (265.619) in 2007. This level of increase in the capitalisation of the JSE may not be unconnected to the sale of Edcon (a clothing retailer) to a private equity consortium. Further, the sale of a 20 per cent stake in the Standard Bank group to the Industrial and Commercial Bank of China might have contributed to this level of increase in the JSE capitalisation in that year. Morocco recorded the lowest stock market capitalisation as a percentage of GDP in 1989 (2.289).

In addition, the descriptive statistics for the total value of all traded shares in the sampled stock market exchanges as a percentage of GDP (*TURNOVER*) between 1980 and 2012 suggest that South Africa recorded the highest value in 2008 as compared to Nigeria that recorded the lowest volume in 1989 (0.0178). Discussion of the descriptive statistics for the dummy variables (inflation (*INFLATION* and trade volume (*TRADE*)) are considered unnecessary because they are not part of the variables of interest in the estimations. In all, equity capitalisation exhibits the highest level of volatility as compared to FDI that appears to be more resilient in the analysis.

The observation from the analysis contained in Table 5.1 is in line with previous findings (Beamish & Banks, 1987; Jeffus, 2004; Bénassy-Quéré, Coupet, & Mayer, 2007; Hailu, 2010). In addition, the correlogram-Q-statistics test is conducted to test for autocorrelation in the series. The test reveals that there is no autocorrelation in the series up to the lag of 16. As indicated in chapter four, this study intends to investigate the possible regional effects on the main variables of interest in this study. To that extent, we will proceed to analyse the regional effects through the descriptive statistics. The output of the regional effects is depicted in Table 5.2.

Table 5.2: Descriptive Statistics for Equation 2 (1980-2012) – Regional Dynamics

North Africa – Pooled Descriptive statistics

	FDINFL	BANK	EQCAP	NONFIN	PRIVY	TURNOVER
Mean	2.096743	41.48241	20.21174	13.90870	44.91465	5.246296
Median	1.589571	47.63822	10.56272	7.251865	47.69861	1.221997
Maximum	9.424577	74.52475	88.73975	50.52455	75.46774	39.98322
Minimum	-0.210299	14.03905	2.288972	0.128763	13.18058	0.106007
Std. Dev.	1.890663	15.78512	21.81706	15.72227	16.69079	9.398273
Skewness	1.768546	-0.135291	1.665245	0.932259	-0.153291	2.332043
Kurtosis	7.110936	1.891789	4.937608	2.459205	1.703534	7.454047
Jarque-Bera	121.3196	5.368054	61.24174	15.54666	7.321124	171.5679
Probability	0.000000	0.068288	0.000000	0.000421	0.025718	0.000000
Sum	207.5775	4106.759	2000.962	1376.962	4446.551	519.3833
Sum Sq. Dev.	350.3114	24418.66	46646.44	24224.60	27301.10	8656.099
Observations	99	99	99	99	99	99
CQS		0.2688***	0.3958***	0.1049***	0.2487***	0.4904***

North Africa (Egypt)

	FDINFL	BANK	EQCAP	NONFIN	PRIVY	TURNOVER
Mean	2.542159	33.77368	23.86250	33.28157	36.22076	8.707949
Median	1.741456	30.37049	16.43421	36.25473	33.07230	2.299441
Maximum	9.343527	53.36719	88.73975	50.52455	54.93114	39.98322
Minimum	-0.210299	15.87697	3.743926	14.75867	13.18058	0.179666
Std. Dev.	2.237186	11.61321	24.28193	11.00682	11.67126	12.77675
Skewness	1.620556	0.357956	1.343997	-0.268307	0.253497	1.470619
Kurtosis	5.375916	1.714996	3.914548	1.688093	1.928720	3.668868
Jarque-Bera	22.20595	2.975179	11.08484	2.762448	1.931441	12.51012
Probability	0.000015	0.225917	0.003917	0.251271	0.380709	0.001921
Sum	83.89125	1114.531	787.4626	1098.292	1195.285	287.3623
Sum Sq. Dev.	160.1601	4315.732	18867.58	3876.805	4358.988	5223.848
Observations	33	33	33	33	33	33

North Africa (Morocco)

	FDINFL	BANK	EQCAP	NONFIN	PRIVY	TURNOVER
Mean	1.210953	37.22940	26.58131	7.963731	37.76342	5.424254
Median	0.596262	27.51473	20.02899	7.251865	32.27027	2.133197
Maximum	4.641830	74.52475	85.19169	17.17659	71.21470	28.18958
Minimum	0.003232	14.03905	2.288972	0.940118	16.80232	0.106007
Std. Dev.	1.261888	19.54805	26.03460	5.138500	17.00292	8.471783
Skewness	1.121935	0.520977	0.911501	0.290437	0.477045	1.875829
Kurtosis	3.275667	1.911040	2.585732	1.789076	1.964035	5.167086
Jarque-Bera	7.027553	3.123316	4.805559	2.480160	2.727329	25.81040
Probability	0.029784	0.209788	0.090466	0.289361	0.255722	0.000002
Sum	39.96144	1228.570	877.1831	262.8031	1246.193	179.0004
Sum Sq. Dev.	50.95555	12228.04	21689.62	844.9338	9251.174	2296.675
Observations	33	33	33	33	33	33

Table 5.2 continues

North Africa (Tunisia)

	FDINFL	BANK	EQCAP	NONFIN	PRIVY	TURNOVER
Mean	2.537116	53.44415	10.19142	0.480813	60.75978	1.606685
Median	2.205335	52.00040	8.718248	0.536142	60.05065	1.009865
Maximum	9.424577	67.72235	22.20978	0.812962	75.46774	17.78000
Minimum	0.600417	47.58281	4.680400	0.128763	46.44948	0.184159
Std. Dev.	1.770915	4.312865	5.582136	0.194974	6.184150	3.071782
Skewness	1.877582	1.368388	0.888650	-0.371541	0.049814	4.601992
Kurtosis	8.067114	4.915538	2.575664	1.977684	3.066619	24.79212
Jarque-Bera	54.69323	15.34394	4.590925	2.196289	0.019751	769.4636
Probability	0.000000	0.000466	0.100715	0.333489	0.990173	0.000000
Sum	83.72484	1763.657	336.3168	15.86683	2005.073	53.02062
Sum Sq. Dev.	100.3565	595.2257	997.1279	1.216479	1223.799	301.9471
Observations	33	33	33	33	33	33
West Africa (Nigeria)						
	FDINFL	BANK	EQCAP	NONFIN	PRIVY	TURNOVER
Mean	3.080351	15.08456	10.54057	12.54557	17.06116	1.298276
Median	2.889681	12.57826	7.853700	13.81913	13.23590	0.120569
Maximum	8.279540	35.39296	35.99110	29.05323	63.11585	9.259680
Minimum	-1.150856	8.377203	3.745239	1.971889	8.934061	0.017788
Std. Dev.	1.951197	6.687729	8.557656	7.586334	10.67929	2.372455
Skewness	0.708319	1.570344	1.674051	0.187904	2.857302	2.185845
Kurtosis	4.121780	4.782273	5.276576	2.163717	11.96714	6.628339
Jarque-Bera	4.489725	17.93058	22.53981	1.155827	155.4660	44.38020
Probability	0.105942	0.000128	0.000013	0.561068	0.000000	0.000000
Sum	101.6516	497.7905	347.8387	414.0037	563.0184	42.84312
Sum Sq. Dev.	121.8294	1431.223	2343.471	1841.679	3649.511	180.1133
Observations	33	33	33	33	33	33
CQS		-0.1161***	0.2296***	0.1676***	0.1255***	0.2048***
Southern Africa (South Africa)						
	FDINFL	BANK	EQCAP	NONFIN	PRIVY	TURNOVER
Mean	0.867182	58.39585	153.3293	1.822736	111.5909	40.21759
Median	0.409797	57.00336	136.6658	1.822456	116.2357	14.32826
Maximum	6.136400	78.32955	265.6193	4.244845	167.5360	142.6287
Minimum	-0.674920	37.96843	99.00165	0.408235	55.60003	4.621268
Std. Dev.	1.347555	10.77237	52.36949	1.079900	33.85756	42.53460
Skewness	2.157639	0.152182	0.755784	0.648451	-0.143402	1.005191
Kurtosis	8.366813	2.066522	2.221569	2.508091	1.736706	2.829811
Jarque-Bera	65.20842	1.325527	3.974841	2.645405	2.307482	5.597080
Probability	0.000000	0.515425	0.137048	0.266414	0.315455	0.060899
Sum	28.61700	1927.063	5059.866	60.15030	3682.501	1327.180
Sum Sq. Dev.	58.10897	3713.405	87762.02	37.31787	36682.70	57894.14
Observations	33	33	33	33	33	33
CQS		0.6196***	0.3973***	-0.2896***	0.5435***	0.5161***
East Africa (Kenya)						
	FDINFL	BANK	EQCAP	NONFIN	PRIVY	TURNOVER
Mean	0.560148	23.11599	17.46739	6.923350	29.73786	1.250458
Median	0.402865	23.43907	11.89643	7.005947	29.40222	0.468384
Maximum	2.676694	33.58402	46.97015	16.47278	38.14996	6.820000
Minimum	0.004721	17.30457	5.143699	2.296972	24.60027	0.119363
Std. Dev.	0.603192	4.137148	13.56683	3.772697	3.063780	1.712121
Skewness	2.394649	0.401307	0.780813	0.543985	0.592204	1.783593
Kurtosis	8.714689	2.657654	2.110777	2.477474	3.233902	5.287434
Jarque-Bera	76.44319	1.046910	4.440414	2.002981	2.004107	24.69110
Probability	0.000000	0.592470	0.108587	0.367331	0.367125	0.000004
Sum	18.48487	762.8277	576.4239	228.4705	981.3494	41.26511
Sum Sq. Dev.	11.64289	547.7119	5889.882	455.4637	300.3760	93.80343
Observations	33	33	33	33	33	33
CQS		0.1315***	0.2500***	-0.1477***	0.2386***	0.2858***

**Std. Dev (Standard deviation)*

*CQS*** (Correlogram-Q-statistics) test statistic for autocorrelation up to the lag of 16. Result shows no autocorrelation up to the lag of 16. Correlations are asymptotically consistent approximations*

**** p<0.01, ** p<0.05, * p<0.1*

According to Table 5.2, although Egypt appears to be the regional economic powerhouse, there seems to be some equitable viability of the capital market components in the North African region. For example, inflow of FDI to Egypt appears to be more volatile than the other two countries. In 2006, Egypt experienced more inflow of FDI (9.42458) than the other two countries, while the same country also witnessed unprecedented level of divestment (-0.210299) in 2011. The divestment may not be unconnected to the series of political uprising (especially the aftermath of the Arab Spring) that have been confronting many countries in North Africa and the Middle East since 2008. However, Morocco's domestic banks (*BANK*) provided more financial resources to the private sector as a share of the GDP than the other two sampled countries (74.52475 in 2009). In addition, Egypt's stock market capitalisation reaches a regional maximum level in 2007 as compared to the lowest regional capitalisation recorded by Morocco in 1989.

Further, Egypt directed more financial resources to nonfinancial private sector in 1991, while Tunisia recorded the least market efficiency in this regard in 2011. Again, this low level of financial support to nonfinancial private sector in Tunisia in 2011 may be difficult to disconnect from the debacles of Arab Springs at the time. It is surprising to note that Tunisia provided more domestic credit to the private sector (*PRIVY*) in 2011, while Egypt performed the least in this regard in 1980. Expectedly, Egypt recorded higher stock turnover rate (*TURNOVER*) in 2008 while Morocco had the least stock turnover rate in 1989. The buy-and-hold policy in Morocco at the time might have culminated in low trading and as such, the comparatively low stock turnover rate. The CQS also suggests that there is no autocorrelation among the variables in the series.

Given that North Africa is the only region with more than one country in the sample, we present the results of the other regions based on general behaviour of the main variables of interest in comparison to each regional sample. These Tables are presented in Appendix A2-1 to A2-4. According to Table 5.2, on the average, West Africa attracts more inflow of FDI (*FDINFL* - 3.1) than the other regions, closely followed by North Africa (2.1) while East Africa performed the least. However, inflow of FDI to East Africa (on the average) exhibits higher degree of stability (0.6) as compared to West Africa that exhibits higher volatility (2.0) as indicated by their standard deviation.

Considering the financial resources provided to the private sector by domestic money banks as a share of GDP (*BANK*), Southern Africa performs better on the average compared to the other regions, closely followed by North Africa while West Africa recorded the least performance in this regard. Despite recording the second best performance on the average, North Africa region (15.8) shows higher volatility in terms of bank credit (*BANK*) as compared to the other regions whereas East Africa again appears to be resilient to volatility in this regard (4.1).

Considering the total value of all listed shares in a stock market as a percentage of GDP (*EQCAP)* on regional basis, Southern Africa emerged the average best performer (153.3) compared to the runner-up (North Africa – 20.2) and the least performer (West Africa – 10.5). Although, Southern Africa performs a lot better than the other regions on the average, the region also shows the highest level of volatility while West Africa indicates the highest degree of stability in this instance.

On the average, the claims on domestic real nonfinancial sector by the Central Bank as a share of GDP (*NONFIN*) shows a tight performance between the best performer (North Africa – 13.9) and the runner-up (West Africa – 12.5) as compared to the least performing regions (East Africa – 6.9 and Southern Africa – 1.8). Conversely, the best performing region also shows the highest level of volatility (15.7), while Southern Africa record the highest level of stability in this regard (1.1).

Considering the domestic credit to private sector as a percentage of GDP (*PRIVY*), Southern Africa recorded the best average performance (111.6). Although, North Africa is the second best performer (44.9), the gap between southern Africa and North Africa is very wide. The least performing region on the average (West Africa) recorded a comparatively low average score (17.1). On the contrary, Southern Africa also exhibited the highest level of volatility while East Africa shows the highest level of stability.

Looking at the descriptive statistics for the total value of all traded shares in a stock market exchange (*TURNOVER*), Southern Africa emerged again as the leading region on the average (40.2). Although, North Africa is in the second position (5.2), the gap between the two regions is comparatively very large. Again, the best performer region in stock turnover rate (Southern Africa) also shows the highest level of volatility (42.5) as compared to East Africa that shows the best level of stability in this context (1.7). In all the regional analyses, the test of normal distribution follows the same assumption for the pooled data and they all favour our non-rejection of the null hypothesis of normal distribution at one per cent error level.

5.3.2 Vector error correction estimation for equation 2

In the analyses presented in the paragraphs that follow, equation 10 will be estimated for each of the three Parts of the research (Parts A, B and C). This is considered important as the analysis generated through this process will hint on the specific deterministic relationships between the dependent and the explanatory variables. This form of analysis also hints on the possible relationship that is obtainable if the dependent variable is alternated.

In simple terms, the error correction terms describe how the time-series adjust to disequilibrium. According to Breitung, Brüggemann and Lütkepohl (2004), the simple interpretation of error correction estimation suggests that the error terms that bear negative coefficients would achieve future equilibrium through positive response patterns, while error terms with positive coefficients would be mean-reverting through negative future trends.

In both cases, the error terms have to be statistically significant to be of relevance (Alogoskoufis & Smith, 1991; Baltagi, 2008; Keller, 2012). In essence, the error term in the dynamic estimation is deemed 'reasonable' if it revert towards its equilibrium within a short period, preferably within the first period (depending on the series – daily, weekly, monthly, quarterly or annual data). The results of the VECM for Part A are presented in Tables 5.3 and 5.4 below:

Pooled Estimate

Table 5.3: Vector Error Correction Estimates for Equation 2 (1980-2012): Pooled data (Dependent variable – inflow of FDI)

	Error correction estimation results					
	FDINFL	BANK	NONFIN	PRIVY	EQCAP	TURNOVER
Lag 1	1.00000	-0.005121 (0.04787) [-0.10698]	-0.038252 (0.02820) [-1.35669]	-0.046686 (0.04461) [-1.04660]	0.049632 (0.02093) [2.37135]**	-0.132252 (0.03677) [-3.59647]***
Differenced	-0.118678 (0.04791) [-2.47703]**	-0.014512 (0.09234) [-0.15716]	-0.090312 (0.07081) [-1.27537]	0.012229 (0.21239) [0.05758]	-0.895302 (0.29684) [-3.01607]***	0.391491 (0.15250) [2.56713]**
Differenced in lag 1	-0.383916 (0.08336) [-4.60544]***	-0.023846 (0.05799) [-0.41121]	0.027279 (0.05305) [0.51417]	-8.95E-05 (0.02726) [-0.00328]	0.018113 (0.01328) [1.36388]	-0.069659 (0.03503) [- 1.98827]*
Differenced in lag 2	-0.036352 (0.07937) [-0.45802]	-0.032173 (0.05378) [-0.59818]	0.058018 (0.05268) [1.10134]	0.001122 (0.02631) [0.04265]	0.017858 (0.01412) [1.26471]	-0.087406 (0.03580) [-2.44146]

Estimated coefficients on the first line, standard errors in parenthesis (); and t-statistics in brackets [].
The results are computed separately for each equation using the appropriate residuals
**** $p<0.01$, ** $p<0.05$, * $p<0.1$ {Emphasis are placed on *** $p<0.01$, ** $p<0.05$}*

From equation 2, there is a total of 1080 system (balanced) observations with an included observation of 180 for each of the possible VECM models (derived by alternating the dependent variables). The stability of the model is determined by the Durbin Watson statistics that ranges between 1.89 and 2.05 in the probability statistics determinant estimation (OLS) that is presented in raw E-views output table that appears in Appendix C1. Appendix C1 also contains the detailed information about the possible combinations that are obtainable from equation 2.

This appendix (C1) is presented here as a sample of how the *p-values* of the VECM estimations were generated in order to ascertain the statistical significance of some variables that may be difficult to estimate (e.g. statistical value such as -1.98827) through the use of convention *t-statistics* technique. The presentation of this system estimation will not be repeated for the rest VECM estimations, but the results generated through this process will be reported. From Appendix C1, only 28 statistically significant relationships are identified out of a possible 78 relationships.

According to Table 5.3, the differenced *FDINFL* as well as differenced in lag 1 are statistically significant. In both instances, the error correction mechanisms are negative and significant, suggesting that more than 12 per cent and 39 per cent of the deviations from equilibrium are corrected within the first year through structural reform. Also, the relationship between lagged *FDINFL* and lagged *EQCAP* is statistically significant; so also is the differenced *EQCAP* in lag 1. Further, *TURNOVER* in lag 1, differenced as well as differenced in lag 2 are statistically significant, suggesting that more than 13 per cent, 39 per cent and nine per cent of the disequilibrium expressed in the variables are corrected within the first and second year respectively, with an undertone of structural reform.

The total value of all traded shares in a stock market exchange as a percentage of GDP (*TURNOVER*) is also seen as an important determinant of *FDINFL* in this analysis. However, the other combinations in Table 5.3 appear not to have significant short term effects. The combinations of the other variables that appear in Appendix B1 will not be discussed as they are of no interest in this study. An important observation from the pooled estimation is that only the total value of all listed shares in a stock market as a percentage of GDP (*EQCAP)* and the total value of all traded shares in a stock market exchange as a percentage of GDP (*TURNOVER*) are statistically significant as determinant of *FDINFL* and their speeds of adjustment to equilibrium is weak.

The regional VECM estimations for equation 2 are also conducted and the results are presented in Table 5.4. However, it is considered unnecessary to present the *p*-value determinants in this instance, but the statistical significance of the variables will be discussed.

In addition, the variables of interest are presented in the VECM Tables while the other combinations that are of no interest in this study are presented in the appendix (B1 to B35). According to *p*-value determinant estimation, the stability of the estimation is ensured with the Durbin-Watson statistics that ranges between 1.8 and 2.1 for all the regions. The *p-value* determinant estimation also suggests that 14 out of a possible 84 combinations are statistically significant at five per cent error level.

Regional Estimates

Table 5.4: Vector Error Correction Estimates for Equation 2 (1980-2012): Regional analysis (Dependent variable – lagged FDINFL)

Variables	**Error correction estimation results**					
North Africa	**FDINFL**	**BANK**	**PRIVY**	**NONFIN**	**EQCAP**	**TURNOVER**
Lag 1	1.000000	-0.109120 (0.06276) [-1.73874]*	0.029503 (0.05240) [0.56301]	-0.045536 (0.01612) [-2.82410]**	-0.021347 (0.04070) [-0.52454]	0.072569 (0.09528) [0.76160]
Differenced	-0.632057 (0.11865) [-5.32729]***	0.288934 (0.28479) [1.01456]	0.525604 (0.42062) [1.24958]	0.121746 (0.20312) [0.59937]	-0.446743 (0.48171) [-0.92741]	0.051738 (0.30275) [0.17090]
Differenced in lag 1	-0.146996 (0.10743) [-1.36831]	-0.188983 (0.06834) [-2.76521]**	0.035387 (0.04102) [0.86262]	-0.077718 (0.06846) [-1.13519]	-0.025139 (0.03483) [-0.72184]	0.203055 (0.08001) [2.53800]**
Differenced in lag 2	0.122855 (0.10486) [1.17163]	-0.095321 (0.07044) [-1.35323]	-0.015273 (0.04167) [-0.36651]	-0.002235 (0.07075) [-0.03160]	0.048202 (0.03820) [1.26169]	-0.154479 (0.07544) [-2.04779]**
Southern Africa		**BANK**	**PRIVY**	**NONFIN**	**EQCAP**	**TURNOVER**
Lag 1	1.000000	-0.507385 (1.35379) [-0.37479]	1.167091 (0.35285) [3.30764]***	-40.37407 (3.64814) [-11.0670]***	-1.794196 (0.18714) [-9.58754]***	1.022530 (0.16945) [6.03446]***
Differenced	-0.025577 (0.01620) [-1.57880]	-0.034261 (0.03141) [-1.09078]	0.062751 (0.14847) [0.42265]	0.018886 (0.00495) [3.81855]***	0.420743 (0.20488) [2.05361]**	0.068778 (0.11531) [0.59646]
Differenced in lag 1	-0.913725 (0.25619) [-3.56658]***	-0.392223 (0.27818) [-1.40996]	0.142387 (0.07840) [1.81624]*	0.296951 (0.59429) [0.49967]	-0.088986 (0.04817) [-1.84729]*	-0.025091 (0.04657) [-0.53879]
Differenced in lag 2	-0.392122 (0.25074) [-1.56385]	-0.442812 (0.21846) [-2.02694]**	0.186793 (0.07078) [2.63908]**	-1.250032 (0.81039) [-1.54250]	0.003738 (0.02423) [0.15426]	0.174741 (0.08312) [2.10228]
West Africa	**FDINFL**	**BANK**	**PRIVY**	**NONFIN**	**EQCAP**	**TURNOVER**
Lag 1	1.000000	1.363983 (0.20942) [6.51304]***	-0.971534 (0.20575) [-4.72198]***	-0.256107 (0.02913) [-8.79103]***	-0.046705 (0.10962) [-0.42606]	-1.359188 (0.44563) [-3.05006]***
Differenced	-1.442001 (0.28580) [-5.04554]***	-0.751062 (0.62773) [-1.19648]	0.950671 (1.10765) [0.85828]	-1.500545 (0.86187) [-1.74103]*	0.024466 (1.11883) [0.02187]	-0.015272 (0.25417) [-0.06009]
Differenced in lag 1	0.375608 (0.26892) [1.39675]	1.793540 (0.35027) [5.12051]***	-1.429234 (0.24539) [-5.82436]***	-0.266282 (0.13391) [-1.98855]**	0.010770 (0.16516) [0.06521]	-1.948591 (1.05472) [-1.84750]*
Differenced in lag 2	0.351631 (0.18195) [1.93260]*	0.474752 (0.24422) [1.94394]*	-0.805598 (0.22527) [-3.57615]***	-0.034416 (0.13222) [-0.26029]	0.556872 (0.21205) [2.62610]	-3.210988 (0.77822) [-4.12604]
East Africa	**FDINFL**	**BANK**	**PRIVY**	**NONFIN**	**EQCAP**	**TURNOVER**
Lag 1	1.000000	-0.159288 (0.22132) [-0.71971]	-2.449650 (0.28929) [-8.46785]***	2.123940 (0.31304) [6.78480]***	-0.946304 (0.15438) [-6.12965]***	1.53159 (1.67669) [6.87759]***
Differenced	-0.005592 (0.03384) [-0.16526]	0.018321 (0.11184) [0.16382]	0.291317 (0.12570) [2.31753]***	-0.104551 (0.07828) [-1.33559]	-0.486373 (0.30724) [-1.58303]*	-0.132885 (0.03829) [-3.47027]***
Differenced in lag 1	-0.995856 (0.15774) [-6.31327]***	0.036421 (0.10073) [0.36158]	0.031511 (0.07411) [0.42520]	-0.154991 (0.08704) [-1.78059]*	0.058545 (0.03699) [1.58274]*	0.813849 (0.35203) [2.31189]**
Differenced in lag 2	-0.722909 (0.15477) [-4.67083]***	-0.036466 (0.10158) [-0.35899]	0.140081 (0.07248) [1.93267]**	0.120609 (0.08080) [1.49269]	-0.062591 (0.05105) [-1.22610]	-0.062699 (0.66560) [-0.09420]

Estimated coefficients on the first line, standard errors in parenthesis (); and t-statistics in brackets [].
The results are computed separately for each equation using the appropriate residuals
**** p<0.01, ** p<0.05, * p<0.1 {Emphasis are placed on *** p<0.01, ** p<0.05}*

North Africa

According to Table 5.4 and appendix B2 in the instance of North Africa, 14 out of possible 84 relationships are statistically significant. Specific to Table 5.4, six out of 24 relationships are statistically significant. In specific, lagged *FDINFL* in its differenced form is statistically significant. Further, the error correction mechanisms are negative and significant, suggesting that more than 63 per cent of the deviations from equilibrium are corrected within the first year. Further, the relationship between *FDINFL* and differenced *BANK* in lag 1 is statistically significant and negative. This indicates that *BANK* is an important determinant of inflow of FDI, and more than 19 per cent of the disequilibrium experienced in the variation is corrected within the first year.

In addition, the lagged form of *NONFIN* and differenced form of *TURNOVER* in lag 2 have statistically significant and negative relationships with *FDINFL*. These relationships suggest that more than five per cent and 15 per cent of the disequilibrium are corrected within the first year. However, the same cannot be said for the relationship between *FDINFL* and differenced *TURNOVER* in lag one. This relationship bears a positive coefficient, suggesting that the variation would have to be shocked in order to correct about 23 per cent of the disequilibrium within the first year. In the North Africa analysis, three of the capital market variables are statistically significant determinants of *FDINFL*.

Southern Africa

For Southern Africa, there are a total of 180 system (balanced) observations, and included observation is 30. The *p-value* determinant estimation is considered stable given its Durbin-Watson statistics that ranges between 2.18 and 2.25. In addition, 17 out of possible 84 variable combinations are statistically significant. According to Table 5.4, 10 out of a possible 24 combinations are statistically significant of which four bear negative coefficients (below the point of equilibrium) and the remaining six bear positive coefficients (above the point of equilibrium).

In a more specific term, differenced *FDINFL* in lag 1 is statistically significant. There is an indication that more than 91 per cent of the variations expressed in the variable could be corrected within the first year by introducing nominal shock on the variables, which is capable of shooting the series towards the equilibrium point. Still on Southern Africa analysis, differenced *BANK* in lag 2 share a negative and statistically significant coefficient with *FDINFL*. This suggests that *BANK* in this form is an important determinant of *FDINFL*, and more than 44 per cent of the disequilibrium in the variable could be corrected within the first year.

PRIVY in the Southern Africa analysis in its lag 1 shares a positive relationship with *FDINFL*, so also is *TURNOVER*. This relationship suggests that both variables are significant determinants of *FDINFL* and the disequilibrium expressed in these series are explosive as they are above 100 per cent. In the case of the other statistically significant variables, differenced *PRIVY* in its lag 2 is positive, so also is *TURNOVER*. The interpretation of this form of relationship is similar except for time lag, which varies from one to two years and their speeds of adjustment are also 19 per cent and 17 per cent respectively.

In addition, the *NONFIN* in lag 1 and E*QCAP* in lag 1 both share positive relationships with *FDINFL*. These relationships hint that these positive variables are above the equilibrium points and have to be shocked to reverse their series towards equilibrium. The analysis further indicates that these relationships are explosive as they tail above 100 per cent. In conclusion, the differenced NONFIN and differenced EQCAP bear positive relationships with FDINFL, and their speeds of adjustment are two per cent and 42 per cent respectively.

West Africa

For West Africa, the numbers of total system observation as well as included observations are similar to that of Southern Africa. For West Africa, the stability of the *p-value* determinant estimation is buttressed by the Durbin-Watson statistics that ranges between 1.6 and 2.0. Looking at the individual error terms in the VECM estimation as contained in Table 5.4, 10 out of a possible 84 combinations are statistically significant of which seven bear negative coefficients and the remaining three bear positive coefficients.

Looking at individual variables, *FDINFL* in first difference as well as differenced in lag 1 are statistically significant with explosive negative coefficient. This may imply that if there is a meaningful linear combination of exogenous shock in the variable over the previous year, it would affect its behaviour in the current year (Alogoskoufis & Smith, 1991). Further, *BANK* in lag 1, and differenced in lag 1 are statistically significant when it interacts with *FDINFL*. It is noteworthy that both relationships are positively related and their effects are also explosive. However, *FDINFL* and *PRIVY* share statistically significant relationships that are negative. *PRIVY* in its first lag, differenced in first lag and differenced in lag 2 indicate that more than

97 per cent, explosive (143 per cent) and 81 per cent of the disequilibrium is corrected within the first year respectively.

The analysis for *NONFIN* indicates that this variable share a statistically significant relationship with *FDINFL* only in its first lag, and the coefficient suggests that more than 26 per cent of the disequilibrium is corrected within the first year. The relationship between *FDINFL* and differenced *EQCAP* in lag 2 is statistically significant and its coefficient suggests that more than 56 per cent of the disequilibrium will be corrected within the first year. *TURNOVER* shares two inverse relationships with *FDINFL*, first in its lagged form and second, when differenced in lag 2. In both instances, the coefficients are explosive (136 per cent and 321 per cent respectively).

East Africa

For East Africa analysis, the same number of system observation and included observation were obtained as in the other regions. However, the Durbin-Watson statistics of the *p-value* determinant estimation ranges between 1.7 and 2.4, which is acceptable as indication of the model's stability. Further, 12 out of a possible 84 interaction combinations are statistically significant. Out of the 12, 10 are of interest in this study. Differenced *FDINFL* in lag 1 is statistically significant with 99 per cent coefficient. So also is the differenced form of this variable in lag 2 with a negative coefficient of 73 per cent. In both instances, there are indications that 99 per cent and 73 per cent of the disequilibrium expressed in these interactions can be corrected within the first and second year respectively.

Still on East Africa analysis in Table 5.4, none of the *BANK* variables is statistically significant. However, *FDINFL* and *PRIVY* share three statistically significant relationships. The lag form of *PRIVY* bears a negative coefficient that is explosive, followed by the differenced form of *PRIVY* that is positive with a coefficient of 29 – suggesting that 29 per cent of the disequilibrium in the series is corrected within the first year. The variable in lag 2 is also statistically significant and the coefficient suggests that more than 14 per cent of the disequilibrium is corrected within two years. *NONFIN*, however, in its first lag, shares a single positive relationship with *FDINFL* and the coefficient of the relationship is explosive. *EQCAP* in its first lag has a single statistically significant relationship with *FDINFL*, and the coefficient of the relationship suggests that more than 95 per cent of the disequilibrium is corrected within the first year.

The relationship between *FDINFL* and *TURNOVER* yield three forms of statistically significant results. In the first instance, *TURNOVER* in lag 1 shares a negative statistical significance with *FDINFL* with an explosive coefficient. However, the relationship in its differenced form is positive and it indicates a 13 per cent error correction within the first year. When this variable is differenced and in lag 1, the coefficient suggests that more than 81 per cent of the disequilibrium in the series is corrected within the first year.

In the regional analysis, except for North Africa region, capital market variables are found to share statistically significant relationships with *FDINFL* and the speed of adjustment to equilibrium ranges from low (2 per cent) through to being explosive. Having conducted the error correction estimations, we now proceed to the test of unit root in the series.

5.3.3 Panel unit root test for equation 2

Prior to the dynamic panel estimation, test of stationarity is conducted. Evidence suggests that if the time series of the variable under study are not integrated in the same order, the variable cannot be in a long-run equilibrium relationship (Engle and Granger 1987; Johansen and Juselius, 1990; Jönsson, 2005). Thus, it is important to conduct the stationarity tests in order to determine the order of integration of the variables for the purpose of regression analyses and cointegration tests. The Levin, Lin and Chu unit root test is used as the dominant method.

The Levin, Lin and Chu (2002) unit root test (LLC) is very popular in literature (Jönsson, 2005; Pesaran, 2007; Baltagi, 2008). This method is regarded as the most reliable test in panel data because the technique "allows for fixed effects, individual deterministic trends and heterogeneous serially correlated errors" (Baltagi, 2008:275). This is essentially so because, according to Baltagi, the length of the time series, which is held as infinity, is crucial for determining asymptotic properties of estimators.

In addition, the approach provides a good approximation for the empirical distribution of the test statistic even in relatively small samples (for example where N ranges between 10 and 250, and T between 25 and 250) (Pesaran, 2007; Baltagi, 2008) as in the case of this study. The fixed effects consideration is important given that we are focussing on specific countries in Africa, and the estimation inference is restricted to the behaviour of these countries across series. Also, given that all the countries are pooled together in the estimation, the fixed effects diagnostic wipes out the individual effects of countries in the series. The result of the stationarity test is presented in Table 5.5.

Table 5.5: Unit Root Tests for Equation 2 in Part A (1980 – 2012)

Newey-West Automatic Bandwidth Selection and Bartlett Kernel

	I		II		III	
Variables	Levin, Lin & Chu (Individual Intercept and Trends)		Levin, Lin & Chu (individual effects)		Levin, Lin & Chu (none)	
	At level	In first diff.	At level	In first diff.	At level	In first diff.
FDINFL	-7.89033***	-	-7.38178**	-	-2.0741**	-
Observation	191	-	191	-	183	-
Order of integration	I(0)		I(0)		(I(0)	
BANK	-2.20896**	-	0.95657	-4.4496***	3.08456	-8.9578***
Observation	187	-	186	186	186	186
Order of integration	I(0)		I(1)		I(1)	
EQCAP	-0.13933	-2.05990**	2.83900	-5.0543***	1.52127	-9.08623***
Observation	181	165	179	173		
Order of integration	I(1)		I(1)		I(1)	
NONFIN	-3.09768***	-	-0.46065	-8.84961***	-3.11405***	-
Observation	186	-	186	183	185	-
Order of integration	I(0)		I(1)		I(0)	
PRIVY	-0.12360	-3.87139***	0.60489	-4.92863***	1.29929	-10.2445***
Observation	184	179	185	177	189	177
Order of integration	I(1)		I(1)		I(1)	
TURNOVER	10.5263	9.97232	6.97660	12.7308	2.35283	-1.60853**
Observation	172	171	172	168	172	168
Order of integration	-		-		I(1)	

Using the Levin, Lin & Chu (2002) test, probabilities are computed assuming asympotic normality
****; **; * This indicates that we reject the null hypothesis of unit root at 1%, 5% and 10%.*
Automatic selection of maximum lags; Automatic lag length selection based on SIC: 0 to 5
All variables except for EQCAP, PRIVY and TURNOVER are stationary at level and significant at minimum of 5%.

Table 5.5 contains three types of unit root tests, using the same method. From that table, the Levin, Lin and Chu (2002) unit root test is adopted, using the Newey-West Automatic Bandwidth Selection and Bartlett Kernel selection criteria. Column I of the table tests for unit root in individual intercept and trend (both at level and in first difference), while columns II and III tests for unit roots in individual effect and no effects respectively.

As suggested in Table 5.5, analyses presented in column I suggest that three variables (*FDINFL, NONFIN and BANK*) become stationary at level and statistically significant at one per cent and five per cent error levels respectively, while the other two variables (*EQCAP and PRIVY*) only become stationary in first difference but statistically significant at one per cent error levels. The unit root tests for *TURNOVER* in column 1 (at level and in first difference) indicate the presence of unit root in columns 1 and II. The result contained in column II suggests that all the variables tested become stationary in the first difference and statistically significant at one per cent error level, except for *FDINFL* that is stationary at level and statistically significant at one per cent error level. The results contained in column III suggest that all the variables (including *TURNOVER*) pass the tests of unit root. While *FDINFL* and *NONFIN* are stationary at levels and statistically significant at five per cent error levels, the remaining four variables only become stationary in first difference but statistically significant at one per cent error levels[13].

The overall stationary test for the variables used in equation 2 indicates that the variables are not integrated in the same order, regardless of the type of analysis. Although, all the variables become stationary at a point, but their order of integration varies widely. To that extent, it becomes important to introduce each of the variables in their first difference, essentially so to satisfy cointegration criteria. In the regression analyses, we will adopt orthogonal deviation technique rather than differencing and the justification for that choice will be presented later. Although, other tests of stationarity techniques, such as Im, Pesaran and Shin W-stat test, ADF - Fisher Chi-square and ADF - Choi Z-stat were also used (not reported) benefitting from balanced panel arrangement, their results were not significantly different from the one presented in Table 5.5.

5.3.4 Dynamic panel estimation for equation 2

Having conducted the descriptive statistics for the variables used in this study, coupled with the error correction estimation, and having tested the variables for stationarity, attention is now shifted to the estimation of the models. Various estimation techniques have been used in studies of this nature (Levine & Zervos, 1998; Asiedu, 2002; Alfaro et al, 2004; Chousa, Valdlamannati & Tamazian, 2008). The main consideration in choosing an estimation method is the likely problems of estimation bias and inconsistent conditions of a dynamic estimation (Adjasi and Biekpe, 2006; Revia, 2013). The primary intention is to estimate the models in a way that is dynamic enough to achieve the study objectives while eliminating possible errors that may result from country specific or time-related effects that may be correlated with the explanatory variables.

To address these errors and biases, this study adopts the Arellano and Bond (1991) Generalized Method of Moments (GMM) dynamic instrumental variable modelling approach. In this estimation approach, the lagged values of the dependent variable (inflow of FDI -

[13] *TURNOVER* is statistically significant at 5% error level.

FDINFL) and the differences of the independent variables (in orthogonal deviation environment) are used as valid instruments to control for this bias and errors. The use of suitable instruments is important in dynamic panel estimation because the lagged dependent variable [$y_{it} - y_{it\ -1}$] will be correlated with the lagged error terms [$e_{it} - e_{it\ -\ 1}$] by construct and this process would precipitate endogeneity problem in the estimation.

Based on the assumptions that there is no serial correlation in the error terms and the possibility of weak exogeneity of explanatory variables, the following moments condition applies to the instrumentation procedure:

$E[CMT_{it} - j\Delta e_{it}] = 0$ for $j = 2, 3, \ldots, (T - 1)$; $i = 1 \ldots 6$ (11)

$E[z_{it} - \Delta e_{it}] = 0$ for j = 1, 2, 3, . . . , (T- 1); $i = 1 \ldots 6$ (12)

Where z_{it} is a set of explanatory variables.

The Arellano and Bond (1991) Generalized Method of Moments (GMM) estimation is based on the moment conditions specified in equations 11 and 12 above and the estimates is only consistent if the lagged values of explanatory variables that are used in the estimation are valid instruments. The validity of the of instruments used is checked using a Sargan test of over-identifying restrictions which tests for correlation between the instruments used in the estimation and the model residuals. The result of the dynamic panel (using Generalised Method of Moments - GMM) is presented in Table 5.6.

Table 5.6: The GMM Panel Regression for Equation 2 (1980-2012): pooled data

Capital Market Development on Inflow of FDI (Dependent Variable – FDINFL)

	I	II	III	IV	V
EQCAP	0.017020 (0.004180)***				
INFLATION	0.021737 (0.013215)				
TRADE	0.047866 (0.012770)***				
TURNOVER		0.020931 (0.005505)***			
INFLATION		0.017804 (0.013257)			
TRADE		0.052265 (0.012468)***			
BANK			0.033227 (0.010379)***		
INFLATION			0.022785 (0.013772)*		
TRADE			0.055044 (0.012947)***		
PRIVY				0.019902 (0.005883)***	
INFLATION				0.021649 (0.013733)	
TRADE				0.057802 (0.012469)***	
NONFIN					0.005179 (0.023507)
INFLATION					0.026338 (0.026338)**
TRADE					0.034139 (0.013656)**
Observations	192	192	192	192	192
Number of countries	6	6	6	6	6
Sargan Test (Prob >chi2)	0.304	0.288	0.596	0.232	0.891
Orthogonal Deviations	Yes	Yes	Yes	Yes	Yes

*Robust standard errors are in parentheses. *** p<0.01, ** p<0.05, * p<0.1. Cross-section weights instrument weighting matrix and convergence was achieved after 1 weight iterations. Cross-section weights (PCSE) standard errors & covariance (no d.f correction). Maximum lags of dependent and predetermined variables for use as instruments are limited to 1. Period fixed (dummy variables) applied in the estimation*

In Table 5.6, both time-specific effects and cross-sectional analysis were conducted. The two-way error correction methods are used in order to accommodate the likelihood of either or both of these errors in the estimation. The Hausman test suggests that the introduction of period fixed effect is strong as the null hypothesis falls in the region of rejection, hence the justification for introducing period fixed dummy into the regression.

The test further suggests that cross-sectional effects are statistically significant, as the hypothesis falls within the region of rejection, hence the motivation for introducing cross section fixed effect dummy (orthogonal deviation) (Arellano & Bover, 1995). Further, we adopted the weighting matrix in the criterion function in order to establish the robustness of the GMM to heteroskedasticity and autocorrelation of unknown form in the estimation (Baltagi, 2008). We thereby tackle multicollinearity and endogeneity bias by implementing a robust estimation procedure through the instrumentation and orthogonalisation.

By so doing, the reliability and sensitivity of the analysis are ensured. In addition, the estimation is done on two-stage least squares (2SLS – not reported) instrument weighting matrix in robust coefficient covariances, which is contingent on the transformation of the residuals in the orthogonal deviations environment. This weighting technique exhibits robust property in that it is the optimal weighting matrix for the transformed model specification (Arellano & Bover, 1995). The 2SLS is conducted for robustness check and the output is not statistically significantly different from the results generated from the GMM estimation. Hence, the assumption of the validity of the estimation presumably holds for all the GMM estimations in this study.

In the pre-estimation process, the stepwise regression analysis (not reported) conducted indicates that the introduction of legal origin weakens the explanatory powers of the model, thereby prompting its removal in order to avoid misspecification. In all cases in the analyses contained in this study, the null hypotheses of non-significance of our set of instruments are rejected through the Sargan tests. Using the total value of all listed shares in a stock market as a percentage of GDP (*EQCAP)* as the explanatory variable in column I, the robust standard errors suggests statistical significance of the model, coupled with the *p-value* that is statistically significant at 1 per cent.

The statistical insignificance of Sargan tests (0.304) lend credence to the statistical validity of the estimation propositions (Gujarati & Porter, 2009; Keller, 2012).The estimation coefficient indicates a positive relationship with the dependent variable, suggesting that a country with high level of equity capitalisation has the tendency to attract more inflow of FDI than a country with less capitalised equity market. The coefficient of equity turnover rate (*TURNOVER*) is also positive and statistically significant (Column II). The explanatory power of the coefficient suggests that equity turnover rate is more motivating to attract inflow of FDI than the total value of all listed shares in a stock market as a percentage of GDP (*EQCAP).* This finding is in line with the outcome of the studies conducted by Jeffus (2004), as well as Baker, Foley and Wurgler (2008).

Caves (1974, 82, 96, and 2007) hypothesis is reinforced when we consider the statistical importance of the financial resources provided to the private sector by domestic money banks as a share of GDP (*BANK*). As indicated in column III, *BANK* is not only statistically significant with positive coefficient, but the variable also exhibits the highest level of explanatory power (0.03). Considering the explanatory power of the coefficient of effect of domestic credit provided by banking sector as a percentage of GDP on inflow of FDI, it could be argued that *BANK* positively influences inflow of FDI (*FDINFL*). In specific, an increase in domestic bank credit has a statistically significant probability of positively influencing the attractiveness of the sampled African countries to inflow of FDI.

The domestic credit to private sector as a percentage of GDP (*PRIVY*) is also statistically significant with positive coefficient. Although, the explanatory power of the variable is weaker relative to equity turnover rate (*TURNOVER*) and domestics bank credit (*BANK*), it is stronger than that of equity market capitalisation (*EQCAP*). In essence, although equity market capitalisation is a statistically significant positive motivator for inflow of FDI, its influence in this regard is weaker compared to *PRIVY*, *EQCAP* and, more importantly, *BANK*.

The fifth capital market variable used in this analysis (*NONFIN*) indicates a positive coefficient but it is statistically insignificant. It could thus be observed that claims on domestic real nonfinancial sector by the Central Bank as a percentage of GDP does not serve as an important pull factor for inflow of FDI into the sampled African countries. Although, the period effect indicates that this variable has become increasingly important in determining the attractiveness of the sampled African countries since 2005 up until 2012, just like the rest of capital market development variables used in this analysis.

The outputs for the regional effects show fairly different stories. In North Africa estimation, the same process is followed as done for the pooled estimation, given that the number of observation for the three-country regional analysis is comparatively higher than in the other regions (96 compared to 33). Although GMM is applied in the Southern, West and East African estimations, orthogonal deviation cannot be used being single-country analyses. To that effect, we applied the heteroskedasticity and autocorrelation consistent (HAC) estimation, using the Bartlett Kernel, Integer Newey-West fixed bandwidth selection procedure.

Study (Baltagi, 2008) suggests that the GMM-time series (HAC) option enhances the robustness of estimations to contemporaneous autocorrelation of residuals in estimation. We report results based on standard errors and covariance weighting matrix estimation. Also, because of the small observation size (33), we restrict the number of dummy variables to one (*INFLATION*) in order to uncover the explanatory power of the capital market variables that are used in the estimation. Inflation is preferable to trade volume (*TRADE*) because it is a by-product of a country's macroeconomic policy and its influence is more immediate as compared to that of *TRADE*. Further, annual percentage change in consumer prices (*INFLATION*) is more of a concern in Africa than *TRADE* and its introduction into the system may change the dynamics of the estimation. This fear is compounded given its possible negative multiplier effects on the quality of life and cost of living on entire domestic economy. The results of the estimation are presented in Table 5.7:

Table 5.7: The Regional-Effect GMM panel Regression for equation 2 (1980-2012) Capital Market Development on Inflow of FDI (Dependent Variable – FDINFL)

	North Africa	Southern Africa	West Africa	East Africa
EQCAP	0.037882 (0.007917)***	0.008716 (0.000985)***	0.138573 (0.023977)***	0.015785 (0.005162)***
INFLATION	0.019910 (0.033456)	-0.054775 (0.009734)***	0.061494 (0.010776)***	0.029470 (0.009206)***
Sargan Test (Prob >chi2)	0.320	0.325	0.904	0.283
TURNOVER	0.091711 (0.015830)***	0.016613 (0.002375)***	0.511797 (0.051686)***	0.140917 (0.037673)***
INFLATION	0.0941) (0.030233)	-0.003779 (0.004693)	0.085063 (0.010970)***	0.038576 (0.006492)***
Sargan Test (Prob >chi2)	0.546	0.523	0.407	0.238
BANK	0.020190 (0.013098)	0.030876 (0.005396)***	0.105441 (0.017018)***	0.017268 (0.004345)***
INFLATION	-0.005716 (0.042182)	-0.095392 (0.024328)***	0.085320 (0.010261)***	0.016261 (0.007666)**
Sargan Test (Prob >chi2)	0.740	0.956	0.194	0.345
PRIVY	0.017184 (0.014558)	0.013781 (0.002270)***	0.085320 (0.019926)***	0.012412 (0.005008)**
INFLATION	-0.009564 (0.043102)	-0.064848 (0.017148)***	0.058766 (0.011677)***	0.017360 (0.011921)
Sargan Test (Prob >chi2)	0.306	0.621	0.119	0.556
NONFIN	-0.041205 (0.028354)	0.277537 (0.144716)*	0.134559 (0.051699)**	-0.006743 (0.017839)
INFLATION	-0.011960 (0.039792)	-0.022801 0.032873	0.031371 (0.023974)***	0.045752 (0.016325)***
Sargan Test (Prob >chi2)	0.379	0.198	0.135	0.423
Observation	96	33	33	33
Number of countries	3	1	1	1
Orthogonal Deviation	Yes	No	No	No
Newey-West (HAC)	No	Yes	Yes	Yes

*Robust standard errors are in parentheses. *** p<0.01, ** p<0.05, * p<0.1. Cross-section weights instrument weighting matrix and Convergence was achieved after 1 weight iterations. Cross-section weights (PCSE) standard errors & covariance (no d.f. correction). Maximum lags of dependent and predetermined variables for use as instruments are limited to 1.*

Before conducting the regression analysis, stepwise regression is conducted in order to determine the explanatory power of the variables used in the estimation. The result of the stepwise regression suggests that trade volume (*TRADE*) weakens the explanatory powers of the model. This finding further reinforces the justification to remove the variable from the estimation. In the North Africa regional analysis, the robust standard errors suggest statistical significance of the model.

In addition, the goodness of fit of the model is ascertained through the Sargan tests that are statistically insignificant in the estimation. We use the total value of all listed shares in a stock market as a percentage of GDP (*EQCAP)* as the independent variable in Table 5.6 while inflow of FDI (*FDINFL*) remains the dependent variable. According to that Table, the total value of all listed shares in a stock market as a percentage of GDP (*EQCAP)* has positive relationship with inflow of FDI (*FDINFL*) in all the four regions in our sample. The coefficient of this variable is stronger is West Africa than in the other three regions. This suggests that although, equity capitalisation is a statistically significant determinant of inflow of FDI to the regions in our sample, its effect is greater in West Africa (0.14) and lesser in Southern Africa (0.00) than in the other regions.

Table 5.6 further suggests that the total value of all traded shares in a stock market exchange (*TURNOVER*) bears positive coefficients with the dependent variable in all the regions. According to the Table, the relationship between the dependent variable (*FDINFL*) and stock turnover rate (*TURNOVER*) is statistically significant for all the four regions. However, stock turnover rate tends to explain inflow of FDI to West Africa more than the other three regions, while its explanatory power is comparatively weakest in explaining inflow of FDI to Southern Africa region. Apart from the statistical importance of the equity market as a determinant of inflow of FDI to the four Africa regions in this estimation, *BANK* also play a significant role in attracting inflow of FDI to the four regions.

As contained in Table 5.7, *BANK* has positive coefficient with the dependent variable and it is statistically significant for the four regions. According to this analysis, the more financial resources provided to the private sector by domestic money banks as a share of GDP, the more FDI flows to the four Africa regions sampled in this study. In specific, the result indicates that *BANK* plays a stronger deterministic role in inflow of FDI to West Africa than in the other three regions, with North Africa showing the least importance of this variable in attracting FDI.

Regarding domestic credit to the private sector as a percentage of GDP (*PRIVY*), this variable bears a positive coefficient in all the regions, but it is only statistically significant in three of the four regions namely Southern, West and East Africa regions. However, its statistical significance is stronger in Southern and West Africa compared to East Africa region. In addition, its explanatory power is stronger in explaining inflow of FDI to West Africa (0.085) and weakest in East Africa (0.012) in this regard.

It must be recalled that claims on domestic real nonfinancial sector by the Central Bank as a share of GDP (*NONFIN*) is statistically insignificant as a determinant of inflow of FDI to Africa in the pooled estimation. In the regional analysis, however, the result is not very different. In specific, *NONFIN* bears negative coefficient with the dependent variable in North and East Africa, but the variable is statistically insignificant in both instances.

In Southern and West Africa regions, the variable bears a positive coefficient and it is statistically significant. The statistical significance is stronger in West Africa (five per cent level) than in Southern Africa (10 per cent). In specific, the explanatory power of *NONFIN* as a pool factor for inflow of FDI to regions in Africa is stronger in Southern Africa than in West Africa. However, the fact that the variable is only significant at 10 per cent error level as compared to five per cent error level in the case of West Africa indicates that we tame the comparative strength of the statistical importance of this variable in Southern Africa with caution.

5.3.5 Impulse response analysis for equation 2

Although, the regression analysis is able to establish some form of relationship between the dependent and independent variables, it is important to establish the speed of adjustment of the dependent variables to the shocks of independent variables. In econometrics, an impulse response function depicts the effect of a one-time shock (more importantly of the dependent variable) to one of the innovations on current and future values of the potential endogenous variables (Pesaran & Yongcheol, 1998; Koop, 2008).

To control for individual effects in all the impulse response estimations in this study, the residuals are orthogonalised while the instrumental variables are restricted using the AIC criteria. This restriction is essential because, in its absence, the long-run reactions of the variables to the impulses hitting the system will not be very clear (Lewis & Reinsel, 1985; Breitung, Br¨uggemann & L¨utkepohl, 2004).

Further, these diagnostic procedures ensure that the instrumental variables are contemporaneously uncorrelated and endogeneity bias is eliminated (Pesaran & Yongcheol, 1998; Breitung, Brüggemann and Lütkepohl, 2004). For equation 2, the impulse response estimation is generated using the nonfactorised one unit innovations. This technique is informed by the nature of FDI data and capital market dataset that are presented in natural numerical or currency units. Further, the point of equilibrium in the speed of adjustment for all the impulse response estimations is set to zero (0), given that (0) is the balancing point between negative and positive impulse responses. The result of the impulse response for equation 2 is presented in Table 5.8. In Table 5.8, all the variables in the estimations are entered at the same time, especially given that the introduction of the variables separately into the estimation yields the same result.

Pooled Estimation

Table 5.8: Impulse Response Estimates for Equation 2 (1980-2012): Pooled data (Response of FDINFL to Capital Market)

Period	BANK	NONFIN	PRIVY	EQCAP	TURNOVER
1	0.000000	0.000000	0.000000	0.000000	0.000000
2	-0.023238	0.031819	0.005451	0.012223	0.085354
3	-0.061279	0.099444	0.027208	0.028655	0.054149
4	-0.076296	0.113791	0.041010	-0.000673	0.076214
5	-0.055945	0.114639	0.023717	-0.008374	0.061940
6	-0.060183	0.107780	0.042321	-0.012313	0.063750
7	-0.070794	0.102943	0.045335	-0.009711	0.081459
8	-0.065645	0.096792	0.046376	-0.008193	0.102405
9	-0.068091	0.097605	0.053718	-0.009917	0.120982
10	-0.074827	0.101259	0.060055	-0.010815	0.134971
Nonfactorized one unit innovation.					

Conventionally, impulse response estimation also helps to ascertain stationarity in the estimated variables. In practice, if the estimated model is not stationary, the asymptotic values will not be displayed since they do not exist. More importantly, if the estimated model is stationary, the impulse responses will asymptote to zero (Pesaran & Yongcheol, 1998; Baltagi, 2008). In Table 5.8, both these cases hold, especially given that the impulse responses asymptotes to zero for all the explanatory variables. It must be pointed out that one standard deviation shock is selected to control for innovation uncertainty when estimating the standard errors of the responses in all the impulse response estimations in this study.

The coefficients of the representation presented in the analysis contained in Table 5.8 may be interpreted as reflecting the responses of FDI inflow to impulses (innovation shocks) of capital market development indicators hitting the system. Looking at individual variables in Table 5.8, the reaction of inflow of FDI to one unit shock in financial resources provided to the private sector by domestic money banks as a share of GDP (*BANK*) begins in the second period and it continues negatively for the duration of the estimation period (nine years).

By implication, the speed of adjustment of the FDI inflow to one unit innovation on *BANK* is very significant and this relationship suggests that inflow of FDI is negatively influenced by *BANK* and the effect is even greater in the fourth and 10th periods (eighth and seventh per cent). However, the reaction of inflow of FDI to one unit innovation shock on *NONFIN* is positive, and the effect is greater in the fourth and the fifth periods (11 per cent). Further, the reaction of inflow of FDI to *PRIVY* is positive and the impulse response is highest in the 10th period (six per cent).

The responses of FDI inflow to the two equity market variables were both negative and positive. For *EQCAP*, the first two periods are positive and the effect is greater (three per cent) in the third year, but the negative effects are very mild and the worst responses are recorded by the sixth and 10th periods (one per cent). For a unit shock on *TURNOVER*, the response of FDI inflow is positive and the highest response is recorded in period ten (13 per cent).

Considering the reaction of FDI inflow to these capital market variables, it is evident that these variables play strong deterministic role on the attractiveness of the sampled African countries to inflow of FDI. More specifically, the reaction of FDI inflow to a unit shock in financial resources provided to the private sector by domestic money banks as a share of GDP (*BANK*) as well as a unit shock on the total value of all traded shares in a stock market exchange (*TURNOVER*) may negatively affect inflow of FDI to the sampled African countries. A cautious approach to any possible innovative shock on these explanatory variables will thus be expedient.

Having looked at the impulse response analysis for the pooled equation, we now look at the regional impulse response analyses, beginning with North African analysis that is presented in Table 5.9.

North Africa

Table 5.9: Impulse Response Estimates for Equation 2 (1980-2012): North Africa Regional data (Response of FDINFL to Capital Market)

Period	BANK	PRIVY	NONFIN	EQCAP	TURNOVER
1	0.000000	0.000000	0.000000	0.000000	0.000000
2	-0.120013	0.016740	-0.048937	-0.011646	0.157187
3	-0.037586	-0.066663	-0.004317	0.067129	-0.105906
4	-0.073039	-0.008365	0.051053	0.070743	-0.135963
5	0.030442	-0.001669	0.109168	-0.048501	-0.031302
6	0.154136	-0.010457	0.113738	-0.081509	-0.014702
7	0.159154	-0.011184	0.064636	0.042008	-0.245407
8	0.142285	-0.004897	0.032068	0.052318	-0.108125
9	0.204046	-0.001206	0.052226	-0.054589	-0.125943
10	0.206750	-0.016160	0.044402	0.014113	-0.098763
Nonfactorized one unit innovation					

According to Table 5.9, inflow of FDI reacts negatively to one unit innovation shock in financial resources provided to the private sector by domestic money banks as a share of GDP (*BANK*) from the second period through to the fourth period, before the reaction changes to a positive one for the rest of the period under consideration. The worst negative effect is recorded in the second period whereas the best positive reaction comes in the tenth period (21 per cent). This implies that although inflow of FDI may react negatively to new banking regulations, the negative effect will be temporary and the positive effects on inflow of FDI will be greater at a later stage.

Looking at the reaction of inflow of FDI to one unit innovation shock on domestic credit to the private sector as a percentage of GDP (*PRIVY*), inflow of FDI reacts positively at two per cent to the new development, but the reaction becomes negative from the third period and it does not recover for the entire period considered in this study. The highest negative reaction is recorded in the third period (seven per cent), and the reaction becomes insignificant at barely one per cent for the remaining period considered.

Further, the reaction of FDI inflow to one unit shock on the claims on domestic real nonfinancial sector by the Central Bank as a share of GDP (*NONFIN*) is significantly high in the second period (about 5 per cent), but it becomes positive in the fourth period and that positive reaction continues throughout the periods covered, the highest being in the fifth and sixth periods (11 per cent). As for one unit innovation shock on the two equity market indicators, the reaction of FDI inflow is mixed.

The period immediately after the innovation shock on the total value of all listed shares in a stock market as a percentage of GDP (*EQCAP)* experienced a negative reaction of about one per cent on inflow of FDI. FDI inflow later recovered to gain about seven per cent improvement in the third and fourth periods, before reacting negatively again at about eight per cent in the sixth period. The negative trend continues for the rest of the period considered, albeit at a reducing response rate.

Looking at the reaction of FDI inflow to one unit innovation shock on the total value of all traded shares in a stock market exchange (*TURNOVER*), it is observed that inflow of FDI reacts spontaneously and positively too by about 16 per cent immediately after the innovation shock, but the reaction becomes negative immediately after the second period (11 per cent), and the negative trend continues for the rest of the period covered. The negative effect reaches its peak in the seventh period (25 per cent).

The general observation from this analysis is that all these explanatory variables play statistically significant deterministic roles on inflow of FDI to North Africa. While the best possible effect is recorded through innovation shock on *BANK*, the reaction of inflow of FDI to innovation shock on *TURNOVER* is negative and the speed of adjustment to the shock is very rapid.

Southern Africa

Table 5.10: Impulse Response Estimates for Equation 2 (1980-2012): Southern Africa Regional data (Response of FDINFL to Capital Market)

Period	BANK	PRIVY	NONFIN	EQCAP	TURNOVER
1	0.000000	0.000000	0.000000	0.000000	0.000000
2	-0.379246	0.112536	1.329608	-0.043095	-0.051244
3	-0.264069	0.088883	-0.095560	0.024306	0.044498
4	0.034823	-0.008505	-1.636286	0.026825	0.099046
5	-0.355251	0.084069	0.359086	-0.012698	0.076905
6	-0.461435	0.107518	0.151818	-0.000619	0.102086
7	-0.171374	0.069778	-1.181646	0.028718	0.158104
8	-0.235495	0.072567	-0.874583	-0.002308	0.183896
9	-0.486622	0.128862	-0.088230	-0.004832	0.185199
10	-0.374700	0.121273	-1.180467	0.015006	0.236112
Nonfactorized one unit innovation					

The results of the impulse response presented in Table 5.10 for Southern Africa indicates that the reactions of FDI inflow to the capital market variables are mixed. To begin with, inflow of FDI reacts spontaneously in a negative way to one unit innovation shock on financial resources provided to the private sector by domestic money banks as a share of GDP (*BANK*) by about 38 per cent in the second period. The negative trend continues throughout the period under consideration and it reaches its peak in the ninth period (49 per cent). This result hints that Southern Africa region would not be attractive to inflow of FDI if the banking sector experiences instability.

In addition, inflow of FDI reacts more positively than negatively to one unit innovation shock on domestic credit to the private sector as a percentage of GDP (*PRIVY*). In specific, except for the fourth period that experiences less than one per cent negative reaction, inflow of FDI reacts positively to one unit innovation shock on *PRIVY* throughout the period covered in the study. For instance, inflow of FDI reacts positively to one unit innovation shock on *PRIVY* in the second period by more than 11 per cent, and the positive trend reaches a peak of 13 per cent in the ninth period before reducing to 12 per cent in the 10th period. One may argue from the analysis that the advantage of innovation shock on *PRIVY* would be meaningfully important to make Southern Africa more attractive to inflow of FDI.

Looking at the reaction of inflow of FDI to one unit innovation shock on the claims on domestic real nonfinancial sector by the Central Bank as a share of GDP (*NONFIN*), it is interesting to note that inflow of FDI reacts positively and spontaneously too (second period), to the innovation shock by more than 100 per cent. However, the positive reaction does not last for long. The reaction becomes negative in the third period, and the negative reaction is explosive in the fourth period, before receding to moderate positive reactions in the fifth and sixth periods. The negative reactions are explosive again in the seventh and 10th periods. Even the negative reaction during the eighth period is more than 87 per cent. One can thus argue that inflow of FDI will generally react negatively to innovation shock on the claims on domestic real nonfinancial sector by the Central Bank as a share of GDP (*NONFIN*), even though the innovation shock may look expedient at the beginning.

Looking at the reaction of FDI inflow to one unit innovation shock on the two equity capital market variables, it is observed that FDI inflow reacts negatively by about four per cent to one unit innovation shock on the total value of all listed shares in a stock market as a percentage of GDP (*EQCAP).* The reaction turns positive in the third (2 per cent) and fourth (3 per cent) periods before changing to negative by about one per cent in the fifth period. The seventh and 10th periods also experience positive reactions of about three and two per cent respectively. One may thus observe that although the speed of adjustment of FDI inflow to one unit innovation shock on *EQCAP* is high, there is a high tendency that Southern Africa region will be more attractive to FDI inflow through this form of innovation shock.

The reaction of inflow of FDI to one unit innovation shock on the last capital market variable (and the second equity capital market variable – *TURNOVER*) hints that this form of innovation shock is very desirable in order for Southern Africa to be more attractive to inflow of FDI. For instance, inflow of FDI reacts immediately but negatively by about five per cent to this innovation in the second period, but the reaction becomes positive thereafter, reaching a peak of 24 per cent in the 10th period. It can therefore be proposed that inflow of FDI to Southern Africa region will react more positively to one unit innovation shock on the equity market (*EQCAP* and *TURNOVER*) than to debt market, especially *BANK* and *NONFIN*, whose effects are conspicuously negative.

West Africa

Table 5.11: Impulse Response Estimates for Equation 2 (1980-2012): West Africa Regional data (Response of FDINFL to Capital Market)

Period	BANK	PRIVY	NONFIN	EQCAP	TURNOVER
1	0.000000	0.000000	0.000000	0.000000	0.000000
2	-0.173325	-0.028280	0.103024	0.078119	0.011360
3	-1.639017	0.642010	0.412394	0.703195	-1.963460
4	-1.332007	0.720480	0.567654	-0.387053	0.629666
5	0.164986	-0.364442	0.139206	-1.098547	5.110116
6	0.198699	-0.161041	-0.020251	0.447027	-2.504201
7	-1.106491	0.684175	0.195488	0.674209	-6.389053
8	-0.776256	0.467498	0.340755	-1.143278	4.604588
9	-0.478799	0.329061	0.395747	-1.296325	10.17264
10	0.468987	-0.096942	0.074218	0.098317	-0.732861
Nonfactorized one unit innovation					

According to Table 5.11, inflow of FDI responds to one unit innovation shock on the financial resources provided to the private sector by domestic money banks as a share of GDP (*BANK*) negatively in most of the periods and explosive in three of the instances. In specific, the reaction of inflow of FDI in the first period is about 17 per cent, before the negative reaction becomes explosive in third and fourth periods. The positive recovery in the fifth and sixth periods is barely 16 and 20 per cent respectively before the negative reaction sets in again. After the explosive negative reaction in the seventh period, the speed of adjustment back to the point of equilibrium becomes steady and a positive 47 per cent response is recorded in the tenth period.

Looking at the reaction of FDI inflow to one unit innovation shock on the domestic credit to the private sector as a percentage of GDP (*PRIVY*), it is observed that inflow of FDI reacts immediately in the second period by about three per cent and it quickly recover back to positive territory by the third and fourth periods (64 and 72 per cent respectively). The reaction becomes negative again in the fifth and sixth periods (36 and 16 per cent respectively) before turning positive in the seventh, eighth and ninth periods (68, 47 and 32 per cent respectively). However, about 10 per cent negative reaction is recorded in the 10th period. The observation from these results is that inflow of FDI to West Africa will generally react more positively than negatively to innovation shock on *PRIVY*, and the speed of adjustment back to equilibrium is rapid.

Looking at the reaction of FDI inflow to one unit innovation shock on the claims on domestic real nonfinancial sector by the Central Bank as a share of GDP (*NONFIN*), we observe that the reaction is generally positive, except for the negative reaction of about two per cent recorded in the sixth period. In specific, the positive reaction of inflow of FDI to one unit innovation shock on *NONFIN* in the second, third and fourth periods are 10, 41 and 57 per cent respectively. The positive trend continues and reaches 40 per cent in the ninth period, before regressing to seven per cent in the 10th period. Here again, it can be proposed that the claims on domestic real nonfinancial sector by the Central Bank as a share of GDP (*NONFIN*) is an important determinant of inflow of FDI to West Africa and the speed of adjustment of FDI inflow to innovative shock on this variable is high.

Regarding the reaction of inflow of FDI to one unit innovation shock on the total value of all listed shares in a stock market as a percentage of GDP (*EQCAP)*, it is observed that inflow of FDI reacts positively in more instances to the innovative shock. However, in three of the four instances where inflow of FDI reacts negatively, the reactions are explosive. While inflow of FDI begins its positive reaction in the second period at about eight per cent, the reaction gains momentum to more than 70 per cent in the third period before a negative swing of about 39 per cent in the fourth period and an explosive negative reaction in the fifth period.

Although the positive recovery of about 45 and 67 per cent improvement in the sixth and seventh periods are noticeable, the reaction becomes negatively explosive in the eighth and ninth periods and the effects of these negative reactions overshadows the mere 10 per cent positive recovery in the 10th period. It could thus be suggested that although inflow of FDI will generally react positively to innovation shocks on the total value of all listed shares in a stock market as a percentage of GDP (*EQCAP)* in West Africa, the impact of the negative reactions will ultimately outweigh the positive reactions.

The reaction of FDI inflow to one unit innovation shock on the total value of all traded shares in a stock market exchange (*TURNOVER*) is mixed, with a chaotic speed of adjustment. While the reaction is barely one per cent at a positive territory in the second period, it becomes negatively explosive in the third period before turning positive (63 per cent) in the fourth period. The positive reaction becomes explosive in the fifth period, but the negative reaction that follows in the sixth and seventh periods are high.

Although, the reaction of FDI inflow to *TURNOVER* recovered positively well in the eighth and more importantly in the ninth periods, but the negative reaction in period 10 is also noticeable (73 per cent). In the case of West Africa, the general argument can be advanced that inflow of FDI responds to innovation shocks on all the capital market variables in the estimation - more negatively to *BANK* and more positively to *TURNOVER*, suggesting that although these variables are important determinants of the attractiveness of West Africa to inflow of FDI, the effects of *BANK* and *TURNOVER* are higher.

East Africa

Table 5.12: Impulse Response Estimates for Equation 2 (1980-2012): East Africa Regional data (Response of FDINFL to Capital Market)

Period	BANK	PRIVY	NONFIN	EQCAP	TURNOVER
1	0.000000	0.000000	0.000000	0.000000	0.000000
2	0.037311	0.045209	-0.166868	0.063837	0.749364
3	-0.088554	0.219120	-0.049888	0.023907	0.002911
4	0.029449	0.189683	-0.021435	0.020144	0.077213
5	0.103669	0.168789	-0.156871	0.118279	-0.791201
6	0.176833	-0.091925	-0.000366	0.061693	-0.548381
7	0.150307	-0.188475	0.169472	-0.082269	0.463221
8	-0.065563	-0.039933	0.115954	-0.128937	1.914360
9	-0.255529	0.381128	-0.121139	-0.023583	1.936927
10	-0.214098	0.726336	-0.360977	0.175277	0.006842
Nonfactorized one unit innovation					

From Table 5.12, inflow of FDI responds to one unit innovation shock on capital market variables hitting the system both negatively and positively. In specific, the reaction of inflow of *FDINFL* to the financial resources provided to the private sector by domestic money banks as a share of GDP (*BANK*) is positive but weak in the second period (about four per cent). The reaction becomes negative in the third period by nine per cent before maintaining a steady positive reaction of three, 10, 18 and 15 per cent during fourth, fifth, sixth and seventh periods respectively. However, the reaction enters a negative territory in the eighth period and it never recovered till the last period in the study. A general observation from these results is that inflow of FDI will react more negatively (26 per cent) than positively (18 per cent to innovative shocks on *BANK*.

Further, inflow of FDI reacts positively by four per cent during the second period to one unit innovation shock on the domestic credit to the private sector as a percentage of GDP (*PRIVY*). During the third, fourth and fifth periods, this positive reaction stands at 22, 19 and 17 per cent respectively. Thereafter, although the variable reacts negatively by nine, 19 and four per cent during the sixth, seventh and eight periods, the positive reactions that follows between the ninth (38 per cent) and 10th (73 per cent) periods are more significant. This lends credence to the statistical significance of *PRIVY* as an important capital market determinant of the attractiveness of East Africa to inflow of FDI.

Looking at the reaction of FDI inflow to one unit innovation shock on the claims on domestic real nonfinancial sector by the Central Bank as a share of GDP (*NONFIN*), we observe that the reaction is generally negative, except for the positive reactions of 17 and 12 per cent recorded in the seventh and eighth periods. In the second period, inflow of FDI reacts negatively by 17 per cent to one unit innovation shock on *NONFIN*. The negative reaction continues in the third (four per cent), fourth (two per cent) and fifth (16 per cent) periods. By the ninth and 10th periods, the negative reactions are 12 and 36 per cent respectively. It can thus be implied that the negative effects of innovation shocks on *NONFIN* will negatively affect the attractiveness of East Africa to inflow of FDI.

Regarding the reaction of inflow of FDI to one unit innovation shock on the total value of all listed shares in a stock market as a percentage of GDP (*EQCAP),* it is observed that inflow of FDI reacts positively in more instances to the innovations shock than negatively. In specific, the positive reaction starts in the second period (six per cent), increases to 12 per cent in the fifth period before changing to negative again in the seventh (eight per cent), eighth (13 per cent) and ninth periods (two per cent). The reaction of FDI inflow to one unit innovation shock on *EQCAP* ends in the 10th period in a positive territory (18 per cent). These results indicate that inflow of FDI will react more positively than negatively to innovation shock on *EQCAP,* and that *EQCAP* is an important determinant of the attractiveness of East Africa to inflow of FDI.

The reaction of FDI inflow to one unit innovation shock on the total value of all traded shares in a stock market exchange (*TURNOVER*) is largely very positive, except for the two negative reactions recorded in fifth (79 per cent) and sixth (55 per cent) periods. In the second period, the reaction is strong at 75 per cent, before becoming mild in the fourth period (eight per cent). The seventh period experiences a moderate reaction of 46 per cent, but the positive reaction becomes explosive in the eighth and ninth periods. Although, the 10th period is positive, its effect is very mild (barely one per cent). In all instances, it can be argued that innovation shocks on the capital market variables will improve the attractiveness of East Africa to inflow of FDI. It is also observed that all the capital market variables are statistically significant as determinants of inflow of FDI to the East African region; while innovation shocks on *BANK* will generally result in more negative effects on the attractiveness of the region to inflow of FDI, such a shock would yield more positive effects in the case of *TURNOVER*.

5.3.6 Cointegration test for equation 2

After the impulse response analysis, attention will now be directed to the causality test. However, causality test cannot be performed until we are able to establish long-run cointegration of the variables under consideration. As such, cointegration regressions are conducted. In the cointegration estimation, we specify the deterministic trend components through the trend specification. We estimate the differenced regressors equations (given the I(1) order of integration as informed by the unit root test presented earlier). With the basic assumption of nonstationarity (Pedroni, 2000; Kao & Chiang, 2000), we apply the pooled (weighted) cointegration regression estimation. This is done in order to account for heterogeneity by using cross-section specific estimates of the long-run covariances in reweighting the data prior to computing the pooled fully-modified ordinary least squares (FMOLS).

According to Pedroni (2000), as well as Kao and Chiang (2000), first-stage estimates of the long-run and regressors equations are used to obtain the residuals, and estimate the individual long-run variances thereby enhancing the stability of the result. These authors further observe that the FMOLS is particularly useful in situations where the long-run variances differ across cross-sections in heterogeneous cointegrated panels. Further, we estimate the individual and long-run average covariance matrices using a (non-prewhitened) kernel approach with a Bartlett Kernel function and Newey-West fixed bandwidth.

For robustness check, we applied the grouped-mean estimator technique to accommodate potential presence of heterogeneity in the cointegrating relationships. According to Pedroni (2001; 2004), this technique offers the desirable property of providing consistent estimates of the sample mean of the cointegrating vectors, in contrast to the pooled and weighted estimators. However, the results are not statistically different from the one generated through the base estimation technique (FMOLS). We therefore report the results based on the FMOLS given its specific relevance to this study (cross-section and period effects). To limit the lag length because of the small sample size, the Schwarz criterion is applied to select the number of lags required in each case. The result of the cointegration test is presented in Table 5.13.

Table 5.13: Cointegration Regression for equation 2 (1980-2012)
Capital Market Development on Inflow of FDI (Dependent Variable – FDINFL)

	I	II	III	IV	V
EQCAP	0.019565 (0.00542)***	0.042582 (0.010447)***	0.012613 (0.003985)***	0.213119 (0.052026)***	0.012021 (0.004821)***
TURNOVER	0.026920 (0.00721)***	0.093478 (0.02315)***	0.016497 (0.004205)***	0.783384 (0.068903)*	0.100553 (0.039901)***
BANK	0.044055 (3.12088)***	0.044179 (0.019098)***	0.072785 (0.014252)***	-0.008565 (0.08999)*	0.012583 (0.019205)*
PRIVY	0.024567 (0.009499)**	0.035536 (0.022182)*	0.020635 (0.004458)***	-0.008367 (0.041728)*	0.016333 (0.027391)*
NONFIN	-0.015936 (0.02443)**	-0.031397 (0.034619)*	-0.356084 (0.068199)*	0.030650 (0.052832)*	-0.058497 (0.018455)***
Observation	192	96	32	32	32
Number of countries	6	3	1	1	1
Pooled Estimation	Yes	No	No	No	No

*Robust standard errors are in parentheses. *** p<0.01, ** p<0.05, * p<0.1. Method: Panel Fully Modified Ordinary Least Squares (FMOLS). First-stage residuals use heterogeneous long-run coefficients. Long-run covariance estimates (Prewhitening with lags = 1, Bartlett Kernel, Integer Newey-West fixed bandwidth).*

In Table 5.13, column I represents the pooled estimate for the six African countries in our sample. Columns II, III, IV and V represent the North, Southern, West and East African regions as sampled. We report results based on robust standard errors. The results of the cointegration tests for the pooled sampled regions suggest that we reject the Null of no cointegration.

Although, this decision criteria is weaker for domestic credit to private sector as a percentage of GDP (*PRIVY*) and claims on domestic real nonfinancial sector by the Central Bank as a share of GDP (*NONFIN*), but the two variables are still statistically significant at 5 per cent error levels. In the regional analysis, cointegration between the dependent and independent variables are though statistically significant, but only at 10 per cent for four of the five capital market variables under consideration.

In the pooled cointegration test, *EQCAP*, *TURNOVER* and *BANK* share statistically significant relationships with the dependent variable at 99 per cent confidence levels, while the cointegration between the dependent variable and the other two capital market variables (*PRIVY* and *NONFIN*) are statistically significant at 5 per cent error levels. This suggests that all the variables used in the pooled equation share long run relationships with the dependent variable.

For North Africa, the two equity market variables along with *BANK* are statistically significant at 99 per cent confidence levels, while the *PRIVY* and *NONFIN* are statistically significant at 10 per cent error levels respectively. The situation for Southern Africa is a bit different, in that four of the five capital market variables are in long run equilibrium with the dependent variable, while the fifth variable (*NONFIN*) is only statistically significant at 10 per cent error level.

In West Africa, only equity capitalisation (*EQCAP*) is statistically significant at 99 per cent confidence level, and the remaining four capital market variables only show cointegration with the dependent variable at 10 per cent error levels. In the case of East Africa, three of the five capital market variables (*EQCAP*, *TURNOVER*, and *NONFIN*) are statistically significant at 99 per cent confidence levels, while the remaining two variables (*BANK* and *PRIVY)* are only statistically significant at 10 per cent error levels. In line with the regional cointegration analysis, argument can be advanced that there are long run equilibrium relationships among the variables used in equation 2. Further observation suggests that the result contained in Table 5.13 is in line with the GMM result presented in Table 5.7.

5.3.7 Granger causality test for equation 2

After the cointegration test, attention will now be directed to the causality test, to establish the direction of causality in the relationship established in the regression analysis. In this study, Granger causality test will be used. The Granger Causality tests are generally used to examine whether there exists causal relationship between the macroeconomic variables under study. To test for causality, the null hypothesis of no causality has to be rejected, as determined by the *p-value* of the series. More specifically, we reject the Null in the rows for *p-values* <= 0.05. This Granger test is implemented by running the following regression:

$$\Delta y_t = \mu_1 + \sum_{i=1}^{p} \beta_i \, \Delta \mathrm{y}_{\mathrm{t}-1} + \sum_{i=1}^{p} \gamma_{\mathrm{i}} \, \Delta X \mathrm{t}_{-1} + \varepsilon_{1t} \qquad (13)$$

The statistical significance of the null hypothesis ($H_{0:}\ \gamma_1 = \gamma_2 = ...\gamma_p = 0$) is tested against the alternative hypothesis:

$$\Delta \mathrm{Y}_t = \mu_2 + \sum_{i=1}^{p} \beta_1 \Delta \mathrm{Y}_{t-i} + \sum_{i=1}^{p} \beta_2 \Delta X_{t-i} + \varepsilon_{2t} \qquad (14)$$

Alternative hypothesis decision: ($H_{0:}\ \gamma_1 > \gamma_2 ...\gamma_p > 0$);

Where Δ is the difference operator, Y and X are the variables being tested for causal relationship, $\mathcal{E}_{1t}$ and $\mathcal{E}_{2t}$ are constant term, β_1 and β_2 are the estimate coefficients, and p is the lag length of the model.

Statistically, Granger causality from one variable (*y*) to the coincident variable (*x*) is established if the null hypothesis of the asymptotic chi-square (χ^2) test is rejected. A significant test statistic indicates that the *x* variable has predictive value for forecasting the corresponding movements in *y* in the series. Although, one of the major shortcomings of the Granger causality test is that it is based on the asymptotic theory, which prescribes the stationarity of variables (Granger, 1988), this assumption is satisfied in this study as indicated in Table 5.5 (unit root test). Further, in all the causality tests, the main results are highlighted to show clearly the variables that are statistically significant.

The causal relationships among the variables tested are indicated in red in Table 5.14, which contains only the variables of interest (capital market development and inflow of FDI variables):

Table 5.14: Granger Causality Test for Equation 2 (1980-2012): Pooled Data (lag of 2)

Direction of causality →		Statistical significance
FDINFL	EQCAP	(0.38128)
EQCAP	FDINFL	(3.37066)*
FDINFL	TURNOVER	(0.3195)
TURNOVER	FDINFL	(0.1413)*
FDINFL	BANK	(1.10540)
BANK	FDINFL	(0.44435)*
FDINFL	PRIVY	(1.02365)
PRIVY	FDINFL	(0.05814)
FDINFL	NONFIN	(1.05504)
NONFIN	FDINFL	(1.26532)
Observation		186
Number of countries		6

*F-statistics are in parentheses. *** p<0.01, ** p<0.05, * p<0.1.*

From Table 5.14, in three of the possible ten instances, we do not reject the null that capital market variables do not homogeneously cause inflow of FDI. From Table 5.14, there are only three causal relationships in the analysis, and they are unidirectional. In specific, causality runs from equity capitalisation to inflow of FDI. Causality also runs from equity turnover rate to inflow of FDI and the last causality runs from the financial resources provided to the private sector by domestic money banks as a share of GDP to inflow of FDI.

In all the three instances, the causal relationship is weak (10 per cent error level). Despite the weak statistical significance of these causal relationships, argument can still be advanced that three of the five capital market variables used in this analysis motivates inflow of FDI to the sampled African countries. As done in the previous analysis, we also investigate the regional effects on causality. The results of the causality test are presented in Table 5.15:

Table 5.15: Granger Causality Test for Equation 2 (1980-2012)
Regional analysis (lag of 2)

Direction of causality		North Africa	Southern Africa	West Africa	East Africa
⟶		Statistical significance			
FDINFL	EQCAP	(2.60744)*	(2.01603)	(0.20825)	(1.81227)
EQCAP	FDINFL	(2.84562)**	(4.56259)**	(0.13950)	(4.08595)**
FDINFL	TURNOVER	(0.02438)	(0.32466)	(0.06498)	(1.20780)
TURNOVER	FDINFL	(2.42803)**	(4.18826)**	(0.38657)	(4.16741)**
FDINFL	BANK	(0.14113)	(2.52314)*	(0.12558)	(1.44696)
BANK	FDINFL	(4.34323)**	(5.47091)**	(0.30500)	(1.05555)
FDINFL	PRIVY	(0.10304)	(2.16034)	(0.09455)	(1.55387)
PRIVY	FDINFL	(1.34425)	(7.21368)***	(0.05211)	(1.24453)
FDINFL	NONFIN	(1.04957)	(0.97369)	(1.63221)	(1.71617)
NONFIN	FDINFL	(0.25359)	(0.70366)	(0.55204)	(0.30812)
Observation		93	31	31	31
Number of countries		3	1	1	1

*F-statistics are in parentheses. *** p<0.01, ** p<0.05, * p<0.1.*

North Africa:

From Table 5.15, the causal relationship between the dependent variable (inflow of FDI – *FDINFL*) and the five capital market variables is fairly different from the relationships obtained for the pooled African estimation. In the North Africa regional analysis, there is bidirectional causality between inflow of FDI and equity capitalisation in the North Africa region. However, the causality is stronger from equity capitalisation to FDI than the other way round. This may be interpreted that equity capitalisation leads to inflow of FDI and increases in inflow of FDI may at a later stage influence equity capitalisation. Although, bidirectional causality may signal some degree of endogeneity, it must be recalled that we controlled for endogeneity in the regression analysis, thereby allaying this fear.

Further analysis of Table 5.15 indicates that there is a direct causal relationship from stock turnover rate to inflow of FDI, suggesting that stock turnover rate does positively influence inflow of FDI to the sampled North Africa region. The same level of causal relationship also exists between the financial resources provided to the private sector by domestic money banks as a share of GDP (*BANK*) and inflow of FDI. This finding buttresses the hypothesis raised by Caves (2007).

Southern Africa:

In the Southern Africa causality results, there is a bidirectional causal relationship between the financial resources provided to the private sector by domestic money banks as a share of GDP (*BANK*) and the dependent variable (inflow of FDI). By implication, causality flows stronger from *BANK* to *FDINFL* than the other way round which may suggest that an increase in *BANK* will culminate in an increase in *FDINFL*.

In the long-run, increases in inflow of FDI may precipitate an increase in available credit to domestic private banks, which may be channelled to the private sector to rekindle the cyclical effect of capital regeneration. However, the remaining capital market variables (except for claims on domestic real nonfinancial sector by the Central Bank as a share of GDP - *NONFIN*) indicate unidirectional causal relationship with the dependent variable. The causality flows from these capital market variables to inflow of FDI at 5 per cent levels for equity capitalisation and stock turnover rate, and one per cent for domestic credit to private sector as a share of GDP (*PRIVY*).

As informed by the results in Table 5.15, all the capital market variables (except for *NIONFIN*) contributes to the attractiveness of Southern Africa to inflow of FDI. This result corroborates the findings in Table 5.7 where *NONFIN* is found to be less significant as a determinant of inflow of FDI to Southern Africa. It could thus be suggested that further development of the southern Africa capital market will enhance the attractiveness of the region to inflow of FDI.

West Africa:

The West Africa Granger causality analysis indicates that none of the capital market variables used in this analysis have any causal effect on the dependent variable and vice versa. However, this may not be interpreted as suggesting that capital market does not influence inflow of FDI to West Africa region, especially given the dominant GMM result in Table 5.7.

East Africa:

The result of Granger causality test for East Africa is unique. In the East Africa analysis, only the stock market variables (equity capitalisation – *EQCAP* and stock turnover rate – *TURNOVER*) indicate unidirectional causal relationship with the dependent variable (*FDINFL*). In specific, causality between equity capitalisation and inflow of FDI flows strongly from equity capitalisation to inflow of FDI. This suggests that equity capitalisation does serve as a pull factor for inflow of FDI to the East Africa region. The same relationship exists between the equity turnover and inflow of FDI. By implication, this form of relationship suggests that stock turnover rates do attract inflow of FDI to East Africa region.

In all the regional analyses, claims on domestic real nonfinancial sector by the Central Bank as a share of GDP (*NONFIN*) does not Granger cause inflow of FDI. This finding is not very different from the findings contained in the regression analysis (Table 5.7) where *NONFIN* is only statistically significant in Southern Africa (10 per cent) and in West Africa (5 per cent).

Having completed a series of analyses that are deemed necessary to test the possible impact of capital market development on inflow of FDI within the limit of this study, we now proceed to Part B of the analysis. The next set of equations (equations 3 to 7) estimates the possible relationship between institutional framework and capital market development. Given that the role of institutional adequacy on capital market development (especially in Africa) is scarce in literature, this forms a part of the contribution of this study to the body of existing knowledge.

5.4 Part B: Model specification for institutional framework and capital market development

As done in Part A, the analyses of equations in this Part will begin with descriptive statistics. However, a single descriptive statistical table will be presented for the variables used in the Part. Table 5.16 contains the descriptive statistics for the pooled data, while Tables A2-1 to A2-4 contains the descriptive statistics for the four regions considered in this study. The argument below lays credence to the variables contained in Table 5.16.

5.4.1 Descriptive statistics for equations 3 to 7

To begin with, we conduct the descriptive statistics to establish the kind of relationship that exists between the variables used in estimating the models specified in this Part of the study. However, given that the explanatory variables used in Parts B and C are the same, we include the dependent variable for Part C in order to avoid duplicating the descriptive statistic in Part C. The result of the descriptive analysis is presented in Table 5.16.

Table 5.16: Descriptive Statistics for Equations 3 to 7 (1980-2012): pooled data

	LAWRULE	POLITY	INFLATION	QLEGAL	CORRUPTION
Mean	-0.374104	-1.969697	10.39535	-0.206048	3.399497
Median	-0.120418	-5.000000	8.042283	-0.201023	3.300000
Maximum	0.240164	9.000000	83.62289	0.778381	5.300000
Minimum	-1.521641	-9.000000	-5.550901	-1.322868	1.000000
Std. Dev.	0.559494	5.921576	10.68197	0.426414	1.245107
Skewness	-0.692909	0.798545	3.098005	-0.037600	-0.022748
Kurtosis	1.753156	2.043955	16.95526	3.059373	1.705352
Jarque-Bera	28.66966	28.58391	1923.403	0.075736	13.84501
Probability	0.000001	0.000001	0.000000	0.962840	0.000985
Observations	198	198	198	198	198
CQS (BANK)	0.6317***	0.2384***	-0.3831***	0.6927***	0.7831***
CQS (PRIVY)	0.5255***	0.4843***	-0.2377***	0.7774***	0.7070***
CQS (NONFIN)	0.1470***	-0.372***	0.2306***	-0.3366***	-0.3553***
CQS (EQCAP)	0.3575***	0.6517***	-0.1848†	0.6903***	0.4498***
CQS (TURNOVER)	0.2692***	0.4936***	-0.1068†	0.4913***	0.2931***
CQS (FDINFL)	-0.1059***	-0.1842††	0.1678***	-0.2779***	-0.1115***

Std. Dev (Standard deviation; CQS* (Correlogram-Q-statistics) test statistic for autocorrelation up to the lag of 16. Result shows no autocorrelation with the dependent variable up to the lag of 16.Correlations are asymptotically consistent approximations.*
****Denotes statistical significance at 1% level*
† No autocorrelation up to lag of 10
†† No autocorrelation up to lag of 8

The descriptive statistics contained in Table 5.16 suggests that Nigeria has the worst rule of law (*LAWRULE*) rating out of the sampled countries and it was recorded in 2003 (-1.5216), while Morocco's rule of law is rated the best in our sample and it occurred in 1998 (0.2402). The descriptive statistics for combined polity (*POLITY*) indicates that Tunisia in 1980 was considered the worst country on polity ratings while South Africa was rated the best throughout the period under consideration. Further, Nigeria experienced the highest-sample level of deflation in 1998 (-5.5509), as opposed to the highest sample-inflation level experienced by the same country in 1992 (83.6229).

Still on the descriptive statistics contained in Table 5.16, Nigeria recorded the sample-worst quality of legal framework (*QLEGAL*) in 2004 (-1.32287) as opposed to South Africa's sample-best rating in 2003 (0.7784). Corruption is largely seen as the major deterrent to capital market development in Africa (Hailu, 2010) and the result of the descriptive statistics is in the affirmation of this postulation. For example, the best corruption ranking in our sample was recorded by Tunisia in 2001 (5.3).

This suggests that Tunisia in 2001 has a score of 53 out of 100 on a scale from 0 (highly corrupt) to 100 (very clean) (Transparency International, 2013). Although two-thirds of the 177 countries surveyed in 2013 scored below 50 (Transparency International, 2013), the fact that the best-ranked African country (and one of the six-largest economies in Africa) was ranked this low indicates a serious, corruption problem on the continent. To further buttress the severity of corruption as indicated by the descriptive statistics, Nigeria was ranked the lowest on corruption index in 2001 (1, i.e. 10 out of 100).

The statistics for the skewness and the kurtosis do fairly well support the assumption of normal distribution. In addition, the fact that our sample size is small (198) couple with the statistically significant *p-value* (0.000, except for *QLEGAL*) favours our non-rejection of the null hypothesis of normal distribution at one per cent.

As done in Part A, we also conduct the regional descriptive statistics in this Part. The results of the regional descriptive statistics are presented in Appendix A2-1 to A2-4. According to the regional descriptive statistics, North Africa region is ranked comparative the best in the rule of law (*LAWRULE*) (0.24) and West Africa is ranked the worst (-1.1). Considering the combined polity score (*POLITY*), Southern Africa is ranked the best (9) while North Africa records the least rank.

Further, inflation is a general problem in the sampled region. However, the problem is seen to be a major concern in West Africa than in the other regions. Still on the descriptive statistics, Southern Africa is considered to be the best out of the four regions in terms of quality of legal framework, and West Africa is again, the least performer in this regard. In conclusion, corruption is highest in North Africa than the other three regions in our sample while East and West Africa are considered better-ranked in this regard.

5.4.2 Vector error correction estimates for equations 3 to 7

Having ensured that the variables are normally distributed, it is considered important to determine the error terms for equations 3 to 7. The vector error correction technique is also adopted for these set of equations as done for equation 2. The results of the vector error correction tests are presented in the tables that follow:

The "pooled" VECM estimations for equations 3 to 7 is presented in Tables 5.17 and 5.18 below. The same set of diagnostics and restrictions applied to the estimation presented in Table 5.3 and 5.4 are also applied in Tables 5.17 to 5.21. In Table 5.17, sections A, B, C, D and E represents equations 3, 4, 5, 6 and 7 respectively.

Table 5.17: Vector Error Correction Estimates for Equations 3 to 7 (1980-2012): Pooled data

	Error correction estimation results					
SECTION A	**BANK**	LAWRULE	POLITY	INFLATION	QLEGAL	CORRUPTION
Lag 1	1.0000000	-1.408036 (24.0637) [-0.05851]	-2.502282 (1.41874) [-1.76374]*	3.864851 (0.81604) [4.73610]***	37.96712 (29.6011) [1.28263]	-8.512879 (9.89673) [-6.86017]***
Differenced	-0.008178 (0.00785) [-1.04171]	-0.000100 (0.00020) [-0.50881]	0.004098 (0.00544) [0.75389]	-0.096986 (0.02327) [-4.16721]***	-0.000285 (0.00025) [-1.14515]	0.0006605 (0.00054) [0.08570]
Differenced in lag 1	0.286817 (0.09110) [3.14824]***	2.349478 (3.24567) [0.72388]	0.117943 (0.11011) [1.07114]	0.033196 (0.03058) [1.08548]	-1.474962 (2.53481) [-0.58188]	0.723358 (1.17171) [0.61735]
Differenced in lag 2	-0.097194 (0.09872) [-0.98457]	2.184468 (3.40320) [0.64189]	-0.055913 (0.10911) [-0.51243]	0.024604 (0.02601) [0.94592]	-1.855886 (2.50937) [-0.73958]	0.917290 (1.20206) [0.76310]
SECTION B	**PRIVY**	LAWRULE	POLITY	INFLATION	QLEGAL	CORRUPTION
Lag 1	1.000000	-49.69867 (28.3618) [-1.75231]	-7.867040 (1.67444) [-4.69832]***	-0.671377 (0.95516) [-0.70290]	77.09678 (35.1307) [2.19457]	-10.92443 (11.6937) [-0.93422]
Differenced	-0.015907 (0.01488) [-1.06901]	6.26E-05 (0.00017) [0.36134]	0.015123 (0.00462) [3.27345]	0.007818 (0.02168) [0.36062]	-0.000322 (0.00022) [-1.48122]	-0.000985 (0.00047) [-2.08418]
Differenced in lag 1	-0.079673 (0.09202) [-0.86583]	10.28797 (6.98412) [1.47305]	-0.004823 (0.23874) [-0.02020]	-0.065895 (0.05076) [-1.29814]	-5.366757 (5.48649) [-0.97818]	-0.980780 (2.52680) [-0.38815]
Differenced in lag 2	-0.124044 (0.09498) [-1.30603]	-1.541174 (7.41362) [-0.20788]	-0.158036 (0.23871) [-0.66206]	0.017526 (0.05079) [0.34508]	2.301456 (5.43068) [0.42379]	0.223716 (2.55649) [0.08751]
SECTION C	**NONFIN**	LAWRULE	POLITY	INFLATION	QLEGAL	CORRUPTION
Lag 1	1.000000	-40.83922 (8.16022) [-5.00467]***	-0.130357 (0.47893) [-0.27218]	-1.671101 (0.27684) [-6.03635]***	7.656146 (10.0227) [0.76388]	12.14712 (3.36606) [3.60871]***
Differenced	-0.004523 (0.01443) [-0.31348]	0.000706 (0.00052) [1.36373]	0.003771 (0.01446) [0.26083]	0.284395 (0.05802) [4.90144]***	0.000802 (0.00066) [1.22148]	-0.002176 (0.00143) [-1.51849]*
Differenced in lag 1	0.483091 (0.07860) [6.14602]***	2.525994 (2.31450) [1.09138]	0.036390 (0.07466) [0.48741]	0.050903 (0.02299) [2.21376]**	-3.290938 (1.79998) [-1.82832]*	0.208661 (0.78948) [0.26430]
Differenced in lag 2	-0.223845 (0.07817) [-2.86352]***	0.903895 (2.40796) [0.37538]	-0.107255 (0.07517) [-1.42684]	0.029313 (0.01848) [1.58651]*	-2.590148 (1.77509) [-1.45917]*	0.481244 (0.80298) [0.59933]
SECTION D	**EQCAP**	LAWRULE	POLITY	INFLATION	QLEGAL	CORRUPTION
Lag 1	1.0000000	-0.002399 (0.00591) [-0.40573]	-9.961800 (2.42097) [-4.1148]***	-6.135781 (1.37478) [-4.46311]***	-11.11145 (50.4648) [-0.22018]	9.268320 (16.9015) [0.54837]
Differenced	0.002806 0.00234) [1.20114]	-2.19E-05 (1.9E-05) [-1.17897]	0.006916 (0.00318) [2.17336]**	0.051614 (0.01399) [3.69035]***	0.00005 (0.00015) [0.28342]	-0.000473 (0.00032) [-1.49529]*
Differenced in lag 1	0.245145 (0.07844) [3.12529]***	9.004136 (10.3469) [0.87022]	0.335541 (0.35667) [0.94076]	-0.012042 (0.09369) [-0.12853]	1.001732 (8.02603) [0.12481]	-3.947290 (3.59281) [-1.09866]
Differenced in lag 2	-0.280138 (0.07564) [-3.70344]***	1.104842 (10.2373) [0.10792]	-0.503063 (0.35921) [-1.40048]	0.022794 (0.08090) [0.28175]	-5.142249 (7.92809) [-0.64861]	-2.608261 (3.64687) [-0.71521]
SECTION E	**TURNOVER**	LAWRULE	POLITY	INFLATION	QLEGAL	CORRUPTION
Lag 1	1.000000	-25.72531 (16.8185) [-1.52958]*	-3.365817 (0.99969) [-3.36685]***	1.051581 (0.56586) [1.85839]*	20.82384 (20.7832) [1.00195]	6.855955 (6.92906) [0.98945]
Differenced	-0.064197 (0.01860) [-3.45179]***	0.000122 (0.00028) [0.43053]	0.013209 (0.00790) [1.67271]*	-0.066837 (0.03538) [-1.88927]*	-0.000453 (0.00036) [-1.26076]	-0.000920 (0.00076) [-1.20309]
Differenced in lag 1	0.921068 (0.10597) [8.69162]***	-6.716674 (5.36544) [-1.25184]	-0.149298 (0.17855) [-0.83618]	0.054552 (0.03965) [1.37573]	-2.741899 (4.17744) [-0.65636]	0.613258 (1.89742) [0.32321]
Differenced in lag 2	-0.214701 (0.11726) [-1.83097]*	-1.774773 (5.64038) [-0.31465]	-0.100366 (0.18085) [-0.55498]	0.041233 (0.03905) [1.05578]	-2.335352 (4.13080) [-0.56535]	0.743558 (1.92151) [0.38696]

Estimated coefficients on the first line, standard errors in parenthesis (); and t-statistics in brackets [].
The results are computed separately for each equation using the appropriate residuals
**** p<0.01, ** p<0.05, * p<0.1 {Emphasis are placed on *** p<0.01, ** p<0.05}*

According to section A in Table 5.17, 13 out of the possible 84 combinations are statistically significant but only four of these statistically significant variables are of interest. One of those statistically significant error terms is the differenced *BANK* in lag 1, with a positive coefficient that hints that more than 28 per cent of the disequilibrium in the series is corrected within the first period.

In addition, *INFLATION* in its first lag is statistically significant with an explosive positive coefficient, while the differenced form of *INFLATION* is statistically significant with a negative coefficient that suggests that about 10 of the disequilibrium in the series is corrected within the first period. More importantly, the statistical significance of differenced *INFLATION* suggests that a change in real inflation dynamics would significantly influence the *BANK* in Africa. To conclude section A, the effects of *INFLATION* on *BANK* is negative and this relationship bears a negative coefficient that is explosive in nature.

According to section B of Table 5.17, 14 out of the possible 84 combinations are statistically significant, but only four of those combinations are of interest in this study. The stability of the *p-value* determinant estimations that range between 1.95 and 2.05 allude to the stability of the model. According to Section B, the dependent variable (*PRIVY*) shares a negative statistically significant relationship with lagged *POLITY*, and the coefficient is explosive in nature.

In addition, the differenced form of *POLITY* shares a positive relationship with the dependent variable but the coefficient is low (about 2 per cent). For the remaining two variables, *QLEGAL* and *CORRUPTION* are statistically significant and they bear positive and negative coefficients respectively. While the coefficient of the former is explosive, the coefficient of the latter is very low (less than one per cent). Based on the analysis presented in this section, argument can therefore be advanced that *POLITY, QLEGAL* and *CORRUPTION* do influence the development of *PRIVY* in the sampled African countries.

In section C, out of a possible 84 possible relationships, only 12 are statistically significant, and eight of those statistically significant relationships are of interest to this study. Also, the stability of the model is ensured through the Durbin-Watson statistic that ranges between 1.95 and 2.05. looking at individual relationships, the differenced *NONFIN* in lag 1 bears a positive coefficient, which suggests that more than 48 per cent of the disequilibrium in the series is corrected within the first period by possibly ‘pulling’ the innovation shock towards the point of equilibrium. However, the differenced form of the same variable in lag 2 bears a negative coefficient, which suggests that more than 22 per cent of the effects of the shocks on the system can be corrected within the first period.

In addition, *LAWRULE* in lag 1 bears an explosive negative coefficient, while the same variable in its differenced form bears an infinitesimal positive coefficient. *POLITY* does not have any form of statistically significant relationship with *NONFIN*, but *INFLATION* shares three different forms of relationship with the dependent variables. In the first instance, *INFLATION* in lag 1 bears an explosive negative coefficient with the dependent variable. But the differenced form of the variable shares a positive relationship with the dependent variable with a coefficient that suggests more than 28 per cent system error correction within the first period. Further, the differenced form of the variable in lag 1 also bears a positive coefficient that suggests more than five per cent system error correction within the first period.

The last variable of interest in section C is *CORRUPTION*. The lag 1 form of this variable shares a single statistically significant relationship with the dependent variable. It is noteworthy that the coefficient of the variable is very explosive. Having analysed the relationship between *NONFIN* and the institutional variables, we now proceed to section D in Table 5.17. According to section D, the Durbin-Watson statistic of the *p-value* determinant estimation ranges between 1.95 and 2.06, suggesting a strong stability. In addition, out of a possible 84 combination of variables, only 13 are statistically significant and six of those variables appear in Table 5.17.

The differenced form of *EQCAP* in lag 1 as well as the differenced form of the variable in lag 2 are statistically significant and bear moderate positive (0.25) and negative (-0.28) coefficients respectively. This form of result indicates that lags (periods) play an important role in the adjustment of this variable to equilibrium and that the variable is more likely to respond rapidly to the effects of innovations shock on the system. The other variable of interest here is *POLITY*. This variable in lag 1 and its differenced form bears explosive negative (-9.96) and infinitesimal positive (0.006) coefficients respectively with the dependent variable. This relationship suggests that although lag (period) plays an important role on the influence of the variable on *EQCAP*, a change in the policy framework will be of stronger (positive) importance.

The last variable of interest in this section is *INFLATION*. Just as in the case of *POLITY*, *INFLATION* also shares an explosive negative (-6.14) and low positive (0.05) coefficients with the dependent variable. This form of relationships hints that while lag is of essence in the adjustment of the variable to equilibrium, a change in functionality of the policy framework will mollify the effects of the shocks on the system more effectively. The last section (section E) of Table 5.17 contains the results for the last dependent variable (equation 7). According to the analysis of the 84 possible relationships that are obtainable in this section, it is observed that only 13 are statistically significant, of which four are of interest in this study. In addition, the Durbin-Watson statistics that ranges between 1.5 and 2.13 hints that the *p-value* determinant estimation is stable.

Looking at individual variables, it is observed that *TURNOVER* (the dependent variable) bears a negative (-0.06) and positive (0.92) coefficients in its differenced form as well as its differenced form in lag 1 respectively. This relationship hints that lag (period) is of statistical importance to the adjustment of this variable to equilibrium. That is, the variable will adjust very quickly to the effects of any possible innovations shock on the system very quickly (by more than 92 per cent in one instance).

Still on this section of the Table, *POLITY* bears an explosive negative (-3.37) relationship with the dependent variable while *INFLATION* bears a subtle negative coefficient. While the former suggests a rapid speed of adjustment to lag, the latter hints on a possible change to innovative shock on the variable. In the pooled analyses, the results largely indicate that all the institutional variables used in this study are good determinants of the dependent variables. Although, variables such as the rule of law (*LAWRULE*) and quality of legal framework (*QLEGAL*) play less statistically significant role in explaining the variations expressed in the dependent variables (capital market development variables).

North Africa

Having discussed the results of the pooled estimation, we now proceed to investigate the regional effects of the vector error correction model. The results of the analysis are contained in Table 5.18 for North Africa. After discussing the results for North Africa, we will proceed to the discourse of the other regions of interest in this study.

Table 5.18: Vector Error Correction Estimates for Equations 3 to 7 (1980-2012): North Africa Regional effects

	Error correction terms					
SECTION A	**BANK**	LAWRULE	POLITY	INFLATION	QLEGAL	CORRUPTION
Lag 1	1.000000	151.5541 (188.119) [0.80563]	-12.46509 (13.8756) [-0.89834]	-14.10335 (4.91635) [-2.86866]***	-687.1519 (205.513) [-3.34360]***	21.41086 (34.6898) [0.61721]
Differenced	-0.004901 (0.00384) [-1.27675]	-4.34E-05 (9.9E-05) [-0.43827]	0.002562 (0.00087) [2.94237]**	0.011921 (0.00467) [2.55463]	0.000155 (0.00012) [1.30036]	-0.000239 (0.00028) [-0.84011]
Differenced in lag 1	0.336071 (0.14341) [2.34339]**	-4.737759 (4.75514) [-0.99635]]	- 1.396057 (0.53112) [2.62850]**	-0.026283 (0.09125) [-0.28803]	-4.380500 (4.18376) [-1.04703]	-1.275820 (1.62632) [-0.78448]
Differenced in lag 2	0.189203 (0.14724) [1.28498]	0 -1.656322 (5.31532) [-0.31161]	0.172994 (0.70047) [0.24697]	-0.013332 (0.08046) [-0.16569]	-6.454020 (3.63331) [-1.77635]*	-0.898925 (1.66132) [-0.54109]
SECTION B	**PRIVY**	LAWRULE	POLITY	INFLATION	QLEGAL	CORRUPTION
Lag 1	1.000000	139.7177 (35.5856) [3.92624]***	- 3.165524 (2.67027) [1.18547]	0.125475 (0.87505) [0.14339]	22.79300 (39.1765) [0.58180]	-12.45405 (6.47975) [-1.92200]**
Differenced	-0.008446 (0.03132) [-0.26971]	-0.001661 (0.00052) [-3.21364]***	-0.010002 (0.00505) [-1.97881]*	0.035239 (0.02671) [1.31915]	-0.000644 (0.00065) [-0.99058]	-0.002509 (0.00156) [-1.61219]*
Differenced in lag 1	0.263998 (0.14613) [1.80665]*	6.190737 (7.43162) [0.83303]	1.622419 (0.82338) [1.97044]*	-0.058394 (0.12801) [-0.45618]	-2.699910 (5.36557) [-0.50319]	-4.742487 (2.44299) [-1.94127]*
Differenced in lag 2	-0.115225 (0.14370) [-0.80185]	-2.020960 (7.82500) [-0.25827]	0.576533 (1.08198) [0.53285]	0.004691 (0.11863) [0.03955]	-3.555599 (5.10467) [-0.69654]	0.313446 (2.42711) [0.12914]
SECTION C	**NONFIN**	LAWRULE	POLITY	INFLATION	QLEGAL	CORRUPTION
Lag 1	1.000000	-23.23713 (10.8224) [-2.14713]**	-1.441228 (0.76347) [-1.88774]*	-2.043194 (0.26000) [-7.85840]***	44.11218 (12.3828) [3.56239]***	7.557043 (2.06171) [3.66543]***
Differenced	-0.058818 (0.03633) [-1.61896]*	0.002510 (0.00136) [1.84500]*	0.001810 (0.01302) [0.13900]	0.270898 (0.05929) [4.56891]***	0.000300 (0.00171) [0.17572]	-0.004826 (0.00407) [-1.18690]
Differenced in lag 1	0.640800 (0.11212) [5.71531]***	0.898494 (3.14338) [0.28584]	-0.256751 (0.34120) [-0.75250]	-0.028970 (0.07322) [-0.39566]	-4.574640 (2.75927) [-1.65792]*	0.064623 (1.04358) [0.06192]
Differenced in lag 2	-0.169621 (0.10901) [-1.55598]*	3.406783 (3.54082) [0.96215]	0.226533 (0.46454) [0.48766]	-0.148000 (0.05871) [-2.52102]**	-3.132657 (2.47628) [-1.26507]	0.311781 (1.03602) [0.30094]
SECTION D	**EQCAP**	LAWRULE	POLITY	INFLATION	QLEGAL	CORRUPTION
Lag 1	1.000000	45.73170 (21.9356) [2.08482]**	-2.397042 (1.46685) [-1.63415]*	2.915693 (0.50409) [5.78409]***	30.41331 (24.1435) [1.25969]	16.31204 (3.87290) [4.21184]***
Differenced	-0.147929 (0.04421) [-3.34619]***	-0.001442 (0.00061) [-2.36931]**	0.002982 (0.00624) [0.47786]	-0.080992 (0.03182) [-2.54537]**	0.000237 (0.00081) [0.29058]	-0.001685 (0.00199) [-0.84501]
Differenced in lag 1	0.701426 (0.10481) [6.69253]***	3.320346 (8.10649) [0.40959]	0.194984 (0.83698) [0.23296]	0.317603 (0.16014) [1.98325]*	-0.593802 (6.65281) [-0.08926]	-1.661393 (2.64415) [-0.62833]
Differenced in lag 2	-0.124113 (0.11719) [-1.05905]	3.166256 (9.13311) [0.34668]	0.674718 (1.15650) [0.58341]	0.198962 (0.13909) [1.43046]	-10.08447 (6.30158) [-1.60031]*	-0.305192 (2.61944) [-0.11651]
SECTION E	**TURNOVER**	LAWRULE	POLITY	INFLATION	QLEGAL	CORRUPTION
Lag 1	1.000000	-75.27159 (34.3629) [-2.19049]**	-7.873593 (2.17946) [-3.61263]***	1.891940 (0.73112) [2.58773]**	71.21924 (37.2330) [1.91280]*	0.256609 (6.15425) [0.04170]
Differenced	-0.046239 (0.02216) [-2.08625]**	0.000485 (0.00060) [0.81085]	0.006738 (0.00566) [1.18985]	-0.087852 (0.02807) [-3.12969]***	-0.000303 (0.00072) [-0.42132]	0.002944 (0.00173) [1.69981]*
Differenced in lag 1	0.692116 (0.12799) [5.40773]***	-32.27558 (4.78457) [-6.74577]***	0.216696 (0.47915) [0.45225]	0.092738 (0.08292) [1.11842]	1.771896 (3.81356) [0.46463]	-1.954877 (1.45052) [-1.34771]
Differenced in lag 2	-0.688729 (0.13985) [-4.92487]***	-26.85167 (5.19079) [-5.17294]***	-1.170527 (0.65768) [-1.77979]*	0.161492 (0.07486) [2.15715]**	-1.485253 (3.56477) [-0.41665]	1.260379 (1.46057) [0.86294]

Estimated coefficients on the first line, standard errors in parenthesis (); and t-statistics in brackets [].
The results are computed separately for each equation using the appropriate residuals
**** p<0.01, ** p<0.05, * p<0.1 {Emphasis are placed on *** p<0.01, ** p<0.05}*

According to the *p-value* determinant estimation, 12 out of the possible 84 variable combinations are statistically significant and six of those variables appear in Table 5.18 section A, being variables of interest. Further, the Durbin-Watson statistics ranges between 1.84 and 2.11 to suggest that the estimation is stable. Looking at the individual variables, the differenced *BANK* in lag 1 is statistically significant with a positive coefficient that suggests an approximation of 34 per cent of error correction within the first year. The other variables of interest include *POLITY* that has subtle positive (0.002) and explosive negative (-1.4) coefficients with the dependent variable. These kinds of relationships with the dependent variable (*BANK*) suggest that the effects of the innovative shocks of *POLITY* on the system are not only statistically significant, but could be explosive as well when period is factored in.

INFLATION is another variable of interest in this section. In lag 1, the variable shares an explosive negative coefficient with the dependent variable but a barely one per cent positive coefficient in its differenced form. The differenced form of this variable bears a positive coefficient (16 per cent). The result for *INFLATION* suggests that period effect is of essence in the reversal of the variable back to the point of equilibrium. This result is similar to the one obtained for *POLITY*. The last variable of interest in this section is *QLEGAL*. The variable in lag 1 bears an explosive negative coefficient that lends credence to the postulation that period effect is of essence. In all, these three variables are statistically significant determinants of *BANK* and their speed of adjustment appears to be high.

In section B of Table 5.18, 18 out of the possible 84 combinations are statistically significant. However, only two of these combinations are relevant in our context. Also, the Durbin-Watson statistics of the *p-value* determinant estimation that ranges between 1.86 and 2.12 alludes to the stability of the model. As indicated in Table 5.18, only one variable (*LAWRULE*) is of statistical significance to this study. Looking at the statistically significant variable (*LAWRULE*), in lag 1, the variable has an explosive positive coefficient, but the differenced form of the variable has a negative coefficient that is less than one per cent. This result suggests that the effects of innovations shock on *LAWRULE* do influence the reaction of *PRIVY* and that the reversal of the effects of innovations shock on the system are more periods -dependent.

In section C, the Durbin-Watson statistics of the *p-value* determinant estimation that ranges between 1.87 and 2.07 indicates that the estimation is stable. Further, eight out of a possible 84 combinations are statistically significant at five per cent error level, of which seven are of statistical relevance to this study as indicated in Table 5.18. Looking at individual variables, differenced *NONFIN* in lag 1 is statistically significant with a positive coefficient, suggesting that more than 64 per cent of the deviations from equilibrium are corrected within the first year. In the case of lagged *LAWRULE*, the coefficient is negative and explosive and *POLITY* is found to be statistically insignificant.

Still on section C, *INFLATION* in lag 1 is statistically significant with an explosive negative coefficient, but its differenced form bears a positive coefficient that suggests about 27 per cent adjustment to the equilibrium point within the first period. The differenced form of the variable in lag 2 also bears a negative coefficient that suggests about 15 per cent adjustment to equilibrium within two periods. The remaining two statistically significant variables in the section are *QLEGAL* and *CORRUPTION*. Both variables are statistically significant in lag 1, with positive coefficients that are explosive. These kinds of relationships suggest that the dependent variable (*NONFIN*) react rapidly and in explosive manner too, to innovations shock on these variables.

The results contained in section D in Table 5.18 is regarded as being reliable because the Durbin-Watson statistics that ranges between 1.93 and 2.14 indicate that the estimation is stable. Further, 15 out of possible 84 combinations are statistically significant at five per cent error level, and six of those variables feature in section D in Table 5.18. Looking at individual variables, differenced *EQCAP* and its lag 1 form bear negative and positive coefficients respectively. In the former, the coefficient of the variable suggests that about 15 per cent of the deviation from equilibrium is corrected through the innovative shock hitting the system, while the coefficient of the latter suggests that more than 70 per cent of the deviations from the equilibrium point are corrected within the first period.

The other variable of interest in the section is *LAWRULE*. The variable in its differenced form is statistically significant and it bears an infinitesimal negative coefficient. In the case of *INFLATION*, the variable bears an explosive positive relationship in lag 1 and a low negative coefficient (0.08) if differenced. Considering the variation between the two forms of the variable, it is apparent that the lag (period) plays an important role in the behaviour of the variable. As such, the relationship between the variable and the dependent variable (*EQCAP*) suggests that the dependent variable would react significantly to innovative shock from *INFLATION* as it hits the system and this reaction is presumably rapid. Still on this section, *CORRUPTION* in lag 1 is statistically significant with explosive positive coefficient. This result tallies with that of *INFLATION* and the interpretation is the same.

The stability of the analysis of the variables presented in the concluding section of Table 5.18 (section E) suggests stability, considering the Durbin-Watson statistics that ranges from 1.86 to 2.15. Out of the possible 84 combinations, 14 of those combinations are statistically significant and six of those variables feature in Table 5.18 as the variables of interest.

The consideration of individual variables suggests that differenced *TURNOVER* and differenced *TURNOVER* in lag 1 bears negative and positive coefficients respectively. In the former relationship, there is an indication that about 5 per cent of the deviation from the equilibrium point will be corrected within the first period, whereas the results in the latter indicates that more than 69 per cent of the deviation from equilibrium as a result of the innovative shock hitting the system will be corrected within the first year. The differenced *TURNOVER* in lag 2 also bears a negative coefficient that suggests that about 69 per cent of the disequilibrium that occurs through the innovations shock is corrected within two periods. The result of differenced *LAWRULE* in lag 1 is similar to the result of differenced *TURNOVER* in lag 1, except that the coefficient is negative and explosive in this instance. Differenced *LAWRULE* in lag 2 also bears a negative coefficient and this coefficient is explosive in nature.

In the instance of *POLITY* in lag 1, the variable bears a negative but explosive coefficient. *INFLATION* in lag 1 also bears an explosive coefficient but positive. Still on *INFLATION*, the variable in first difference bears a negative coefficient that suggests that about 9 per cent of the deviation from equilibrium is corrected within the first year. The general conclusion that could be reaches from Table 5.18 is that two institutional variables (*LAWRULE* and *INFLATION*) are statistically significant determinants of capital market efficiency in North Africa.

Southern Africa

Having concluded the interpretation of error correction results for North Africa, we now look at the results for Southern Africa. The result of the error correction analysis for the region is presented in table 5.19.

Table 5.19: Vector Error Correction Estimates for Equations 3 to 7 (1980-2012): Southern Africa Regional effects

	Error correction terms					
SECTION A	**BANK**	LAWRULE	POLITY	INFLATION	QLEGAL	CORRUPTION
Lag 1	1.000000	-654.9841 (62.5610) [-10.4695]***	-3.558712 (0.44760) [-7.95065]***	-2.562924 (0.48261) [-5.31059]***	63.26229 (17.7853) [3.55700]***	57.15002 (11.9932) [4.76521]***
Differenced	-0.139804 (0.04679) [-2.98758]***	0.001382 (0.00085) [1.63197]*	0.060120 (0.06314) [0.95219]	-0.053481 (0.03128) [-1.70965]*	0.001231 (0.00112) [1.09937]	-0.004462 (0.00229) [-1.94696]*
Differenced in lag 1	0.223019 (0.27031) [0.82504]	-55.47553 (24.9180) [-2.22633]**	-0.271796 (0.16821) [-1.61584]*	-0.781197 (0.37359) [-2.09105]	-0.609106 (7.31006) [-0.08332]	8.911345 (6.48712) [1.37370]
Differenced in lag 2	-0.354715 (0.26419) [-1.34263]	-38.98274 (19.7438) [-1.97443]*	-0.223582 (0.15488) [-1.44356]	-0.239846 (0.19447) [-1.23331]	6.722561 (9.92040) [0.67765]	7.541730 (6.30401) [1.19634]
SECTION B	**PRIVY**	LAWRULE	POLITY	INFLATION	QLEGAL	CORRUPTION
Lag 1	1.000000	66070.10 (4300.49) [15.3634]***	-179.0804 (29.1629) [-6.14069]***	28.57885 (30.1050) [0.94931]	2009.517 (1339.50) [1.50020]*	-675.3233 (814.787) [-0.82883]
Differenced	-0.001151 (0.00214) [-0.53847]	-3.90E-05 (4.3E-06) [-9.06355]***	0.001261 (0.00071) [1.77585]*	3.88E-05 (0.00042) [0.09179]	-2.49E-05 (1.3E-05) [-1.86300]*	3.26E-05 (3.2E-05) [1.00560]
Differenced in lag 1	-0.089452 (0.24558) [-0.36425]	158.3581 (113.325) [1.39738]	-0.126422 (0.57920) [-0.21827]	-1.174226 (1.14117) [-1.02897]	-3.278392 (31.1132) [-0.10537]	-24.21749 (19.5814) [-1.23676]
Differenced in lag 2	0.059426 (0.27973) [0.21244]	69.92352 (76.3870) [0.91538]	-0.362374 (0.59356) [-0.61051]	-0.360636 (0.69923) [-0.51576]	67.83834 (37.7095) [1.79897]*	46.67980 (23.6542) [1.97343]*
SECTION C	**NONFIN**	LAWRULE	POLITY	INFLATION	QLEGAL	CORRUPTION
Lag 1	1.000000	-573.9748 (54.3007) [-10.5703]***	-0.379404 (0.39184) [-0.96827]	-1.546788 (0.41618) [-3.71666]***	-63.00187 (16.7698) [-3.75686]***	-17.09200 (10.1098) [-1.69063]
Differenced	-0.010522 (0.01365) [-0.77103]	0.003754 (0.00075) [5.01081]***	0.048160 (0.09594) [0.50197]	-0.083652 (0.03847) [-2.17439]**	0.002116 (0.00155) [1.36435]	-0.003767 (0.00385) [-0.97781]
Differenced in lag 1	0.799887 (0.24713) [3.23669]***	-6.204344 (5.91632) [-1.04868]	-0.042444 (0.03554) [-1.19411]	-0.040271 (0.08154) [-0.49386]	-1.452048 (2.21857) [-0.65450]	0.418731 (1.14460) [0.36583]
Differenced in lag 2	-0.630414 (0.26582) [-2.37161]**	-3.501348 (3.94068) [-0.88851]	-0.009791 (0.03093) [-0.31659]	-0.051634 (0.05094) [-1.01370]	-3.347068 (2.36637) [-1.41443]	-2.283668 (1.42531) [-1.60223]*
SECTION D	**EQCAP**	LAWRULE	POLITY	INFLATION	QLEGAL	CORRUPTION
Lag 1	1.000000	-186.2381 (91.9783) [-20.2481]***	142.3826 (0.61416) [2.31833]**	6.394227 (0.63274) [10.1055]***	-37.21537 (25.4153) [-1.46429]	201.9238 (18.0120) [11.2105]***
Differenced	-0.419375 (0.15710) [-2.66950]**	0.000758 (0.00041) [1.84995]*	-0.014429 (0.03887) [-0.37118]	-0.018922 (0.01851) [-1.02237]	0.000595 (0.00051) [1.16233]	0.001190 (0.00097) [1.22773]
Differenced in lag 1	-0.016255 (0.20791) [-0.07818]	-478.0695 (247.163) [-1.93423]*	0.948234 (0.97202) [0.97553]	-1.617379 (1.82539) [-0.88605]	-164.2617 (80.0839) [-2.05112]*	57.71794 (40.4011) [1.42862]
Differenced in lag 2	-0.845779 (0.30909) [-2.73639]***	-351.6731 (188.585) [-1.86480]*	1.677274 (1.31580) [1.27472]	-0.568373 (1.13724) [-0.49978]	-175.7222 (89.5696) [-1.96185]*	-37.39652 (37.9314) [-0.98590]
SECTION E	**TURNOVER**	LAWRULE	POLITY	INFLATION	QLEGAL	CORRUPTION
Lag 1	1.000000	-740.2521 (134.020) [-5.52344]***	0.207629 (0.81032) [0.25623]	-6.932836 (1.27763) [-5.42631]***	181.9154 (59.1993) [3.07293]***	195.0991 (41.9338) [4.65255]***
Differenced	0.067329 (0.08851) [0.76070]	0.000810 (0.00042) [1.92359]*	0.020173 (0.03858) [0.52286]	-0.003786 (0.01834) [-0.20641]	-3.34E-06 (0.00065) [-0.00514]	-0.002745 (0.00050) [-5.53466]***
Differenced in lag 1	0.300872 (0.40898) [0.73567]	99.32541 (68.2832) [1.45461]	-0.410973 (0.51088) [-0.80444]	-0.915585 (1.03204) [-0.88716]	61.95432 (32.2932) [1.91849]**	52.89281 (24.7641) [2.13587]***
Differenced in lag 2	-0.315437 (0.55053) [-0.57297]	40.40794 (50.4522) [0.80091]	0.043028 (0.49747) [0.08649]	-0.146253 (0.65464) [-0.22341]	53.62781 (40.0925) [1.33760]	36.32949 (31.8650) [1.14010]

Estimated coefficients on the first line, standard errors in parenthesis (); and t-statistics in brackets [].
The results are computed separately for each equation using the appropriate residuals
**** p<0.01, ** p<0.05, * p<0.1 {Emphasis are placed on *** p<0.01, ** p<0.05}*

The *p-value* determinant estimation for section A in Table 5.19 suggests that the estimation is stable, given that the Durbin-Watson statistics of the estimation ranges from 1.5 to 2.0. Out of a possible 84 combinations in the estimation, only 13 are statistically significant and eight of those statistically significant combinations appear in Table 5.19. According to section A, the differenced *BANK* bears a negative coefficient, which suggests that about 14 per cent of the error generated in the system as a result of the innovations shock on *BANK* is corrected within the first period.

In the case of *LAWRULE*, the variable bears explosive negative coefficients in lag 1 and also when differenced in lag 1. These results hint that although a change in the structural formation of rule of law may be important determinant of *BANK* efficiency, the period effect is of more statistical significance. A similar result is obtained for *INFLATION* in lag 1, but the coefficient of the differenced form of the variable in lag 1 is not explosive (78 per cent), suggesting that about 78 per cent of error generated through the innovations shock on *INFLATION* hitting the system is corrected within the first period. The result for *POLITY* in lag 1 is also explosive, suggesting exigency of time in the adjustment of the variable back to the equilibrium point. The results for *QLEGAL* and *CORRUPTION* both in lag 1 and bearing explosive positive coefficients indicate that these variables would adjust to equilibrium very rapidly within the first period and their deterministic effects on the dependent variable (BANK) is also noticeable.

In section B, the stability of the estimation is established with the Durbin-Watson statistics of between 1.6 and 2.3. Out of a possible 84 combinations, only 18 are statistically significant at five per cent error level, and three of those combinations appear in section B of Table 5.19. The first of the three variables is *LAWRULE*. This variable in lag 1bears an explosive positive coefficient, but the coefficient becomes negative (still explosive) when the variable is differenced. This finding suggests that both structural changes and period have effects on the reaction of the dependent variable (*PRIVY*) to the rule of law. The result also hints that the dependent variable will react quickly to innovations shock on these explanatory variables as regards both structural changes and time lags. *POLITY* in lag 1 also bears a negative coefficient that is explosive, suggesting a similar fit with *LAWRULE* in lag 1.

Considering section C in Table 5.19, the *p-value* determinant estimation has a Durbin-Watson statistics of between 1.5 and 2.9 that validates the stability of the estimation. Out of the possible 84 combinations, only 16 are statistically significant and seven of those combinations appear in section C of Table 5.19. According to that section, *NONFIN* bears both negative and positive coefficients when differenced in lag 1 and differenced in lag 2 respectively. In both instances, the coefficients hint that about 80 per cent and 63 per cent of the disequilibrium on the series are corrected within the first and second periods respectively, thereby buttressing the exigency of time and structural changes.

The next variable of interest is *LAWRULE*. This variable bears an explosive negative coefficient in lag 1 but infinitesimal positive coefficient in first difference. This result suggests that this variable negatively influences the dependent variable through period dynamics. *INFLATION* has a very similar trait with *LAWRULE* except that the variable bears negative coefficient in both instances and the coefficient of the differenced form is a bit higher (eight per cent). *QLEGAL* also bears an explosive negative coefficient in lag 1. None of the combinations that include *POLITY* and *CORRUPTIO*N are found to be statistically significant. These results suggest that period is of significance in the adjustment of these variables to equilibrium and their deterministic effects on the dependent variable (*NONFIN*) vary significantly across time.

Looking at section D, the *p-value* determinant estimation has a Durbin-Watson statistics that ranges between 1.6 and 2.2, suggesting that the estimation is stable. Further, out of a possible 84 combinations obtainable from the estimation, only 18 are statistically significant and seven of those statistically significant combinations appear in section D of the Table. According to that section, *EQCAP* bears negative coefficients in first difference (42 per cent) and also in lag 2 when differenced (85 per cent). In both instances, 42 per cent and 85 per cent of the deviations from equilibrium point are corrected through structural changes and during the second period. By implication, both structural changes and period play important role in the variation expressed by this variable.

Still on that section, *LAWRULE* bear explosive negative coefficient in lag 1, suggesting that the relationship between the variable and the dependent variable is period-dependent. In addition, *POLITY*, *INFLATION* and *CORRUPTION* all bear explosive positive relationship with the dependent variable in lag 1. These forms of relationships suggest that the deterministic impact of these variables on the dependent variable (*EQCAP*) is period-dependent. The last variable of interest in this section is differenced *QLEGAL*, which has an explosive negative coefficient in lag 1. This implies that the deviation of this variable from equilibrium could be corrected through structural changes and period. In all, an argument can be advanced that all these institutional variables play important roles in explaining the dependent variable and the variation expressed in the system can be corrected through structural change to the innovations shock and through period as well.

The *p-value* determinant estimation for section E of the Table establishes the stability of the estimation through the Durbin-Watson statistics that ranges between 1.5 and 2.0. Further, out of possible 84 combinations, 16 are statistically significant at five per cent error level of which six appear in Table 5.19. Looking at each combination, the interaction of *TURNOVER* and *LAWRULE* generate an explosive negative coefficient on *LAWRULE* in lag 1, so also is *INFLATION*. *QLEGAL* and *CORRUPTION* also generate explosive positive coefficients. In all these instances, the deviation of these variables from equilibrium through innovations shock would be corrected over time, but more specifically, in the first period.

Further, *CORRUPTION* bears an infinitesimal negative coefficient in lag 1, but an explosive positive coefficient when the variable is differenced in lag 1. These results indicate that the deviation from equilibrium as a result of innovations shock will not be corrected effectively through structural change but rather through period dynamics. The overarching conclusion that can be drawn from the error correction estimation conducted for Southern Africa in equations 3 to 7 is that *LAWRULE, POLITY, INFLATION* and *CORRUPTION* play statistically significant deterministic role on the capital market variables. Further, the impacts of period dynamics rather than structural change to the innovative shocks are conspicuous in the results.

West Africa

Sequel to the completion of the error correction estimations for Southern Africa, we now proceed to the West Africa analysis. The results of the analyses are presented in Table 5.20.

Table 5.20: Vector Error Correction Estimates for Equations 3 to 7 (1980-2012): West Africa Regional effects

	Error correction terms					
SECTION A	**BANK**	LAWRULE	POLITY	INFLATION	QLEGAL	CORRUPTION
Lag 1	1.000000	3281.171 (1180.25) [2.78007]**	35.92234 (6.10700) [5.88216]***	2.778349 (1.85551) [1.49735]	958.4879 (708.840) [1.35219]	-958.4717 (119.970) [-7.98927]***
Differenced	0.004875 (0.00307) [1.58744]*	-0.000163 (6.7E-05) [-2.43750]***	-0.004804 (0.00351) [-1.37059]	-0.010454 (0.02485) [-0.42071]	-0.000498 (9.9E-05) [-5.01151]***	-0.000321 (0.00019) [-1.65370]*
Differenced in lag 1	0.112171 (0.25832) [0.43423]	14.90228 (11.6502) [1.27914]	0.041341 (0.20989) [0.19696]	0.012518 (0.02928) [0.42749]	-9.742662 (6.11430) [-1.59342]*	9.515768 (4.08167) [2.33134]***
Differenced in lag 2	-0.281168 (0.28326) [-0.99262]	10.93860 (11.5779) [0.94478]	-0.158349 (0.20724) [-0.76408]	0.016418 (0.03069) [0.53498]	-8.234930 (6.57622) [-1.25223]	5.673090 (3.92754) [1.44444]
SECTION B	**PRIVY**	LAWRULE	POLITY	INFLATION	QLEGAL	CORRUPTION
Lag 1	1.000000	478.8336 (185.333) [2.58363]***	2.940727 (0.70490) [4.17182]***	0.197404 (0.23104) [0.85441]	69.76799 (105.290) [0.66263]	-185.1731 (17.0163) [-10.8821]***
Differenced	-0.068821 (0.05384) [-1.27830]	-0.000573 (0.00050) [-1.14500]	-0.022244 (0.02371) [-0.93830]	-0.056253 (0.15745) [-0.35728]	-0.002864 (0.00074) [-3.85687]***	-0.002153 (0.00124) [-1.74163]*
Differenced in lag 1	0.349733 (0.59095) [0.59182]	31.51992 (29.4969) [1.06858]	0.254903 (0.54901) [0.46429]	0.046138 (0.08269) [0.55794]	-2.820836 (16.8637) [-0.16727]	1.879123 (12.2614) [0.15326]
Differenced in lag 2	-1.145252 (0.44424) [-2.57800]**	10.18651 (29.4504) [0.34589]	-0.009645 (0.54366) [-0.01774]	0.055548 (0.07988) [0.69536]	6.017218 (18.7810) [0.32039]	-11.36600 (11.4782) [-0.99023]
SECTION C	**NONFIN**	LAWRULE	POLITY	INFLATION	QLEGAL	CORRUPTION
Lag 1	1.000000	3.984537 (17.3304) [0.22992]	-0.038616 (0.15097) [-0.25578]	-0.091832 (0.04876) [-1.88349]*	-93.12481 (13.0177) [-7.15372]***	35.92499 (2.77523) [12.9449]***
Differenced	-0.199774 (0.10358) [-1.92876]**	0.003386 (0.00335) [1.01088]	0.014153 (0.11955) [0.11839]	0.525998 (0.73745) [0.71327]	0.017252 (0.00346) [4.98055]***	0.002782 (0.00649) [0.42859]
Differenced in lag 1	0.472877 (0.21198) [2.23075]**	11.09230 (8.12272) [1.36559]	0.238112 (0.20953) [1.13639]	0.038923 (0.03188) [1.22087]	-10.57003 (7.86160) [-1.34451]	5.266368 (4.19954) [1.25404]
Differenced in lag 2	-0.141526 (0.22336) [-0.63361]	-6.627216 (7.99689) [-0.82872]	-0.412223 (0.20997) [-1.96326]*	0.042792 (0.02891) [1.47999]	-3.206253 (6.19173) [-0.51783]	4.917381 (3.95711) [1.24267]
SECTION D	**EQCAP**	LAWRULE	POLITY	INFLATION	QLEGAL	CORRUPTION
Lag 1	1.000000	-286.1114 (38.2642) [-7.47725]***	0.664128 (0.23676) [2.80509]**	-0.122110 (0.07856) [-1.55444]*	279.8394 (24.3628) [11.4863]***	-0.003166 (0.00339) [-0.93503]
Differenced	0.135909 (0.05255) [2.58651]**	0.000793 (0.00155) [0.50987]	-0.036787 (0.06661) [-0.55224]	0.157317 (0.45525) [0.34557]	-0.006347 (0.00240) [-2.64314]**	-0.003166 (0.00339) [-0.93503]
Differenced in lag 1	0.022444 (0.26156) [0.08581]	53.01898 (16.7256) [3.16993]***	-0.005698 (0.19713) [-0.02891]	0.010056 (0.02658) [0.37828]	-34.73431 (12.4105) [-2.79878]**	13.50017 (4.46264) [3.02515]***
Differenced in lag 2	-0.462859 (0.17540) [-2.63885]**	10.88749 (15.9619) [0.68209]	0.022932 (0.19225) [0.11928]	0.043940 (0.02757) [1.59352]*	-1.318491 (9.96408) [-0.13232]	10.49612 (3.35054) [3.13266]***
SECTION E	**TURNOVER**	LAWRULE	POLITY	INFLATION	QLEGAL	CORRUPTION
Lag 1	1.000000	-25.70503 (0.92071) [-27.9188]**	0.001823 (0.00237) [0.76845]	0.002240 (0.00073) [3.08322]***	19.16748 (0.54085) [35.4394]***	-4.447389 (0.07610) [-58.4423]***
Differenced	1.122837 (0.38990) [2.87983]**	-0.092806 (0.05070) [-1.83043]*	0.655568 (2.55205) [0.25688]	-17.57149 (17.2078) [-1.02114]	-0.289554 (0.08202) [-3.53015]***	0.352449 (0.10860) [3.24542]***
Differenced in lag 1	0.157918 (0.21894) [0.72128]	27.82650 (8.39255) [3.31562]***	0.009055 (0.03794) [0.23869]	-0.000558 (0.00504) [-0.11067]	-17.74090 (5.68008) [-3.12335]***	5.150623 (1.38505) [3.71873]***
Differenced in lag 2	-1.384929 (0.11896) [-11.6421]***	9.757063 (3.99070) [2.44495]**	0.020553 (0.03756) [0.54726]	0.001524 (0.00555) [0.27450]	-4.068289 (2.71730) [-1.49718]	3.964233 (0.85349) [4.64473]***

Estimated coefficients on the first line, standard errors in parenthesis (); and t-statistics in brackets [].
The results are computed separately for each equation using the appropriate residuals
**** p<0.01, ** p<0.05, * p<0.1 {Emphasis are placed on *** p<0.01, ** p<0.05}*

In section A of Table 5.20, the Durbin-Watson statistics of the *p-value* determinant estimation ranges from 1.7 to 2.2, thereby suggesting that the estimation is stable. Further, nine out of possible 84 combinations are statistically significant and five of those variables appear in the Table as variables of interest to this study. Looking at each section of the Table, the result contained in section A indicates that five combinations are statistically significant at five per cent error level. *LAWRULE* in its differenced form is statistically significant, but the coefficient is negative and infinitesimally low (less than one per cent). Similar result holds for *QLEGAL* in its first difference. *POLITY* in lag 1 bears an explosive positive coefficient, suggesting that time is of essence in the adjustment of the variable back to the point of equilibrium.

CORRUPTION in lag 1 bears an explosive negative coefficient, while the variable in its first difference (and in lag 1) bears a positive but explosive coefficient. The behaviour of this variable suggests that although the variable is an important determinant of variation expressed by *BANK* (the dependent variable), the adjustment of the variable to time lag suggests that period will play an important role in the adjustment of the variable back to equilibrium from innovations shock. In section A, all the explanatory variables play important deterministic roles with the dependent variable (*BANK*) in exception of *INFLATION*.

Section B in the Table presents the result of interaction between *PRIVY* and the institutional variables. The analysis of the *p-value* determinant suggests that the estimation is stable, owing to the Durbin-Watson statistics that ranges between 1.7 and 2.0. According to the results, all the institutional variables play important deterministic role on the behaviour of the dependent variable, again, except for *INFLATION*.

In specific, *PRIVY* in first difference with lag 1 bears an explosive negative coefficient. So also is *LAWRULE* in lag 1 and *POLITY* in lag 1, except that the coefficients are positive in the case of these two variables. The coefficient of *CORRUPTION* in lag 1 is also explosive but negative, while *QLEGAL* bears an infinitesimal negative coefficient in first difference. In this section, the overall conclusion that could be drawn is that time lag is important to the adjustment of these explanatory variables back to equilibrium as a result of innovations shock hitting the system.

In section C, *NONFIN* in first difference and lag 1 bears a positive (40 per cent) coefficient. Here, there is an indication that about 40 per cent of the effects of the shock on the system are corrected within the first period. It can thus be suggested that the variable responds to structural changes in the system over time, thereby reinforcing time exigency in the behaviour of the variable.

Further, *QLEGAL* bears explosive negative coefficient (-93.12) and low positive coefficient (0.017) in lag 1 and in first difference respectively. *CURRUPTION* also bears an explosive positive coefficient in lag 1. These results indicate that time lag plays an important role in the adjustment of the variables back to the point of equilibrium. It must be pointed out, however, that only *QLEGAL* and *CORRUPTION* play statistically significant deterministic role on *NONFIN*.

According to the *p-value* determinant estimation for section D, the Durbin-Watson statistics for the estimation ranges between 1.6 and 2.0. This result hints on the stability of the model. Further, results contained in section D suggest that 10 out of possible 84 combinations are statistically significant. All the 10 statistically significant variables appear in Table 5.20 section D. According to that section, *EQCAP* bears positive coefficient in first difference (14 per cent) and a negative coefficient (-.046) in lag 1 of first difference. This suggests that the deviation from equilibrium experienced by the variable as a result of innovative shock hitting the system can be corrected within two periods through structural reforms.

In lag 1, *LAWRULE* bears an explosive negative coefficient while the same variable bears explosive positive coefficient when lagged in first difference. Further, *POLITY* bears a positive coefficient in lag 1. The coefficient suggests that more than 66 per cent of the deviation from equilibrium is corrected within the first period. As for *QLEGAL*, the variable bears an explosive positive coefficient in lag 1, infinitesimal negative coefficient in first difference and an explosive negative coefficient in first difference in lag 1.

In addition, the coefficients of *CORRUPTION* are explosive and positive in first difference in lag 1, as well as first difference in lag 2. *INFLATION* does not play any statistical significant deterministic role with the dependent variable (*EQCAP*). There is a clear indication from the results contained in this section that the four explanatory variables have strong deterministic impacts on the dependent variable. However, the recovery of the variables from disequilibrium that results from innovations shock hitting the system is more period-dependent than structural inclination.

According to section E of the Table, the Durbin-Watson statistics of the *p-value* determinants estimation ranges from 1.6 to 2.4. This hints that the estimation is stable. Further, 29 out of the possible 84 combinations are statistically significant. Of the 29 variables, 13 appear in section E of Table 5.20. Looking at the combinations, *TURNOVER* bears explosive positive and negative coefficients in first difference and differenced in lag 2. This lends credence to the importance of structural changes rather than period effects.

The other variable of interest in the section is *LAWRULE*. This variable bears an explosive negative coefficient in lag 1. The variable also bears explosive positive coefficients when differenced in lag 1 as well as differenced in lag 2. These kinds of results indicate that period effect is of noticeable significance in the adjustment of the variable back to the point of equilibrium. Further, *INFLATION* in lag 1 bears an infinitesimal positive coefficient with the dependent variable, while *QLEGAL* in lag 1 bears an explosive positive coefficient. The variable in differenced form bears a negative coefficient that hints on the possibility of about 29 per cent of the variation from equilibrium being corrected within the first period. Further, the variable in first difference in lag 1 also bears an explosive negative coefficient.

The last variable of interest in the section is *CORRUPTION*. The *p-value* determinant estimator for the section indicates that the estimation is stable, judging from the Durbin-Watson statistics that range from 1.6 to 2.4. Further, 29 out of a possible 84 combinations are statistically significant. Looking at individual combination, *TURNOVER* bears an explosive positive coefficient as well as an explosive negative coefficient in first difference and also in first difference in lag 1 respectively. The results for *LAWRULE* also generate explosive coefficients – negative in lag 1, positive in differenced form in lag 1, as well as in differenced form in lag 2 respectively.

In addition, *INFLATION* bears a positive infinitesimal coefficient in lag 1. *QLEGAL* bears an explosive positive coefficient in lag 1 and an explosive negative coefficient in differenced lag 1. The variable however, bears a negative coefficient that suggests about 29 per cent of the deviation from the point of equilibrium being corrected through structural adjustment, although period effect is also of significant essence.

As for *CORRUPTION*, the variable is statistically significant throughout the four scenarios presented in Table 5.20 – lag 1, first difference, differenced in lag 1 and differenced in lag 2. The overarching conclusion that can be drawn from the results contained in Table 5.20 is that period effects and structural reforms play prominent role in the adjustment of the variables back to the point of equilibrium from innovative shocks that hit the system. More importantly, all the institutional variables play strong deterministic roles on the dependent variables (capital market variables).

East Africa

The error correction estimation for equations 3 to 7 will now be concluded by presenting the results of the analysis conducted for East Africa. The result is contained in Table 5.21.

Table 5.21: Vector Error Correction Estimates for Equations 3 to 7 (1980-2012): East Africa Regional effects

	Error correction terms					
SECTION A	**BANK**	LAWRULE	POLITY	INFLATION	QLEGAL	CORRUPTION
Lag 1	1.000000	139.5808 (22.6367) [6.16613]***	-3.689936 (0.39828) [-9.26474]***	0.506466 (0.19473) [2.60086]**	315.6668 (42.5568) [7.41754]***	-11.39217 (30.7954) [-0.36993]
Differenced	\-0.069339 (0.05833) [-1.18877]	-0.002734 (0.00171) [-1.59708]]*	0.191248 (0.04570) [4.18446]***	0.164553 (0.24576) [0.66957]	-0.001225 (0.00119) [-1.02712]	0.004391 (0.00377) [1.16465]
Differenced in lag 1	-0.095497 (0.29209) [-0.32695]	2.862091 (9.53964) [0.30002]	0.021140 (0.25359) [0.08336]	-0.033940 (0.07358) [-0.46127]	6.025549 (21.4967) [0.28030]	-3.076456 (4.39737) [-0.69961]
Differenced in lag 2	0.427112 (0.37910) [1.12664]	-4.629178 (7.76836) [-0.59590]	-0.108317 (0.24890) [-0.43518]	0.054119 (0.06315) [0.85700]	11.83264 (13.8061) [0.85706]	1.450011 (4.61087) [0.31448]
SECTION B	**PRIVY**	LAWRULE	POLITY	INFLATION	QLEGAL	CORRUPTION
Lag 1	1.000000	-1560.743 (249.399) [-6.25802]***	51.42073 (4.43543) [11.5932]***	-6.292747 (2.10850) [-2.98447]**	-5095.125 (464.444) [-10.9704]***	840.6126 (280.197) [3.00008]***
Differenced	0.001284 (0.00578) [0.22228]	8.84E-05 (0.00013) [0.65524]	-0.014913 (0.00193) [-7.72057]***	-0.010532 (0.01576) [-0.66830]	2.74E-05 (6.7E-05) [0.40932]	-0.000201 (0.00024) [-0.83709]
Differenced in lag 1	-0.354963 (0.25514) [-1.39123]	-10.11673 (11.7141) [-0.86364]	-0.483707 (0.39651) [-1.21991]	0.064635 (0.14628) [0.44187]	14.36702 (32.8123) [0.43785]	-0.563460 (7.21520) [-0.07809]
Differenced in lag 2	-0.590722 (0.42523) [-1.38919]	-6.497362 (11.3681) [-0.57155]	0.020494 (0.35854) [0.05716]	0.076557 (0.09802) [0.78101]	34.96614 (21.7076) [1.61078]*	7.961528 (6.78045) [1.17419]
SECTION C	**NONFIN**	LAWRULE	POLITY	INFLATION	QLEGAL	CORRUPTION
Lag 1	1.000000	-31.74651 (5.20315) [-6.10140]***	1.479943 (0.09967) [14.8491]***	-0.423627 (0.04572) [-9.26606]***	-87.67153 (9.70324) [-9.03528]***	38.46113 (6.15917) [6.24453]***
Differenced	-0.158144 (0.11681) [-1.35388]	3.00E-05 (0.00618) [0.00485]	-0.713313 (0.09531) [-7.48393]***	0.222931 (0.71017) [0.31391]	-0.002360 (0.00351) [-0.67167]	0.002284 (0.01355) [0.16861]
Differenced in lag 1	0.661994 (0.14981) [4.41892]***	-2.721036 (5.08405) [-0.53521]	-0.109830 (0.15926) [-0.68965]	0.058761 (0.06190) [0.94928]	-4.063380 (13.8455) [-0.29348]	5.102833 (4.36374) [1.16937]
Differenced in lag 2	-0.669156 (0.16740) [-3.99723]***	-2.056188 (5.22738) [-0.39335]	-0.022747 (0.17469) [-0.13021]	0.074412 (0.04702) [1.58244]*	8.499817 (8.31746) [1.02192]	3.587107 (3.46901) [1.03404]
SECTION D	**EQCAP**	LAWRULE	POLITY	INFLATION	QLEGAL	CORRUPTION
Lag 1	1.000000	223.4887 (31.6134) [7.06944]***	-7.187259 (0.54121) [-13.2799]***	0.418338 (0.24453) [1.71080]*	532.7789 (53.1856) [10.0174]***	-132.1059 (32.1513) [-4.10888]***
Differenced	-0.160367 (0.06180) [-2.59475]**	-0.001303 (0.00101) [-1.29575]	0.104059 (0.02325) [4.47568]***	0.009947 (0.11338) [0.08774]	-0.000117 (0.00062) [-0.18920]	0.002720 (0.00229) [1.18657]
Differenced in lag 1	0.363128 (0.16307) [2.22687]**	31.60340 (15.8335) [1.99599]*	0.704609 (0.48622) [1.44917]	0.666812 (0.13019) [5.12198]***	143.4029 (46.8234) [3.06264]***	7.525382 (10.9437) [0.68765]
Differenced in lag 2	0.016521 (0.18903) [0.08740]	41.90696 (14.6919) [2.85238]**	1.147666 (0.53499) [2.14520]**	0.516425 (0.13886) [3.71907]***	75.76485 (29.9059) [2.53344]**	20.34283 (10.0365) [2.02688]**
SECTION E	**TURNOVER**	LAWRULE	POLITY	INFLATION	QLEGAL	CORRUPTION
Lag 1	1.000000	-4.993027 (1.47333) [-3.38895]***	0.120394 (0.02847) [4.22839]***	-0.035515 (0.01158) [-3.06809]***	-34.08429 (3.02628) [-11.2628]***	-2.276231 (1.38646) [-1.64176]*
Differenced	-0.589661 (0.28369) [-2.07857]**	0.001006 (0.02706) [0.03718]	-2.229815 (0.71719) [-3.10909]***	-2.644299 (3.76118) [-0.70305]	0.001278 (0.01323) [0.09657]	0.013146 (0.05693) [0.23092]
Differenced in lag 1	0.745488 (0.30397) [2.45248]**	0.314401 (3.09764) [0.10150]	0.007245 (0.09679) [0.07486]	0.020971 (0.02193) [0.95629]	-11.65187 (7.16644) [-1.62589]*	2.484488 (1.56238) [1.59020]*
Differenced in lag 2	0.282290 (0.58046) [0.48632]	0.022611 (2.92815) [0.00772]	-0.026485 (0.08981) [-0.29489]	0.032871 (0.02180) [1.50803]	3.813378 (4.80367) [0.79385]	3.248667 (1.74373) [1.86305]*

Estimated coefficients on the first line, standard errors in parenthesis (); and t-statistics in brackets [].
The results are computed separately for each equation using the appropriate residuals
**** p<0.01, ** p<0.05, * p<0.1 {Emphasis are placed on *** p<0.01, ** p<0.05}*

From section A in Table 5.21, the *p-value* determinant estimation lends credence to the stability of the model with the Durbin-Watson statistics that ranges between 1.5 and 2.6. Further, 11 out of possible 84 combinations are statistically significant and four out of those variables appear in section A of the Table. In specific, *LAWRULE* and *QLEGAL* bear explosive positive coefficients in lag 1. Whereas, *POLITY* bears both explosive negative and low positive coefficients in lag 1 and in first difference respectively.

As for section B, the Durbin-Watson statistics of the *p-value* determinant estimation ranges from 1.5 to 2.4, thereby alluding to the stability of the estimation. In addition, 14 out of the possible 84 combinations are statistically significant and five of those variables appear in section B of the Table. In specific, all the explanatory variables are statistically significant in lag 1, and in addendum, *POLITY* is statistically significant in first difference. It is however noteworthy that the coefficients of all the variables are explosive in nature.

Further, *LAWRULE, INFLATION, QLEGAL* in lag 1 bear negative coefficients, while *POLITY* and *CORRUPTION* in lag 1 bear positive coefficients. Further, *POLITY* in first difference also bears a negative coefficient. The coefficient of *POLITY* in first difference indicates that more than 71 per cent of the error generated through innovations shock is corrected through structural reform. The results contained in this section also indicate that period effect is of invaluable importance in this combination. Further, all the explanatory variables play important roles in explaining the variations in the behaviour of the dependent variable (*PRIVY*).

The Durbin-Watson statistics for the *p-value* determinant estimation for section C ranges from 1.5 to 2.4. This statistical value suggests that the estimation is stable. Looking at the results of error correction estimations for section C, 14 out of a possible 84 combinations are statistically significant. Out of the 14 statistically significant combinations, eight appears in section C of Table 5.21. Looking at the individual combination in section C, the results of the explanatory variables is similar to the one obtained for section B and the coefficients generated through the interactions are also similar in both instances.

In specific, differenced *NONFIN* in lag 1 bears a positive coefficient that suggests a possible correction of more than 66 per cent of the deviation from equilibrium within the first period. However, the differenced form of the variable in lag 2 bears a negative coefficient that suggests a possible correction of the deviation of the variable from the point of equilibrium by about 67 per cent during the second period. In both instances, the importance of structural change and time lag as determinants of speed of adjustment back to equilibrium are emphasised.

As indicated earlier, the behaviour of the explanatory variables in section C is similar to what we obtained for section B. for instance, all the explanatory variables are statistically significant in lag 1 and *POLITY* is in addition, statistically significant in first difference. Further, the sign on the coefficients of these variables are similar, suggesting some similarity in their response pattern in both instances.

However, the coefficient of *INFLATION* is not explosive in section C and the coefficient of *POLITY* in first difference is also not too weak. In case of the former, the coefficient suggests that about 42 per cent of the error generated through the innovations shock hitting the system will be corrected within the first period. In case of the latter, the coefficient suggests that more than 71 per cent of the deviation from equilibrium will be corrected through structural reforms to the innovations shock. In this section, the importance of time lag and structural change are emphasised. Further, there are indications that the explanatory variables are all good predictors of the variation expressed by the dependent variables (*NONFIN*).

The Durbin-Watson statistics for *p-value* determinant estimation for section D ranges from 1.5 to 2.1, thereby buttressing the stability of the estimation. Further, 22 out of a possible 84 combinations are statistically significant and 14 of those variables appear in Table 5.21 as variables of interest. To start with, *EQCAP* bears a negative coefficient in first difference. The coefficient of the variable suggests that barely 16 per cent of the deviation of the variable from equilibrium point as a result of innovative shock is corrected through structural change. However, the coefficient of the variable when differenced and lagged once, becomes positive and suggests that about 36 per cent of the error generated as the innovative shock hits the system is corrected in the first year and through structural reforms as well.

Further, *LAWRULE* bears an explosive positive coefficient in lag 1, and also an explosive positive coefficient in second difference of lag 2. Again, the importance of time lag is emphasised here. *POLITY* bears an explosive positive coefficient in lag 1 and a low coefficient (about 10 per cent) in first difference. The variable also bears an explosive positive coefficient in lag 2 of first difference.

This instance also emphasise the importance of time lag. Looking at *INFLATION*, the variable bears a positive coefficient when differenced and in lag 1. The coefficient suggest that about 67 per cent of the error generated through innovations shock hitting the system is corrected during the first year and with the aid of structural change. In addition, the variable bears a positive coefficient in first difference of lag 2. The coefficient indicates that about 52 per cent of the error generated through the innovation shock hitting the system is corrected within two periods, aided by structural reforms.

QLEGAL bear explosive positive coefficients in lag 1, differenced in lag 1, as well as differenced in lag 2. This result hints on the importance of time lag and structural change. Further, *CORRUPTION* bears both explosive negative coefficient and explosive positive coefficient in lag 1 and differenced in lag 2 respectively. The result generated in this section suggests that both time lag and structural change play important roles in the adjustment of the variables back to the point of equilibrium. Further, all the explanatory variables contribute significantly towards explaining the variation expressed by the dependent variable.

The *p-value* determinant estimation for section E has a Durbin-Watson statistics that ranges from 1.6 to 2.3, thereby buttressing the stability of the estimation. In addition, eight out of a possible 84 combinations are statistically significant and seven of those variables appear in section E of Table 5.21. To start with, *TURNOVER* bears a negative coefficient in first difference. The coefficient suggests that about 60 per cent of the error generated through the innovation shock hitting the system is corrected through structural reform. The variable also bears a positive coefficient when differenced in lag 1.

Further, all the explanatory variables (except for *CORRUPTION*) are statistically significant in lag 1. In addition, *POLITY* is also significant with an explosive negative coefficient in first difference. Further, *LAWRULE* and *QLEGAL* bear explosive negative coefficients, *POLITY* has a low positive coefficient (12 per cent) and *INFLATION* has an infinitesimal negative coefficient. In this section, it is evident that these variables are important determinants of the variations expressed by the dependent variable. More so, the importance of time lag is espoused stronger than structural change in the error correction process.

The general conclusion from the East Africa error correction estimations is that both time and structural changes play significant role in the adjustment of the variables back to the point of equilibrium from the innovations shock that hit the system. More importantly, all the explanatory variables are observed to have contributed significantly towards explaining the variation that is expressed by the dependent variable.

5.4.3 Panel unit root test for equations 3 to 7

Having looked at the error terms in equations 3 to 7 for both 'pooled' data and the regions, tests for stationarity of the variables used in equations 3 to 7 is conducted. Evidence suggests that if the time series of the variable under study are not integrated in the same order, the variable cannot be in a long-run equilibrium relationship (Engle and Granger 1987; Johansen and Juselius, 1990). Thus, it is important to conduct the stationarity tests in order to ensure that the variables are not integrated in different order. The Levin, Lin and Chu unit root test was used as the dominant method as done in Table 5.5. The results of the unit root test for the variables used in estimating equations 3 to 7 are presented in Table 5.22:

Table 5.22: Unit Root Tests for equations 3 to 7 (1980-2012)
Newey-West Automatic Bandwidth Selection and Bartlett Kernel

	I		II		III	
Variables	Levin, Lin & Chu (Individual Intercept and Trends)		Levin, Lin & Chu (individual effects)		Levin, Lin & Chu (none)	
	At level	In first diff.	At level	In first diff.	At level	In first diff.
LAWRULE	-3.70030***	-	-2.7292***	-	-0.96888	-20.3827***
Observation	185	-	186	-	190	184
Order of integration	I(0)		I(0)		I(1)	
POLITY	-2.52309***	-	0.16979	-13.0398***	-2.63971***	-
Observation	190	-	190	154	188	-
Order of integration	I(0)		I(1)		I(0)	
QLEGAL	-7.06277***	-	-5.3568***	-	-1.56520**	-
Observation	189	-	188	-	187	-
Order of integration	I(0)		I(0)		I(0)	
CORRUPTION	-1.06974	-9.7920***	0.21799	-11.8017***	-1.52291*	-
Observation	182	180	182	178	179	-
Order of integration	I(1)		I(1)		I(0)	
ENFORCE	-1.59244**	-	1.93982	-2.37030**	-5.37030	-7.29761***
Observation	96	-	64	42	64	55
Order of integration	I(0)		I(1)		I(1)	

Using the Levin, Lin & Chu (2002) test, probabilities are computed assuming asympotic normality
****; **; * This indicates that we reject the null hypothesis of unit root at 1%, 5% and 10%.*
Automatic selection of maximum lags; Automatic lag length selection based on SIC: 0 to 5
All variables except for EQCAP, PRIVY and TURNOVER are stationary at level and significant at 5%.

Before analysing the unit root test, it is important to note that the variables used in this table are not 'normal' time series dataset compared to the customary capital market time series dataset such as equity market capitalisation, bank deposit etc. that are readily available in various national accounts. The fact that these variables are largely 'perception'-based indices indicates that we may not be suitable enough to exploit the usual mean-reverting behaviour that characterises conventional unit root tests. However, it is considered important to perform the test in order to conform to the econometric criteria, especially the cointegration regression that is underpinned by order of integration of series.

As indicated in Table 5.22, the order of integration for most of the variables used are I(0), except for corruption index (*CORRUPTION*) and the dummy variable, legal enforcement (*ENFORCE*) that only become stationary in first difference. This suggests that the variables are mostly stationary at level (1%) using Levin, Lin and Chu test. However, as demonstrated in the literature review chapters, the availability/presence of these institutional frameworks in the sampled countries is not sufficient to ensure market efficiency. It was observed that more needs to be done to strengthen the existing regulations and to probably promulgate new ones in order to achieve institutional adequacy. To that effect, these institutional variables are used in their first difference in the estimations.

Although, differencing variables that are already stationary at level may seem over-differenced, but this practice is not uncommon in econometrics as demonstrated by Zivot and Wang (2006). According to these authors, differencing a variable that is stationary at level will yield a scenario similar to the one presented in Figure 5.1:

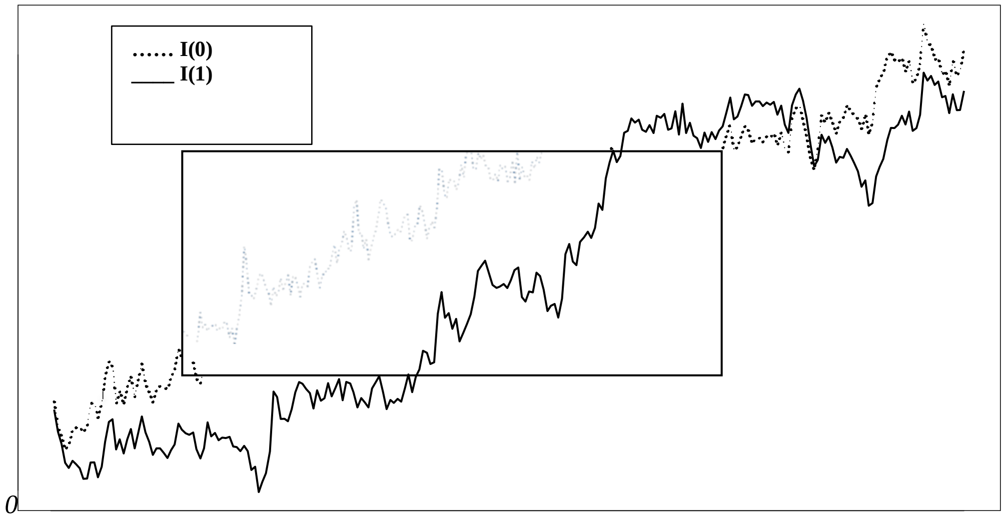

Figure 5.1: Simulated trend stationary (I(0)) and difference stationary (I(1)) processes. Adapted from Zivot and Wang, 2006:113

From Figure 5.1, it is evident that first differencing a variable when it is trend stationary would produce a new form of the original variable with a unit moving average root. That is, the variable in its new form would generate a series that conforms to the original intended stationarity tests that is based on testing for a unit moving average root. By implication, the expected order of integration in the series is not compromised (Zivot and Wang, 2006).

5.4.4 Dynamic panel estimation for equations 3 to 7

Having tested for stationarity (which is a prelude for the test of cointegration), we now proceed to test for cointegration among the variables used in this estimation. However, it is considered important to first test for the goodness of fit of the model specified, and to establish the degree of relationship between the variables used in the estimation.

To capture the effects of institutional framework on capital market development, the Generalised Method of Moments (GMM) as suggested by Arellano and Bond (1991) is favoured. The GMM technique is considered appropriate because, the use of appropriate estimation instruments coupled with application of fixed and cross-section effects in the analysis helps to wipe endogeniety if these biases are present in the estimation. However, the GMM approach is only desirable if the number of the observations in the series is greater than the number of regressors.

In each of these models, we have seven regressors and thirty-two periods (the annual data used in estimating these models run from 1980 to 2012), which suggests that the GMM method can be applied. The result of the GMM estimation is presented in Table 5.12. Before adopting the GMM technique, stepwise regression was conducted to ascertain the explanatory power or redundancy of the variables contained in the model. The result of the stepwise estimation (not reported) indicates that the chosen control variable (*ENFORCE*) do contribute to the explanatory power of the model. As such, this control variable was retained in the final estimation. It must be noted that regional dummies cannot be used in this estimation because of the fixed effect dummies that are entered into the estimation. Further, *INFLATION* that was used as a control variable in Part A is now used as an institutional variable in this Part.

Also, it should be pointed out that E-Views does automatically create instruments to be used in estimation from lags of the dependent and regressor variables in the original specification (here, the White period instrument weighting matrix is used). By so doing, the software transforms the linear model and estimates the nonlinear differenced specification (Orthogonal deviation is used in this analysis). By default, E-Views also automatically add lagged values of the dependent and independent regressors to the corresponding lists of instrumental variables to account for the modified specification.

This transformation ensures that the instruments are not correlated with the residuals, and that the appropriate lag is adopted in the estimation, thereby allaying the fears of endogeneity. Also, as done in Part A, each of the explanatory variables is entered separately into the estimation in order to uncover their statistical significance in explaining capital market development, and to further control for endogeneity bias. We introduce regulatory enforcement as the control variable in Parts B and C. The results of the GMM estimations are presented in Table 5.23.

Table 5.23: The GMM Panel Regression for Equations 3 to 7 (1980-2012): Pooled Data

Institution Framework on Capital Market Development

(Dependent Variable – Capital Market Development Variables)

	BANK	PRIVY	NONFIN	EQCAP	TURNOVER
LAWRULE	0.006307 (0.000958)***	0.001331 (0.000447)***	0.008159 (0.001420)***	0.001719 (0.000386)***	0.000885 (0.000348)**
ENFORCE	0.045701 (0.018159)**	0.036475 (0.017104)**	0.063024 (0.017288)**	0.018255 (0.017149)	0.028095 (0.017212)
Sargan Test (Prob >chi2)	0.459	0.104	0.219	0.309	0.363
POLITY	-0.102994 (0.024614)***	-0.024676 (0.017189)	-0.108794 (0.044284)**	-0.001173 (0.016985)	-0.011715 (0.015137)
ENFORCE	-0.198946 (0.719960)	-0.343592 (0.724908)	-0.784895 (0.709417)	-0.404912 (0. 0.64329)	-0.469056 (0.727310)
Sargan Test (Prob >chi2)	0.360	0.499	0.883	0.199	0.344
INFLATION	-0.083096 (0.077127)	-0.095074 (0.036417)***	0.308442 (0.125943)**	-0.028781 (0.023819)	-0.008746 (0.025681)
ENFORCE	-3.568659 (2.505311)	-3.530756 (0.455140)	-2.619068 (0.467467)	-3.985547 (0.432877)*	-3.782081 (2.450160)
Sargan Test (Prob >chi2)	965	0.710	0.220	0.641	0.175
QLEGAL	-0.004109 (0.000877)***	-0.001141 (0.000628)*	0.003846 (0.001655)**	0.001299 (0.000485)***	0.00283 (0.000576)
ENFORCE	0.045575 (0.020682)*	0.040127 (0.019366)**	0.051587 (0.019072)**	0.026080 (0.018893)	0.037798 (0.018860)*
Sargan Test (Prob >chi2)	0.410	0.615	0.612	0.818	0.141
CORRUPTION	0.001683 (0.002383)	-0.000554 (0.001145)	-0.004134 (0.003610)	-0.000975 (0.000906)	-0.001705 (0.000961)*
ENFORCE	0.394273 (0.044849)*	0.398607 (0.044600)*	0.382627 (0.046910)*	0.388682 (0.046159)*	0.386594 (0.045106)*
Sargan Test (Prob >chi2)	0.237	0.145	0.891	0.711	0.777
Observations	192	192	192	192	192
Number of countries	6	6	6	6	6
Orthogonal Deviations	Yes	Yes	Yes	Yes	Yes

*Robust standard errors are in parentheses. *** p<0.01, ** p<0.05, * p<0.1. Cross-section weights instrument weighting matrix and Convergence was achieved after 1 weight iterations. Cross-section weights (PCSE) standard errors & covariance (no d.f. correction). Maximum lags of dependent and predetermined variables for use as instruments are limited to 1. Period fixed (dummy variables) applied in the estimation*

The estimation technique that was adopted in Part A is also adopted here and will be adopted in Part C as well. As indicated in Table 5.23, we adopt cross-section orthogonal deviation and period fixed effects in the dynamic panel estimation. To establish the appropriateness of introducing cross-sectional and period fixed effects, we conducted Hausman test. The Hausman test suggests that the introduction of period fixed effect is strong as the null hypothesis falls in the region of rejection, hence the justification for introducing period fixed dummy into the regression. The test further suggests that cross-sectional effects are statistically significant, as the hypothesis falls within the region of rejection, hence the motivation for introducing cross section fixed effect dummy; in this instance, orthogonal deviation. The goodness of fit of the model is ensured through the same set of diagnostics that are performed for equation 2.

From Table 5.23, it is evident that the institutional variables used in this study play some roles in the development of capital markets in the selected countries in Africa. In specific, the impact of rule of law (*LAWRULE*) on equity capitalisation (*EQCAP*) is evidently strong. Bearing a positive coefficient, the statistical significance of this variable on equity capital suggests that an improvement in the process of upholding rule of law will improve equity capitalisation. This is in line with previous studies (Ito, 1999; La Porta, Lopez-de-Silanes, Shleifer & Vishny, 2000) where it was argued that respect for rule of law does translates into investor protection, which is important to attract investments into the equity market.

The analysis further suggests that rule of law does significantly influence stock turnover rates (*TURNOVER*) and the financial resources provided to the private sector by domestic money banks as a share of GDP (*BANK*) as well. In addition, the institutional variable also influences domestic credit to the private sector as a share of GDP (*PRIVY*), as well as claims on domestic real nonfinancial sector by the Central Bank as a share of GDP (NONFIN). In specific, these institutional variable share positive coefficients with all the capital market variables and they all have strong predictive ability as indicated by their level of statistical significance (1%).

Furthermore, the combined polity score (*POLITY*) bears negative coefficient with all the capital market variables, although the impact is only statistically significant on the financial resources provided to the private sector by domestic money banks as a share of GDP (*BANK*) and claims on domestic real nonfinancial sector by the Central Bank as a share of GDP (*NONFIN*). By implication, the negative coefficient signals to the possibility that an improvement in the shrewd or crafty management of public affairs may be counterproductive for capital market development in the selected African markets. To this extent, an argument could be raised that Africa's capital market are already well-regulated and an attempt to further regulate the market may render it uncompetitive. This assumption may hold, given that the largest stock market on the continent, the Johannesburg stock exchange has continuously won the best-regulated stock market award for many years. Various capital market reforms have also taken place in Nigeria, Egypt, Tunisia and the other leading capital markets in Africa.

The impact of inflation (*INFLATION*) on the development of capital market is mixed. Although, the variable expectedly bears negative coefficient with four of the five capital market variables (except *NONFIN*), it is only statistically significant on domestic credit to private sector as a share of GDP (*PRIVY*) and claims on domestic real nonfinancial sector by the Central Bank as a share of GDP (*NONFIN*). This form of characteristic may suggest that although inflation negatively affects capital market development, its effect is mainly felt on the level of domestic credit that is made available to the private sector. In addition, it should not be too surprising to note that inflation has a positive impact on *NONFIN*. Simply, the higher the level of inflation, the more claims the Central Banks have on the domestic real nonfinancial sector of the economy (the volume of the cash injection that is denominated in local currency).

Further, the quality of legal framework (*QLEGAL*) also positively influences three of the five capital market development variables, while the effect is negative in two instances. In specific, this institutional variable bears negative coefficient with the financial resources provided to the private sector by domestic money banks as a share of GDP (*BANK*), and domestic credit to private sector as a share of GDP (*PRIVY*). More importantly, the institutional variable is statistically significant on both variables (*BANK* – 1%; and *PRIVY* - 10%). This may suggest that these financial units are already overregulated and further regulating them may conscript their development.

Converse to the explanation offered above, the quality of legal framework (*QLEGAL*) have positive impact on three capital market development variables, which are equity capitalisation (*EQCAP*), stock turnover rate (*TURNOVER*) and claims on domestic real nonfinancial sector by the Central Bank as a share of GDP (*NONFIN*). However, its impact is only statistically significant on *EQCAP* and *NONFIN*. The positive coefficient of this institutional variable on these capital market development variables, coupled with its strong statistical significance is an indication that an improvement in the quality of legal framework will improve the attraction of the equity market to investors. This finding is also supported by previous studies (King & Levine, 1993c; Laeven & Majnoni, 2004). The same argument can be advanced for *NONFIN*.

To conclude the discourse on the regression analysis for this equation, corruption (*CORRUPTION*) has a negative coefficient with four of the five capital market variables (except for *BANK*), but it is only statistically significant on stock turnover rate, albeit very weakly (10%). As such, it could be proposed that although, corruption generally have negative effects on capital market development, the statistical validity of this proposition is weak, even in the case of stock turnover rate.

The period analysis of these variables (that is included in the estimation, but not reported) reveals that these variables are becoming increasingly important determinants of the capital market development in Africa, especially consistently since 2005. This assertion is supported by the fact that these variables play less significant role in the early 1980s, as opposed to the period from 2005 onward. In addition, the fact that these variables are statistically significant over 26-year period (out of the 32 years covered in the study) is an indication of the prominent deterministic role they play in the development of capital markets in Africa. The fact that period analysis bears mixed coefficients (both negative and positive) may suggest that some intervention policies were applied across the continent over the period, of which some bore positive results while others were counterproductive.

North Africa

The regional analysis of equations 3 to 7 is also conducted and the results are presented in Tables 5.24 to 5.27. In this analysis, the validity of the instruments used is checked using a Sargan test of over-identifying restrictions, which tests for correlation between the instruments used in the estimation and the model residuals. The tests yield statistically insignificant results, suggesting that there is no correlation between the instruments and the model residuals.

Table 5.24: The GMM Panel Regression for Equations 3 to 7 (1980-2012): Regional Analysis (North Africa)

Institution Framework on Capital Market Development

(Dependent Variable – Capital Market Development Variables)

	BANK	PRIVY	NONFIN	EQCAP	TURNOVER
LAWRULE	-41.62804 (9.303436)***	-37.53532 (8.873959)***	22.37404 (5.111045)***	-82. 14.13821 (14.13821)***	-36.64019 (6.342152)***
ENFORCE	15.30053 (6.078259)**	12.52208 (5.797666)**	-4.430686 3.339224	10.93361 (9.236984)	0.143507 (4.143549)
Sargan Test (Prob >chi2)	0.6952	0.4890	0.1380	0.2190	0.3233
POLITY	2.456236 (0.800166)***	2.313192 (0.756317)***	-1.610800 (0.428260)***	6.325139 (1.184631)***	2.699288 (0.536843)***
ENFORCE	21.78241 (6.016891)***	18.18047 (5.687166)***	-7.364741 (3.220323)*	21.06667 (8.907900)**	4.832206 (4.036819)
Sargan Test (Prob >chi2)	0.6380	0.1713	0.1011	0.8720	0.2540
INFLATION	-1.137046 (0.245453)***	-1.190404 (0.225819)***	0.449445 (0.141483)***	-1.093588 (0.423565)**	-0.260341 (0.194156)
ENFORCE	22.18755 (5.587012)***	18.11596 (5.140092)***	-8.735423 (3.220429)***	28.95284 (9.641197)**	8.967412 (4.419386)*
Sargan Test (Prob >chi2)	0.2080	0.1681	0.7742	0.2253	0.4002
QLEGAL	-35.36494 (10.80726)***	-35.21991 (10.14695)***	3.160560 6.234129	-19.92059 (18.26372)	5.877047 (8.196024)
ENFORCE	29.38722 (5.857702)***	25.50254 (5.499800)***	-10.67632 (3.378993)***	34.69849 (9.899214)**	9.446919 (4.442370)*
Sargan Test (Prob >chi2)	0.1991	0.8081	0.1233	0.8323	0.8933
CORRUPTION	-4.959835 4.349023	-2.119098 4.131892	3.659480 2.366729	-14.37451 (6.898396)**	-7.754426 (3.052104)**
ENFORCE	25.57898 (6.112065)***	22.19325 (5.806912)***	-9.784815 (3.326173)***	30.56877 (9.694925)**	8.609655 (4.289391)**
Sargan Test (Prob >chi2)	0.3040	0.3671	0.4123	0.1633	0.1203
Observations	96	96	96	96	96
Number of countries	3	3	3	3	3
Orthogonal Deviations	Yes	Yes	Yes	Yes	Yes

*Robust standard errors are in parentheses. *** p<0.01, ** p<0.05, * p<0.1. Cross-section weights instrument weighting matrix and Convergence was achieved after 1 weight iterations. Cross-section weights (PCSE) standard errors & covariance (no d.f. correction). Maximum lags of dependent and predetermined variables for use as instruments are limited to 1. Period fixed (dummy variables) applied in the estimation*

According to Table 5.24, most of the explanatory variables used in the analyses yield statistically significant results, thereby indicating strong explanatory relationship with the dependent variables. For instance, all the explanatory variables (except for corruption) share statistically significant relationship with *BANK* when we control for legal enforcement of contracts. It must also be pointed out that the coefficients are explosive in all the cases.

In specific, the relationship between *BANK*, and *LAWRULE, INFLATION* and *QLEGAL* are negative, while *POLITY* bears a positive coefficient. All these variables are statistically significant at one per cent error level, thereby signally a very strong deterministic relationship between the financial resources provided to the private sector by domestic money banks as a percentage of GDP (*BANK*) and the institutional variables. This implies that the efficiency of *BANK* is highly influenced by the institutional variables.

Similar relationships exist between the institutional variables and *PRIVY*. Controlling for legal enforcement of contracts (*ENFORCE*), all the institutional variables have statistically significant relationships with the domestic credit to private sector as a percentage of GDP, and the sign of their coefficients are similar to the one obtained for *BANK*. In the case of claims on domestic real nonfinancial sector by the Central Bank as a share of GDP (*NONFIN*), this variable shares strong explanatory relationship with three of the institutional variables, controlling for legal enforcement of contracts (*ENFORCE*). Corruption perception and quality of regulation (*QLEGAL*) are found to be statistically insignificant predictors of *NONFIN*.

The remaining two capital market variables (equity capital variables – *EQCAP* and *TURNOVER*) bear statistically significant relationships with all the institutional variables (except for *QLEGAL*) at one per cent error level, and their coefficients are explosive as well. In specific, these dependent variables share explosive negative coefficients with rule of law (*LAWRULE*), consumer price increase (*INFLATION*), and corruption perception (*CORRUPTION*) and explosive positive coefficients with polity score (*POLITY*). An overall conclusion can be drawn that the institutional variables are strong determinants of capital market development in North Africa. The explosive coefficients of these variables further buttress the statistical significance of this strong relationship.

Southern Africa

The Southern Africa analysis is similar to that of North Africa and the rest of dynamic estimations in this study. The Sargan tests are statistically insignificant and the coefficients of the *p-values* indicate that the models are stable and there is no problem of endogeneity in the estimations. It must be recalled that the explanatory variables are entered into the system separately.

Table 5.25: The GMM Panel Regression for Equations 3 to 7 (1980-2012): Regional Analysis (Southern Africa)

Institution Framework on Capital Market Development

(Dependent Variable – Capital Market Development Variables)

	BANK	PRIVY	NONFIN	EQCAP	TURNOVER
LAWRULE	29.27746 (28.71925)*	157.2380 (90.51603)*	-4.905601 (3.464541)	184.3624 (174.5915)	84.98545 (141.6722)
ENFORCE	14.34204 (1.314143)***	25.22286 (3.820573)***	0.573138 (0.130952)***	35.34017 (5.774329)***	8.479834 (5.692134)
Sargan Test (Prob >chi2)	0.4905	0.7016	0.3643	0.4205	0.1161
POLITY	1.299860 (0.780353)*	4.091776 (2.613371)	-0.051114 (0.045773)	7.260795 (3.017716)**	5.188650 (2.573669)**
ENFORCE	12.90281 (1.446760)***	45.39166 (22.09547)***	0.548786 (0.102642)***	27.74983 (5.005491)***	2.047453 (3.755145)
Sargan Test (Prob >chi2)	0.3504	0.7000	0.4731	0.8764	0.4387
INFLATION	-1.793965 (0.276384)***	-5.925675 (0.887641)***	0.050621 (0.051670)	-7.998117 (2.143277)***	-5.865410 (1.676748)***
ENFORCE	20.05292 (1.171774)***	45.39166 (3.187216)***	0.324035 (0.158761)**	61.96194 (8.027199)***	26.92016 (6.664048)***
Sargan Test (Prob >chi2)	0.1011	0.8765	0.4825	0.7963	0.1935
QLEGAL	15.63659 (12.40161)	66.39788 (45.93493)	1.442785 (1.652856)	64.41569 (90.90513)	108.2337 (55.98826)*
ENFORCE	12.97757 (2.200238)***	20.13857 (7.273156)**	0.283223 (0.236844)	31.09370 (13.19944)**	-3.501880 (9.364903)
Sargan Test (Prob >chi2)	0.7854	0.1353	0.3948	0.3364	0.2204
CORRUPTION	-21.18264 (5.468796)***	-69.94598 (17.76098)***	0.900010 (0.951243)	-311.9470 (113.5057)***	-84.81954 (19.81100)***
ENFORCE	41.45169 (6.369008)***	116.0458 (20.45582)***	-0.657649 (1.191511)	429.2503 (144.6306)***	116.3370 (23.96048)***
Sargan Test (Prob >chi2)	0.2752	0.5643	0.4638	0.8973	0.2473
Observations	33	33	33	33	33
Number of countries	1	1	1	1	1
Orthogonal Deviations	No	No	No	No	No

*Robust standard errors are in parentheses. *** p<0.01, ** p<0.05, * p<0.1. Cross-section weights instrument weighting matrix and Convergence was achieved after 1 weight iterations. Cross-section weights (PCSE) standard errors & covariance (no d.f. correction). Maximum lags of dependent and predetermined variables for use as instruments are limited to 1. Period fixed (dummy variables) applied in the estimation*

Looking at individual variables, the deterministic relationships between *BANK*, and *LAWRULE* and *POLITY*, is only statistically significant at 10 per cent error level, and both bear explosive positive coefficient when we control for legal enforcement of contracts (*ENFORCE*). However, the deterministic relationships are stronger in the case of *INFLATION* and *CORRUPTION*, both with explosive negative coefficients. It could thus be suggested that these institutional variables are strong determinants of the variations expressed by *BANK*.

In the case of domestic credit to private sector as a percentage of GDP (*PRIVY*), the relationship between the variable and *LAWRULE* is only statistically significant at 10 per cent error level and the coefficient is positive but explosive. However, the relationship between the dependent variable and *INFLATION* is statistically significant at one per cent error level with explosive negative coefficient. The same relationship holds for the relationship between the dependent variable and *CORRUPTION*. In the case of *NONFIN*, none of the explanatory variables is found to be of statistical significance as determinants of the variation expressed by the dependent variable.

Further, *POLITY* is found to have an explosive positive relationship with the total value of all listed shares in the Southern Africa stock market as a percentage of GDP (*EQCAP*) and the variable is found to be statistically significant at five per cent error level. However, the relationships between *EQCAP* and *INFLATION*, and with *CORRUPTION* are statistically significant at one per cent error level and bear explosive negative coefficients. Similar result is obtained for the total value of all traded shares in the Southern Africa stock market as a percentage of GDP (*TURNOVER*). In addition, *TURNOVER* has a statistically significant relationship with *QLEGAL* at 10 per cent error level and the coefficient is positively explosive. In the Southern Africa analysis, evidence suggests that institutional variables play strong roles on the development of capital market in that region.

West Africa

The regional analysis for West Africa is presented in Table 5.26 and the discussion of the result follows thereafter.

Table 5.26: The GMM Panel Regression for Equations 3 to 7 (1980-2012): Regional Analysis (West Africa)

Institution Framework on Capital Market Development
(Dependent Variable – Capital Market Development Variables)

	BANK	PRIVY	NONFIN	EQCAP	TURNOVER
LAWRULE	2.170789 (2.533083)	8.244544 (4.993044)*	-25.73783 (3.139129)***	13.37019 (2.998485)***	4.622339 (1.065980)
ENFORCE	4.976224 (1.073823)***	7.702618 (2.078286)***	-5.377310 (0.781048)***	7.778612 (1.018213)***	2.018590 (0.416972)
Sargan Test (Prob >chi2)	0.828046	0.848942	0.315094	0.484637	0.878102
POLITY	0.082956 (0.117282)	0.175842 (0.133108)	-0.731119 (0.216337)***	0.347100 (0.222365)	0.034993 (0.029691)
ENFORCE	4.073090 (0.265242)***	4.436138 (0.270137)***	4.698173 (0.349869)***	2.620037 (0.408581)***	0.177267 (0.073958)
Sargan Test (Prob >chi2)	0.720186	0.288948	0.774380	0.105783	0.483099
INFLATION	-0.075433 (0.029772)**	-0.110775 (0.042182)**	0.169669 (0.059515)***	-0.069939 (0.035561)**	-0.018935 (0.012424)
ENFORCE	4.644547 (0.461630)***	5.162232 (0.469790)***	3.275059 (0.816415)***	3.140586 (0.634374)***	0.385416 (0.189897)*
Sargan Test (Prob >chi2)	0.733966	0.383752	0.189887	0.69435	0.035526
QLEGAL	4.066175 (3.780701)	6.771694 (3.848533)*	-23.59543 (8.424940)***	13.24165 (5.579720)**	3.768445 (1.740505)**
ENFORCE	5.187856 (1.265778)***	6.725239 (1.511766)***	-1.743666 (2.138174)	6.075205 (1.432647)***	1.230927 (0.477590)**
Sargan Test (Prob >chi2)	0.776045	0.320228	0.695080	0.232691	0.417524
CORRUPTION	9.888189 (5.608327)*	7.087669 (6.721359)	24.46266 (10.87551)**	-1.804809 (4.498408)*	3.476786 (1.902850)*
ENFORCE	-0.680119 (2.680886)	1.082648 (3.129844)	-7.418395 (5.257667)	3.747566 (2.014455)*	-0.922839 (0.783464)
Sargan Test (Prob >chi2)	0.460200	0.111582	0.341127	0.148711	0.559373
Observations	33	33	33	33	33
Number of countries	1	1	1	1	1
Orthogonal Deviations	No	No	No	No	No

*Robust standard errors are in parentheses. *** p<0.01, ** p<0.05, * p<0.1. Cross-section weights instrument weighting matrix and Convergence was achieved after 1 weight iterations. Cross-section weights (PCSE) standard errors & covariance (no d.f. correction). Maximum lags of dependent and predetermined variables for use as instruments are limited to 1. Period fixed (dummy variables) applied in the estimation*

In the West Africa analysis, only *INFLATION* (five per cent error level) and *CORRUPTION* (10 per cent error level) are found to have statistically significant relationship with financial resources provided to the private sector by domestic money banks as a percentage of GDP (*BANK*). While *INFLATION* expectantly bears a negative coefficient (eight per cent), *CORRUPTION* surprisingly bears an explosive positive coefficient. This finding indicates that inflation would slightly affect *BANK* development in the region, but *CORRUPTION* would most possibly improve it. This kind of result may suggest that corrupt public officials are closely linked to ownership structures of major banks in the region.

Looking at the relationship between domestic credit to private sector as a percentage of GDP (*PRIVY*) and the institutional variables, it is apparent that *LAWRULE* and *QLEGAL* are statistically significant at 10 per cent error levels and both variables bear explosive positive coefficients. *INFLATION*, however, expectantly bears a negative coefficient (-0.11) and the variable is statistically significant at five per cent error level. This result suggests that the annual percentage change in consumer prices (*INFLATION*) does have more significant negative effect on *PRIVY*, but an improvement in *LAWRULE* and *QLEGAL* will probably improve the development of domestic credit to private sector as a percentage of GDP (*PRIVY*).

Controlling for legal enforcement of contracts, all the institutional variables play deterministic roles on claims on domestic real nonfinancial sector by the Central Bank as a share of GDP (*NONFIN*) at one per cent error level (except for *CORRUPTION* that is statistically significant at five per cent error level). While *LAWRULE* and *QLEGAL* bear explosive negative coefficients, the negative coefficient borne by *POLITY* suggests that the development of *NONFIN* will be affected by about 73 per cent of structural change in *POLITY*. Surprising here again as in the case of *BANK*, *INFLATION* and *CORRUPTION* bear positive coefficients, suggesting that the higher the consumer price index and the higher the corruption level, the more claims on domestic real nonfinancial sector by the Central Bank as a share of GDP (*NONFIN*) would increase in the region.

The relationship between the total value of all listed shares in the Southern Africa stock market as a percentage of GDP (*EQCAP*) and all the institutional variables is strong and statistically significant (except for *POLITY*). However, in this instance, unlike in the previous results, the coefficients of these variables are explosive and they are all positive (except for *INFLATION* that bears a negative coefficient). By implication, corruption is observed to be capable of reducing the values of the equity capital, while all other institutional variables are observed to be capable of positively enhancing the development of the total value of all listed shares in the Southern Africa stock market as a percentage of GDP (*EQCAP*).

In the case of the total value of all traded shares in the Southern Africa stock market as a percentage of GDP (*TURNOVER*), only regulatory quality (*QLEGAL*) and corruption perception (*CORRUPTION*) emerged as the two institutional variables that impact *TURNOVER*. While *QLEGAL* is statistically significant at five per cent error level, *CORRUPTION* is statistically significant at one per cent error level. It can thus be suggested that institutional variables do slightly influence the total value of all traded shares in the Southern Africa stock market as a percentage of GDP (*TURNOVER*).

The regional GMM analysis will be concluded with the results for East Africa, which will be presented in Table 5.27. The presentation of the results will be closely followed by the discussion of the result.

Table 5.27: The GMM Panel Regression for Equations 3 to 7 (1980-2012): Regional Analysis (East Africa)

Institution Framework on Capital Market Development

(Dependent Variable – Capital Market Development Variables)

	BANK	PRIVY	NONFIN	EQCAP	TURNOVER
LAWRULE	15.83799 (6.502879)	38.06961 (5.708911)***	-13.16901 (7.708220)*	43.05834 (28.27531)	-9.724198 (4.077621)**
ENFORCE	7.708899 (1.281673)***	-1.518421 (1.124432)	-1.076670 (1.637769)	11.36162 (6.030807)*	-1.781856 (0.863166)**
Sargan Test (Prob >chi2)	0.552997	0.023047	0.565640	0.866080	0.101752
POLITY	0.548823 (0.162716)***	-0.168667 (0.145782)	-0.420098 (0.054181)***	1.347200 (0.490528)***	0.253673 (0.042838)***
ENFORCE	4.834124 (0.181425)***	6.008252 (0.197133)***	1.371648 (0.101064)***	3.517194 (0.626410)***	0.364758 (0.050279)***
Sargan Test (Prob >chi2)	0.486011	0.502038	0.501845	0.344563	0.153771
INFLATION	-0.271551 (0.109308)***	0.092851 (0.107763)	0.214772 (0.064179)***	-0.226985 (0.254823)	-0.021660 (0.023671)
ENFORCE	5.579730 (0.595127)***	5.735227 (0.292670)***	1.162781 (0.278015)***	4.176792 (1.355198)***	0.255646 (0.116055**
Sargan Test (Prob >chi2)	0.706385	0.830653	0.382924	0.046697	0.648359
QLEGAL	-1.513656 (41.42003)	74.40214 (20.11335)***	-45.62946 (7.796073)***	177.7830 (51.58284)***	23.50720 (5.758629)***
ENFORCE	4.445190 (2.408563)**	11.33262 (1.331066)***	-1.158746 (0.401324)***	13.55528 (3.215443)***	1.585147 (0.376948)***
Sargan Test (Prob >chi2)	0.137707	0.017492	0.315103	0.092001	0.136721
CORRUPTION	9.555779 (6.850786)	16.20960 (2.749537)***	-1.285436 (4.549249)	24.28895 (9.964765)***	6.480838 (0.796544)***
ENFORCE	0.119969 (3.174251)	-0.956394 (1.264798)	2.260665 (2.124713)	-8.143544 (4.780324)*	-2.723264 (0.398424)***
Sargan Test (Prob >chi2)	0.158351	0.016325	0.101478	0.139918	0.103346
Observations	33	33	33	33	33
Number of countries	1	1	1	1	1
Orthogonal Deviations	No	No	No	No	No

*Robust standard errors are in parentheses. *** p<0.01, ** p<0.05, * p<0.1. Cross-section weights instrument weighting matrix and Convergence was achieved after 1 weight iterations. Cross-section weights (PCSE) standard errors & covariance (no d.f. correction). Maximum lags of dependent and predetermined variables for use as instruments are limited to 1. Period fixed (dummy variables) applied in the estimation*

According to the results presented in Table 5.27, two institutional variables (*POLITY* and *INFLATION*) are found to have statistically significant relationships with the dependent variable (*BANK*) at one per cent error level. The coefficient of *POLITY* is positive, suggesting an improvement in polity score would improve financial resources provided to the private sector by domestic money banks as a percentage of GDP (*BANK*) by about 55 per cent. Whereas, increase in consumer prices is capable of decreasing the financial resources provided to the private sector by domestic money banks as a percentage of GDP (*BANK*) by about 27 per cent.

Looking at the domestic credit to private sector as a percentage of GDP (*PRIVY*), there are indications from the results contained in Table 5.27 that *LAWRULE*, *QLEGAL* and *CORRUPTION* are statistically significant determinants of the behaviour of the dependent variable (*PRIVY*). More importantly, the coefficients of the institutional variables are positive and explosive, and they are all statistically significant at one per cent error level. A general conclusion can thus be drawn that these variables have strong influence on the development of domestic credit to private sector as a percentage of GDP in East Africa.

Controlling for legal enforcement of contracts, all the institutional variables (except for *CORRUPTION*) are found to play statistically significant deterministic roles on claims on domestic real nonfinancial sector by the Central Bank as a share of GDP (*NONFIN*). Further, except for INFLATION that surprisingly bear positive coefficient (0.21), the other variables bear negative coefficients. In specific, the coefficient of *LAWRULE* is negative and explosive, so also is the coefficient of *QLEGAL*.

However, the coefficient of *POLITY* suggests that claims on domestic real nonfinancial sector by the Central Bank as a share of GDP (*NONFIN*) would reduce by about 42 per cent through structural changes in *POLITY*. However, a structural change in consumer price would improve the claims on domestic real nonfinancial sector by the Central Bank as a share of GDP (*NONFIN*).

Considering the equity market variables (*EQCAP* and *TURNOVER*), it is observed that *POLITY*, *QLEGAL* and *CORRUPTION* are statistically significant at one per cent error level. In additional, *LAWRULE* is found to be statistically significant at five per cent error level in the case of *TURNOVER* and the coefficient is explosive and negative. In all the instances (except for *TURNOVER* regressed on *POLITY*), the coefficients of the variables are positive and explosive. The two variables that bear positive coefficient (*POLITY & EQCAP*) suggest that the total value of all traded shares in the East African stock market as a percentage of GDP (*TURNOVER*) would improve by about 25 per cent and 235 per cent through structural improvement in the combined polity score as well as improvement on regulatory quality.

The results for regional analyses suggest that all the institutional variables play strong deterministic roles on the development of capital market in all the regions, albeit, in varying degrees. Although, the GMM estimation suggests strong deterministic relationship between the dependent and explanatory variables, there is a need to establish the speed of adjustment of the variables to structural innovation shock hitting the system. This novelty precipitates our presentation of impulse response analysis.

5.4.5 Impulse response analyses for equations 3 to 7

Having conducted the dynamic panel regression for equations, we now shift our focus to the speed of adjustment of the dependent variable to the innovations shock of the explanatory variables on the dependent variables. However, instead of using the one unit innovation method that was adopted in Part A, we will make use of one standard deviation innovation method[14]. The change in approach here is necessary because all the institutional variables are presented in indexes. Their units of measurement are different from the conventional unit standards that are used in capital market dataset[15]. The results of the impulse response analysis are presented in Tables 5.28 to 5.52, beginning with the pooled estimation, through to the regional effects.

Pooled Estimation

Table 5.28: Impulse Response Estimates for Equation 3 (1980-2012): Pooled data (Response of BANK to Institutional Variables)

Period	LAWRULE	POLITY	INFLATION	QLEGAL	CORRUPTION
1	0.000000	0.000000	0.000000	0.000000	0.000000
2	0.184271	0.298551	0.014686	-0.176354	0.171156
3	0.346161	0.300001	-0.103188	-0.316201	0.393752
4	0.397615	0.217431	-0.338125	-0.300470	0.402472
5	0.442183	0.227983	-0.420852	-0.331300	0.415099
6	0.420903	0.262133	-0.506875	-0.328718	0.418742
7	0.439681	0.279862	-0.588001	-0.353020	0.430044
8	0.437887	0.281555	-0.631293	-0.359769	0.438160
9	0.444212	0.285534	-0.663831	-0.370304	0.440775
10	0.445954	0.292296	-0.694208	-0.374698	0.444848
One standard deviation innovations					

From Table 5.28, the financial resources provided to the private sector by domestic money banks as a percentage of GDP (*BANK*) is found to respond negatively and significantly too, to one standard deviation innovation shocks on two institutional variables (*INFLATION* and *QLEGAL*), but positively and significantly to the other institutional variables.

[14] Institutional variables such as *LAWRULE*, *POLITY*, and *QLEGAL* are based on scores and they range between +10 (best score) and -10 (worst score). *CORRUPTION* indexes are perception-based and they are based on scores that range between +1 (corruption free) to -1 (most corrupt).

[15] Capital market variables used in this study are measured in either currency units (*BANK*, *NONFIN* and *PRIVY*) or natural numerical number (*EQCAP* and *TURNOVER*).

The reaction of the financial resources provided to the private sector by domestic money banks as a percentage of GDP (*BANK*) to one standard deviation innovation shocks on rule of law (*LAWRULE*) begins on a positive note in the second period, and it continued in that positive territory throughout the period covered in the study. More importantly, the reaction is barely two per cent in the second period, but it gained momentum thereafter and ended up at about 45 per cent in the 10^{th} period. This form of incremental positive response is an important indication that the rule of law (*LAWRULE*) plays an important deterministic role on the efficiency and development of the financial resources provided to the private sector by domestic money banks as a percentage of GDP (*BANK*) as an important component of the capital market in Africa.

The reaction of the financial resources provided to the private sector by domestic money banks as a percentage of GDP (*BANK*) to one standard deviation innovation shock on *POLITY* is not only positive, but also with incremental effects as well. More specifically, *BANK* begins reacting to the innovation shock in the second period and the impact of the response is about 30 per cent. The effect remains at 30 per cent in the third period, reduces to 22 per cent in the fourth period and grows incrementally thereafter till the last period under consideration. These results suggest that innovation shocks on *POLITY* will be necessary to improve the performance of the financial resources provided to the private sector by domestic money banks as a percentage of GDP (*BANK*), as a strategic intervention towards developing capital market on the continent.

The dependent variable (the financial resources provided to the private sector by domestic money banks as a percentage of GDP (*BANK*) starts by responding positively to one standard deviation innovations shock in the second period by one per cent. Thereafter, the reaction changes to negative in the third period by10 per cent, and grows incrementally in the negative territory to 70 per cent in the 10^{th} period. It can therefore be reasonably concluded that innovation shocks on consumer prices (*INFLATION*) may trigger negative response from the financial resources provided to the private sector by domestic money banks as a percentage of GDP (*BANK*), and the speed of adjustment to equilibrium will be slow.

As for the reaction of *BANK* to a standard deviation innovation shock on regulatory quality (*QLEGAL*), *BANK* starts by responding negatively to the innovation shock and it never reverts back to positive territory throughout the period under consideration. A similar pattern of irreversible negative reaction that is recoded for *BANK* is also recorded here, suggesting that the financial resources provided to the private sector by domestic money banks as a percentage of GDP (*BANK*) will most probably suffer extensively from innovation shock on regulatory quality. To that extent, a compromise on regulatory quality and consumer price may trigger persistent serious instability on *BANK*.

The reaction of the financial resources provided to the private sector by domestic money banks as a percentage of GDP (*BANK*) to one standard deviation innovation shocks on the last institutional variable considered in this study (*CORRUPTION*) is positive and noticeable. In specific, *BANK* starts reacting positively to the innovative shocks on corruption perceptions in the second period at about 17 per cent and the reaction continues for the duration of the period under study.

However, the most important observation in the results is that there is a consistent increase in the enormity of the response and the peak of the responses is reaches in the eighth period through to the 10^{th} period (44 per cent). It can then be reasonably argued that care should be taken to ensure soundness in institutional framework, especially those frameworks relating to consumer price and regulatory quality. The result presented in Table 5.28 indicates that it may take a very long period for financial resources provided to the private sector by domestic money banks as a percentage of GDP (*BANK*) to recover from a possible regulatory shock on these two institutional variables, but the reactions of *BANK* to the other institutional variables (*LAWRULE*, *POLITY* and *CORRUPTION*) are positive.

In the preceding paragraphs, we looked at the effects of one standard deviation innovation shocks on institutional variables as they affect the financial resources provided to the private sector by domestic money banks as a percentage of GDP (*BANK*) across the sampled countries in a pooled data. In the paragraphs that follow, we will look at this relationship at regional level, starting with North Africa as usual.

North Africa

Table 5.29: Impulse Response Estimates for Equation 3 (1980-2012): North Africa Regional data (Response of BANK to Institutional Variables)

Period	LAWRULE	POLITY	INFLATION	QLEGAL	CORRUPTION
1	0.000000	0.000000	0.000000	0.000000	0.000000
2	-0.450888	1.054794	0.166135	-0.100590	-0.326056
3	-0.536569	1.176816	0.169929	-0.425889	-0.336714
4	-0.719050	1.282905	0.214792	-0.144391	-0.213293
5	-0.765858	1.306719	0.305135	-0.196103	-0.351663
6	-0.817538	1.397764	0.378459	-0.031307	-0.309084
7	-0.895114	1.412042	0.392884	0.003783	-0.352857
8	-0.887816	1.431919	0.435107	0.073555	-0.356528
9	-0.938041	1.437698	0.455776	0.114918	-0.352344
10	-0.930306	1.439879	0.461751	0.145271	-0.368809
One standard deviation innovations					

From Table 5.29 on North Africa regional analysis, the financial resources provided to the private sector by domestic money banks as a percentage of GDP (*BANK*) starts by responding negatively in the second period to one unit standard deviation innovation shocks on *LAWRULE*, *QLEGAL* and *CORRUPTION*, and the negative response continues until the last period covered in the case of *LAWRULE* and *CORRUPTION*, and the sixth period in case of *QLEGAL*. However, the responses to the other institutional variables by *BANK* are positive and explosive for the entire period under study in the case of *POLITY*.

Looking at individual variables, the financial resources provided to the private sector by domestic money banks as a percentage of GDP (*BANK*) begins its reaction to one standard deviation innovation shocks on *LAWRULE* in the second period at 45 per cent. It is interesting to note that the negative trend continues for the entire periods covered in this study, but more importantly, with incremental trend. With as little as 45 per cent in the second period, the response grows to 94 per cent in the ninth period, and it regresses a little to 93 per cent in period 10. One may thus opine that unguided flouting of rule of law may cost North Africa the needed development of *BANK*, and ultimately, the attractiveness of the region to inflow of FDI.

Response of the financial resources provided to the private sector by domestic money banks as a percentage of GDP (*BANK*) to one standard deviation innovation shocks on *POLITY* is not only positive, but explosive as well from the second period and the trend continues throughout the period covered in the study. *BANK* responds in similar positive and incremental way to one unit standard deviation innovation shocks on *INFLATION* from 17 per cent in the second period to 46 per cent in the ninth and 10^{th} periods. It can thus be opined that keeping inflation in check will help to improve the development of the financial resources provided to the private sector by domestic money banks as a percentage of GDP (*BANK*).

The response of the financial resources provided to the private sector by domestic money banks as a percentage of GDP (*BANK*) to one standard deviation innovation shocks on regulatory quality (*QLEGAL*) is both negative and positive, but the negative effects are stronger than the positive ones. For example, *BANK* responds negatively to the innovation shocks in the second period by 10 per cent, and the negative increment grows to 43 per cent by the third period. However, the positive effects only record the highest response of 15 per cent, and that is in period 10. One may therefore advance an argument that enervating regulatory quality may trigger inefficiency in the financial resources provided to the private sector by domestic money banks as a percentage of GDP (*BANK*) as an important component of the capital market, and ultimately, dampen the attractiveness of North Africa to inflow of FDI.

The response of financial resources provided to the private sector by domestic money banks as a percentage of GDP (*BANK*) to one standard deviation innovation shocks on corruption perception is negative and the trend is incremental in nature. Starting with about 33 per cent response rate in the second period, the negative effect proceeds to 37 per cent in period 10. This suggests that *BANK* will react immediately, negatively and strongly too, to policy intervention on corruption in North Africa.

This form of reaction may curtail the development of the financial resources provided to the private sector by domestic money banks as a percentage of GDP (*BANK*), which is an important component of the capital market. Reducing the performance of this important capital market component may ultimately reduce the attractiveness of North Africa to inflow of FDI. Again, this analysis suggests that financial resources provided to the private sector by domestic money banks as a percentage of GDP (*BANK*) in North Africa would react negatively, almost immediately too, to changes in institutional regulatory dynamics, especially as regards *LAWRULE, QLEGAL* and *CORRUPTION*. However, while the response of *BANK* to *INFLATION* is positive and significant, the reaction of *BANK* to *POLITY* is instantaneous, positive and explosive.

Southern Africa

Table 5.30: Impulse Response Estimates for Equation 3 (1980-2012): Southern Africa Regional data (Response of BANK to Institutional Variables)

Period	LAWRULE	POLITY	INFLATION	QLEGAL	CORRUPTION
1	0.000000	0.000000	0.000000	0.000000	0.000000
2	1.852962	0.864201	-0.802172	-0.641824	0.128077
3	3.536355	1.266669	-0.200018	-0.599696	0.798806
4	4.239026	1.099280	0.342451	-1.093909	0.156402
5	3.317805	0.412979	0.120878	-1.274361	0.194901
6	1.807056	0.123564	-0.274091	-1.491125	0.508553
7	2.110971	0.634233	-0.281245	-1.220997	1.194619
8	3.279216	1.360377	-0.059885	-1.346515	0.679757
9	3.879550	1.225241	0.198089	-1.442722	0.644966
10	3.101996	0.580940	0.099814	-1.568778	0.584621
One standard deviation innovations					

Considering the results of impulse response presented in Table 5.30, it is observed that financial resources provided to the private sector by domestic money banks as a percentage of GDP (*BANK*) in Southern Africa reacts positively to one standard deviation innovation shocks on all the institutional variables, except for explosive negative response from *QLEGAL* and a more moderate intermittent negative responses to *INFLATION*.

Beginning with the responses of the financial resources provided to the private sector by domestic money banks as a percentage of GDP (*BANK*) to rule of law (*LAWRULE*), it is observed that the reaction of *BANK* to *LAWRULE* is positive and explosive from the second period and the trend continues throughout the entire period covered in this study. As for the reaction of *BANK* to one standard deviation innovation shocks on *POLITY*, it is observed that the response is not stable. It begins with a high 86 per cent in the second period, followed by an explosive percentage increases in third and fourth periods, before regressing to 41 and 12 per cent during the fifth and sixth periods.

The response ends in the last period at 58 per cent after the explosive percentage responses in the eighth and ninth periods. This form of spasmodic responses suggests serious instability that would make adequate policy intervention difficult. However, it must be pointed out that the innovation shock on *POLITY* is capable of enhancing the performance and development of *BANK* as an important component of capital market in Southern Africa.

The responses of financial resources provided to the private sector by domestic money banks as a percentage of GDP (*BANK*) to one standard deviation innovations shock on *INFLATION* are both negative and positive. *BANK* starts by responding negatively to the innovation shocks on consumer prices (*INFLATION)* in the second period by 80 per cent, and the effects of the response reduced to 20 per cent in the third period. By the fourth period, the response turns positive (34 per cent) and a 12 per cent positive response is also recorded in the fifth period. However, the response becomes negative again in the sixth (27 per cent), seventh (28 per cent) and eighth (six per cent) periods, before turning positive again in the ninth (20 per cent) and 10^{th} (10 per cent) periods. This finding suggests that the response of *BANK* to innovation shocks on *INFLATION* would be turbulent and chaotic. However, the negative effects of the innovation shocks (80 per cent) would outweigh its benefit (34 per cent).

The response of financial resources provided to the private sector by domestic money banks as a percentage of GDP (*BANK*) to one standard deviation innovations shock on regulatory quality (*QLEGAL*) is negative throughout the periods covered in this study. Beginning in the second period, *BANK*'s reaction is spontaneous and negative (64 per cent). The response reduces to 60 per cent in the third period, before becoming explosive for the rest of the period under investigation. It is noteworthy, that the negative responses are incremental in nature. Looking at the trend, it appears that the negative effect will continue for a long period. This result indicates that the financial resources provided to the private sector by domestic money banks as a percentage of GDP (*BANK*) may react uninterruptedly to innovation shocks on regulatory quality (*QLEGAL*).

Further, one standard deviation innovation shocks on corruption perception (*CORRUPTION*) have positive effects on *BANK*. The financial resources provided to the private sector by domestic money banks as a percentage of GDP (*BANK*) starts by reacting to one standard deviation innovations shock on *CORRUPTION* positively in the second period (13 per cent) and the response increases to 80 per cent in the third period, becomes explosive in the seventh period, before regressing gently to 58 per cent in the 10^{th} period. This result indicates that an improvement in corruption perception will not only serve as an important determinant of *BANK* development in Southern Africa, but the effects of the improvement will also be extremely significant.

The findings from the analysis point to the fact that *BANK* is positively sensitive to innovation shocks on *LAWRULE*, *POLITY* and *CORRUPTION* in Southern Africa, and any policy intervention to improve these institutional variables will yield positive results on *BANK*. Further, the effects of policy intervention on regulatory quality (*QLEGAL*) will possibly result in monolithic response from *BANK*. As such, any policy intervention in that regard should be tamed with caution in other not to enervate the financial resources provided to the private sector by domestic money banks as a percentage of GDP (*BANK*) - an important component of the capital market, and an important pull factor for inflow of FDI to the region.

West Africa

Table 5.31: Impulse Response Estimates for Equation 3 (1980-2012): West Africa Regional data (Response of BANK to Institutional Variables)

Period	LAWRULE	POLITY	INFLATION	QLEGAL	CORRUPTION
1	0.000000	0.000000	0.000000	0.000000	0.000000
2	2.074233	0.761333	0.649874	-0.505978	0.943115
3	2.402129	0.200872	0.675243	-0.419490	1.869177
4	2.153379	-0.138904	-0.055994	-0.036843	2.216707
5	1.121833	-0.872391	-0.374578	-0.498149	2.214096
6	0.849995	-1.063679	-0.098072	-0.902587	2.390279
7	0.770340	-1.267292	0.311257	-0.977027	2.640390
8	1.330051	-1.228444	0.427037	-0.821188	2.346259
9	1.402693	-1.097640	0.373803	-0.409406	1.772431
10	1.346092	-0.818752	0.233790	-0.277639	1.739871
One standard deviation innovations					

The impulse response analysis for West Africa on equation 3 appears in Table 5.31. From the results generated through that analysis, it is observed that the financial resources provided to the private sector by domestic money bank as a percentage of GDP (*BANK*) responds both positively and negatively to one standard deviation innovation shocks on the institutional variables. In the case of rule of law (*LAWRULE*), *BANK* begins its response to one standard deviation innovation shock on rule of law in the second period and the response is explosive.

This explosive positive response continues throughout the period covered in the study. However, there are two exceptions to the explosive reaction. The first one is in the sixth period when a reaction of 85 per cent is recorded and the second reaction occurs in the seventh period when 77 per cent reaction is recorded. An opinion can thus be proposed that the rule of law is an important determinant of possible development in the financial resources provided to the private sector by domestic money bank as a percentage of GDP (*BANK*).

In addition, the reaction of *BANK* to one standard deviation innovation shocks on *POLITY* is mixed. The response begins strongly in the positive territory at 76 per cent in the second period, and reverts to 20 per cent positive reaction in the third period. Thereafter, the response enters a negative territory in an incremental form and the negative response continues till the 10th period. It is thus observed that even though the initial reaction of *BANK* to *POLITY* is positive, the positive responses are more regressive. More importantly, the negative responses of the financial resources provided to the private sector by domestic money banks as a percentage of GDP (*BANK*) to the innovation shock on *POLITY* becomes incrementally explosive and the resulting negative effects far outweigh the short-run positive effects. Any policy intervention in this regard should thus be tamed with caution.

Looking at the response of the financial resources provided to the private sector by domestic money bank as a percentage of GDP (*BANK*) to one standard deviation innovations shock on annual percentage change in consumer prices (*INFLATION),* it is observed that changes in consumer prices do influence the development of *BANK* more positively. Although, there are some isolated cases of negative response but the effect of the negative responses that occurs between the fourth and sixth periods are not strong. .

In specific, the reaction of *BANK* to one standard deviation innovation shock on consumer price index (*INFLATION*) starts in the second period at 65 per cent, and it progresses gently to 68 per cent in the third period. Thereafter, the response enters a negative territory, and there are six, 38 and 10 per cent negative changes in the response for the fourth, fifth and sixth periods respectively. After the brief negative responses, the responses enter positive territory and the percentage change in the reaction ranges between 43 per cent in period eight and 23 per cent in period 10. It can thus be observed that policy intervention to better manage increases in consumer price index may enhance the development of *BANK* in West Africa.

The impact of one standard deviation innovation shocks on regulatory quality (*QLEGAL*) results in immediate negative reaction from the financial resources provided to the private sector by domestic money banks as a percentage of GDP (*BANK*), which continues for the entire period under study. The response begins in the second period with 51 per cent reduction in *BANK*, which later regresses to 42 and four per cent respectively in the third and fourth periods. The negative reaction reaches its peak in the seventh period (97 per cent), and the effects begins to wane towards the tail end of the period under study with the last period experiencing a mere 28 per cent response effect.

Just as in the case of the other two African regions investigated earlier, regulatory quality is of importance in the development of *BANK* in West Africa. Having observed earlier through the regression analyses the importance of this variable on inflow of FDI to the region, it becomes expedient to tame any regulatory framework that is capable of affecting the functionality of this variable with caution. Otherwise, the attractiveness of the region to inflow of FDI may be compromised.

The last variable of interest in equation 3 is corruption perception (*CORRUPTION*). According to the analysis contained in Table 5.31, the financial resources provided to the private sector by domestic money banks as a percentage of GDP (*BANK*) starts reacting positively to one standard deviation innovation shocks on *CORRUPTION* during the second period with 94 per cent reduction in *BANK* allocation., and the positive reaction continues for the entire periods under consideration in this study, at an explosive rate. Although, the explosive effect begins to ebb from period seven (the peak of the reaction), the speed of adjustment is rather slow. Just like in the case of Southern Africa as discussed earlier, the impact of policy intervention to curb corruption perception in West Africa will be positive on *BANK* – an important component of the capital market and one of the determinants of the attractiveness of the region to inflow of FDI.

East Africa

Table 5.32: Impulse Response Estimates for Equation 3 (1980-2012): East Africa Regional data (Response of BANK to Institutional Variables)

Period	LAWRULE	POLITY	INFLATION	QLEGAL	CORRUPTION
1	0.000000	0.000000	0.000000	0.000000	0.000000
2	-0.390787	0.423990	-0.568393	-0.633496	-0.288741
3	-0.725088	0.419059	-0.104107	-0.340887	0.289244
4	-0.851769	0.201757	-0.019000	-0.668938	0.025731
5	-0.783767	0.347071	0.383479	-0.479584	0.028089
6	-0.953049	0.056581	0.468658	0.096206	0.101237
7	-0.936903	0.110875	0.200525	-0.299466	-0.005917
8	-0.884263	0.248323	0.331513	-0.426749	-0.015291
9	-1.001856	0.217938	0.278450	-0.359728	0.051356
10	-0.904357	0.213641	0.217306	-0.375072	0.083485
One standard deviation innovations					

The results of the impulse response analysis conducted for equation 3 in East Africa appears in Table 5.32. According to that Table, the financial resources provided to the private sector by domestic money banks as a percentage of GDP (*BANK*) starts by responding to one standard deviation innovation shocks on rule of law (*LAWRULE*) negatively, and the effect reduces the *BANK* allocation by 40 per cent in the second period.

The negative reaction continues thereafter at an incremental pace, reaches its peak in the ninth period (100 per cent), and regress a little in period 10 (90 per cent). The trend of this reaction suggests that it will take some time for the variable to revert back to the point of equilibrium, and the effects of the innovation shocks are significantly negative throughout the period covered in the study. This finding hints that unsettling rule of law may precipitate instability in the development of *BANK* in East Africa.

The reaction of *BANK* to one standard deviation innovation shocks on *POLITY* is continuously positive and the highest of such a reaction is 42 per cent (recoded in second and third periods). Thereafter, the reaction of financial resources provided to the private sector by domestic money banks as a percentage of GDP (*BANK*) to one standard deviation innovation shocks on *POLITY* becomes unstable.

For instance, the response grows from 20 per cent in the fourth period to 35 per cent in the fifth period, before regressing to six per cent in the sixth period. The response rate grows from 11 per cent in period seven to 25 per cent in period eight, before regressing to 22 per cent and 21 per cent in periods nine and ten respectively. This kind of trend suggests that the speed of adjustment back to equilibrium is slow and the variable is an important determinant of *BANK* allocation, and by extension, an important pull factor for the attractiveness of the East African region to inflow of FDI.

The response of *BANK* to one standard deviation innovation shocks on *INFLATION* is mixed. The reaction begins on significantly high negative 57 per cent in the second period, regresses to 10 per cent in the third period, and records barely two per cent response rate in the fourth period. Thereafter, the response becomes positive in the fifth period and the positive trend continues for the rest of the period under investigation. Judging from trend of the response, it is apparent that the speed of adjustment back to equilibrium point is slow. Further, while innovation shocks on *INFLATION* would have negative effects on *BANK*, the possibility that the positive effects will continue over a long run lends credence to the appropriateness of policy intervention in East Africa to ameliorate the effects on *INFLATION* in the economy.

Another variable of interest in equation 3 is regulatory quality (*QLEGAL*). According to the results of analysis presented in Table 5.32, the financial resources provided to the private sector by domestic money banks as a percentage of GDP (*BANK*) reacts negatively to one standard deviation innovation shocks on *QLEGAL* from the second period throughout the periods under consideration.

In specific, the reaction begins in the second period with a 63 per cent negative response, closely followed by 34 per cent response rate in the third period, 67 per cent in the fourth and 48 per cent in the fifth period. The response regresses further in the sixth period to 10 per cent before moving further in negative territory to 30 per cent in the seventh period and it ended up at 38 per cent in period 10. The bumpy trend suggests that the speed of adjustment back to the point of equilibrium may be slow. One important observation is that *QLEGAL* has important deterministic effects on *BANK*. As such, any policy intervention in this regard should be cautiously weighted.

The last variable in this equation is *CORRUPTION*. The response of financial resources provided to the private sector by domestic money banks as a percentage of GDP (*BANK*) to one standard deviation innovation shocks on *CORRUPTION* in East Africa is similar to the results obtained for Southern and West Africa regions. In East Africa, the reaction of *BANK* to innovation shocks on *CORRUPTION* is largely positive, except for three instances where the responses are negative (the second, seventh and eighth periods).

More specifically, *BANK* begins by responding to innovation shocks on *CORRUPTION* in the second period with a negative of 29 per cent, and the figure changed to 29 per cent in the positive territory in the third period, before regressing to three per cent in the fourth and fifth periods and 10 per cent in the sixth period. The negative reaction recorded in the seventh period is less than one per cent and similar record for the eighth period is about three per cent. The last two periods record positive reactions of five and eight per cent respectively. Judging from this result, it can be argued that the reaction of financial resources provided to the private sector by domestic money banks as a percentage of GDP (*BANK*) to innovation shocks on corruption perception is significant, thereby justifying policy interventions.

The general observation from the East African analysis is that the institutional variables under consideration have significant deterministic effects on the development of *BANK* in the region. Further, because of the negative reactions of *BANK* to *LAWRULE* and *QLEGAL*, any policy intervention on these two variables should be tame with utmost caution in order not to unnerve one of the critical components of capital market in the region.

The discussion presented in the preceding paragraphs centre on the pooled and regional impulse analyses for equation 3. The same set of analyses will be presented in the paragraphs that follow on equations 4, 5, 6 and 7. The presentation will follow the same pattern adopted above (beginning with the pooled estimation, followed by the regional analyses), with the same set of estimation techniques.

Pooled Estimation

Table 5.33: Impulse Response Estimates for Equation 4 (1980-2012): Pooled data (Response of PRIVY to Institutional Variables)

Period	LAWRULE	POLITY	INFLATION	QLEGAL	CORRUPTION
1	0.000000	0.000000	0.000000	0.000000	0.000000
2	0.863535	0.250214	-0.538797	-0.644828	-0.171623
3	0.470502	0.042471	0.069108	-0.091464	0.178623
4	0.466934	0.245522	0.056866	-0.343857	0.027480
5	0.613917	0.478617	-0.143394	-0.330647	0.087079
6	0.599358	0.596580	-0.004973	-0.414619	0.149227
7	0.620666	0.634488	0.020614	-0.403645	0.162002
8	0.644184	0.735784	0.002823	-0.448216	0.178530
9	0.666758	0.819488	0.021843	-0.465453	0.203896
10	0.677307	0.877598	0.040442	-0.487551	0.219098
One standard deviation innovations					

The impulse response analysis contained in Table 5.33 largely shows possible response from domestic credit to private sector as a share of GDP (*PRIVY*) to one standard deviation innovation shocks on each of the institutional variables. To start with, the responses of *PRIVY* to one standard deviation innovation shocks on rule of law (*LAWRULE*) are positive and progressive in nature, but with some intermittent variation. From as high as 86 per cent increase in the value of domestic credit to private sector as a share of GDP (*PRIVY*) in the second period, the percentage change drops to 47 in the third and fourth periods before increasing to 61 per cent in fifth period. Picking at 60 per cent in the sixth period, the upswing trend continues and reaches a peak of 68 per cent in the 10th period.

While the trend is chaotic at the beginning, it normalises in the second half of the periods covered in the study. These results indicate that the effects of rule of law on domestic credit to private sector as a share of GDP (*PRIVY*) is significant and the speed of adjustment back to the point of equilibrium may be slow. Further, any policy intervention to improve the respect for rule of law in the sampled African countries may enhance the total value and the development of domestic credit to private sector as a share of GDP (*PRIVY*). Buttressing the result of GMM contained in Table 5.23, this variable is an important determinant of inflow of FDI to the continent, and as such, policy intervention to improve rule of law on the continent will contribute positively to enhance efficiency and development of domestic credit to private sector as a share of GDP (*PRIVY*).

In the same vein, the responses of domestic credit to private sector as a share of GDP (*PRIVY*) to one standard deviation innovation shocks on *POLITY* is positive and progressive throughout the period covered in the study. From 25 per cent in the second period, the response dropped to four per cent in the third period and picked up again in the fourth period at 25, and the trend continues thereafter incrementally. The incremental positive response reaches its peak in the 10^{th} period at 88 per cent.

The findings from this analysis indicate that *POLITY* is an important determinant of the behaviour of *PRIVY*, and the speed of adjustment back to the point of equilibrium is slow. It can then be proposed that policy intervention to improve the polity score on the continent will enhance the development of domestic credit to private sector as a share of GDP (*PRIVY*), which is an important component of capital market in Africa.

Further, the reaction of domestic credit to private sector as a share of GDP (*PRIVY*) to one standard deviation innovation shocks on annual percentage change in consumer prices (*INFLATION*) is generally positive, except for three instances (second, fifth and sixth periods) where the responses are negative. In the first period, the negative response affects the value of domestic credit to private sector as a share of GDP (*PRIVY*) by 54 per cent, becomes positive in the third (seven per cent) and fourth (six per cent) periods, before entering negative territory again in the fifth period (14 per cent). The negative reaction in the sixth period is barely up to one per cent, and the positive reactions thereafter are also insignificant. Looking at the responses in general, it appears that the negative responses are of more statistical significance than the positive reactions.

Just as in the previous impulse response estimations in this Part, capital market variables largely respond negatively to innovation shocks on regulatory quality. The same kind of negative reaction is experienced here. The response of domestic credit to private sector as a share of GDP (*PRIVY*) to one standard deviation innovation shock on regulatory quality (*QLEGAL*) is negative from the second period, and it ends up in the negative territory in the 10^{th} period. From a reaction of 64 per cent in the second period, it reduces to nine in the third period before picking up at 33 per cent in the fifth period. The peak of the negative reaction occurs in period ten (49 per cent).

In general, the trend of this reaction suggests that although the impulse response of domestic credit to private sector as a share of GDP (*PRIVY*) to regulatory quality may be greater at one point than the other, the effects are statistically significant and as such, policy interventions in this regard should be tamed with caution.

The last institutional variable in the pooled analysis is corruption perception index (*CORRUPTION*). According to the analysis presented in Table 5.33, it is evident that the reaction of domestic credit to private sector as a share of GDP (*PRIVY*) to one standard deviation innovations shock begins in the second period on the negative note at 17 per cent. However, the response turns positive from the third period (18 per cent), and the positive response continues to gain momentum till the last period under investigation (22 per cent).

An overall observation made from the analyses presented for the pooled impulse response estimation suggests that domestic credit to private sector as a share of GDP (*PRIVY*) reacts significantly to these institutional variables, and the trend in the reactions are indications of slow speed of adjustment back to the point of equilibrium. This finding thus suggests that policy initiatives towards improving the institutional variables should be guided, in order not to defeat the intended purpose. Having concluded the pooled analysis for equation 4, we now proceed to the regional analysis. The results of the regional analyses appear in the paragraphs that follow.

North Africa

Table 5.34: Impulse Response Estimates for Equation 4 (1980-2012): North Africa Regional data (Response of PRIVY to Institutional Variables)

Period	LAWRULE	POLITY	INFLATION	QLEGAL	CORRUPTION
1	0.000000	0.000000	0.000000	0.000000	0.000000
2	0.386290	1.203012	-0.236903	-0.280551	-1.076554
3	0.286696	1.677108	-0.005162	-0.626699	-0.684959
4	-0.071247	1.337359	-0.263713	-0.487239	-0.561353
5	-0.098912	1.097292	-0.198869	-0.538187	-0.451358
6	-0.393675	1.094297	-0.187702	-0.493274	-0.339835
7	-0.411665	1.086155	-0.280367	-0.520096	-0.377935
8	-0.530112	1.149752	-0.240485	-0.522156	-0.316379
9	-0.595313	1.127493	-0.277684	-0.535866	-0.306799
10	-0.652403	1.137481	-0.282618	-0.534861	-0.279066
One standard deviation innovations					

The impulse response analysis presented in table 5.34 indicates that the domestic credit to private sector as a share of GDP (*PRIVY*) responds positively to one standard innovations shock only on *POLITY* as an institutional variable. Apart from *POLITY*, *PRIVY*'s reactions to the other institutional variables are negative, but not explosive.

For instance, the reaction of domestic credit to private sector as a share of GDP (*PRIVY*) to one standard deviation innovation shocks on the rule of law (*LAWRULE*) is positive for the second and third periods, and it becomes negative throughout the remaining periods under consideration, and the trend of the negative responses is incremental as well. From positive responses of 39 per cent and 29 per cent in the second and third periods respectively, the impulse response changes to negative in the fourth period. The negative reaction begins with barely seven per cent and it grows systematically to 65 per cent in the 10th period. The trend of these results suggests that the speed of adjustment back to the point of equilibrium will be slow.

With slow speed of adjustment back to the point of equilibrium, one can easily opine that policy intervention to improve rule of law in North Africa should be carefully considered. This careful consideration is very essential because, any policy misjudgement may unnerve *PRIVY* that is an important component of capital market in the region, and an important determinant of the region to inflow of FDI as suggest in Table 5.7.

The reaction of domestic credit to private sector as a share of GDP (*PRIVY*) to one standard deviation innovation shocks on *POLITY* is positive and explosive from the second period and the trend continues throughout the period under study. With the continuum trend in the explosive nature of the institutional variable (*POLITY*), it is interesting to note that the speed of adjustment to the point of equilibrium is slow, thereby suggesting cautious policy intervention in that regards.

The domestic credit to private sector as a share of GDP (*PRIVY*) starts to react negatively to one standard deviation innovation shocks on annual percentage changes in consumer prices (*INFLATION*) from the second period and the negative reaction continues until the last period under consideration. Beginning with 25 per cent reduction in the domestic credit to private sector as a share of GDP (*PRIVY*) in the second period, the negative effect regresses significantly to barely one per cent in the third period, before picking up to 26 per cent in the fourth period.

The period between fifth and 10th period records a systematic increase from 20 per cent in the fifth period to 28 per cent in the 10th period. The continuity of the reaction in negative territory at incremental trend suggests that the speed of adjustment back to equilibrium point will be slow. As such, any policy intervention targeted at reducing annual percentage change in consumer prices should be guided, in order not to further unnerve the skittish institutional framework. It is further important to note that *PRIVY* is one of the important components of capital market in North Africa, and it also doubles as an important determinant of the attractiveness of the region to inflow of FDI. As such, it is considered inexpedient to introduce policy measures that are capable of upsetting this framework.

Just as in the case of *INFLATION*, the domestic credit to private sector as a share of GDP (*PRIVY*) begins to respond to one standard deviation innovation shocks on regulatory quality (*QLEGAL*) from the second period, and the negative reaction continues until period 10. The negative reaction begins in the second period with 28 per cent in the domestic credit to private sector as a share of GDP (*PRIVY*). This reduction grows to 63 per cent in the second period before regressing slowly to 49 per cent in the fourth period. From the sixth period, the percentage change grows from 49 per cent to 53 per cent in the last period. As in the case of *INFLATION*, the continuum nature of the increment suggests that the speed of adjustment back to the point of equilibrium will be slow, thereby suggesting pragmatic policy interventions that are capable of addressing the vices inherent in the application of rule of law in North Africa.

CORRUPTION is the last institutional variable in the analysis for this section. According to Table 5.34, the reaction of *PRIVY* to one standard deviation innovation shocks on corruption perception is negative from the second period, and the reaction continues in the negative territory throughout the period under consideration. Beginning with an explosive reaction in the second period, the reaction regresses to 68 per cent in the third period and barely 28 per cent in the last period. Here, the speed of adjustment is rapid and it will not take long for the trend to revert back to the point of equilibrium. Riding on the laurel of rapid speed of adjustment, it is possible for the government to try-out various options as the snag of policy misjudgement will be mean reverting in a short period of time.

From the analysis contained in Table 5.34, there are clear indications that domestic credit to private sector as a share of GDP (*PRIVY*) will respond rapidly (negatively or positively) to innovation shocks of the institutional variables, and the reaction could be explosive in the negative but more in the positive territory. The regional analysis for Southern Africa follows in the next paragraphs.

Southern Africa

Table 5.35: Impulse Response Estimates for Equation 4 (1980-2012): Southern Africa Regional data (Response of PRIVY to Institutional Variables)

Period	LAWRULE	POLITY	INFLATION	QLEGAL	CORRUPTION
1	0.000000	0.000000	0.000000	0.000000	0.000000
2	1.839800	0.294122	-2.649349	-0.388470	-3.946115
3	-1.601993	1.593656	-1.531814	3.613076	3.313399
4	-1.841280	-0.879517	-2.618409	3.031053	4.668108
5	-0.820910	0.852139	-2.343262	4.671232	2.192247
6	-0.847165	2.235638	-1.499895	4.059266	1.164886
7	-0.111493	-0.240216	-2.100556	4.762943	3.202523
8	-1.409248	0.541172	-2.069161	3.964609	0.672917
9	-2.065887	0.428796	-1.666180	4.786405	4.166576
10	-0.941939	1.069384	-2.631465	4.506085	2.047744
One standard deviation innovations					

The result of impulse response presented in Table 5.35 suggests that *PRIVY* responds negatively but more positively to institutional variables. Considering the reaction of domestic credit to private sector as a share of GDP (*PRIVY*) to one standard deviation innovation shocks on rule of law (*LAWRULE*), it is observed that the first reaction of the capital market variable to the innovations shock is positive and explosive. However, the response changes to negative in the third period, but it continues to be explosive in most of the instances. Out of the four instances where the reactions are not explosive, they are more than 80 per cent in three of the instances.

The simple implication of these kinds of reactions is that although *PRIVY* will respond positively to innovation shocks on *LAWRULE* at the beginning, the resulting negative effects thereafter will be unnerving. As such, policy intervention in Southern Africa to improve the development of domestic credit to private sector as a share of GDP (*PRIVY*) through the *LAWRULE* nexus cannot be adopted without passable considerations given to its implication. Further, given that the speed of adjustment of this variable back to the point of equilibrium is slow, the recovery process of *PRIVY* from such innovation shock may be enduring.

Looking at the reaction of *PRIVY* to one standard deviation innovation shocks on *POLITY*, it is observed that the capital market variable reacts positively to the innovation shocks on the institutional variable by 30 per cent in the second period. The reaction becomes positively explosive in the third period, before turning negative by 88 per cent in the fourth period. Immediately thereafter, a positive percentage change of 85 per cent is obtained in the fifth period and the positive response becomes explosive again in the sixth period. Except for the 20 per cent negative reaction in the seventh period, the intensity of the positive response are very strong. This may be interpreted as implying strong deterministic relationships between *POLITY* and *PRIVY*.

Looking at the impulse response of domestic credit to private sector as a share of GDP (*PRIVY*) to one standard deviation innovation shocks on changes in consumer price (*INFLATION*), it is observed that the domestic credit to private sector as a share of GDP (*PRIVY*) responds negatively to innovation shocks on this institutional variable from the second period throughout the entire periods covered in this study. More importantly, the negative response is explosive and chaotic in most cases. In a simple term, any intended macroeconomic policy intervention towards improving the state of inflation in Southern Africa should be applied with caution, and realisation that misguided implementation of inflation-related policy may unsettle the domestic credit to private sector as a share of GDP (*PRIVY*) should be borne in mind.

Apart from annual percentage change in consumer prices (*INFLATION*), the impulse response of domestic credit to private sector as a share of GDP (*PRIVY*) to regulatory quality (*QLEGAL*) in Southern Africa forms an important consideration in this study. According to Table 5.35, the domestic credit to private sector as a share of GDP (*PRIVY*) reacts negatively to one standard deviation innovation shocks on *QLEGAL* in the second period by 39 per cent. Thereafter, the reaction turns positive and it remains in the positive territory for the entire duration under study.

It is important to point out that the reaction is very explosive and the trend is unstable. The chaotic trend that is inherent in this response pattern suggests that the speed of adjustment back to the point of equilibrium will be slow. Further, one may suggests that policy intervention towards improving the quality of regulatory environment in Southern Africa may aid the development of domestic credit to private sector as a share of GDP (*PRIVY*), which is an important component of capital market in the region, and one of the capital market determinants of the attractiveness of the region to inflow of FDI.

The last institutional variable of interest here is corruption perception (*CORRUPTION*). From Table 5.35, evidence suggests that domestic credit to private sector as a share of GDP (*PRIVY*) reacts positively (except for the second period) and in most cases, explosively too, to one standard deviation innovation shocks on *CORRUPTION*. From the third period, the reaction of *PRIVY* to innovation shocks on *CORRUPTION* is positive and explosive. Although, *PRIVY* responds to the innovation shocks by 67 per cent increase in period eight, the reaction for the rest of the periods are chaotic and explosive. This finding suggests that the domestic credit to private sector as a share of GDP (*PRIVY*) would improve if regulatory intervention is employed to curb corruption in Southern Africa. Being an important capital market determinant for the attractiveness of FDI inflow to the region, regulatory interventions are required to improve on this institutional framework.

West Africa

Table 5.36: Impulse Response Estimates for Equation 4 (1980-2012): West Africa Regional data (Response of PRIVY to Institutional Variables)

Period	LAWRULE	POLITY	INFLATION	QLEGAL	CORRUPTION
1	0.000000	0.000000	0.000000	0.000000	0.000000
2	-0.110002	0.190700	0.785007	-0.866847	2.768985
3	-2.304440	-0.978941	1.323415	-0.971898	3.639255
4	-3.118537	-2.434080	0.081129	-1.334123	1.758608
5	-3.150376	-2.409085	-0.726932	-1.057729	0.751764
6	-1.887622	-1.245294	0.675365	-1.491078	3.225849
7	-2.390965	-1.416657	2.607338	-1.768104	4.559901
8	-4.024406	-2.786577	1.791298	-1.191978	2.503574
9	-5.145250	-3.374006	-0.972962	-0.590036	-0.214394
10	-2.865383	-1.817249	-1.239666	-1.460663	1.126786
One standard deviation innovations					

The result of impulse response analysis presented in table 5.36 indicates that the domestic credit to private sector as a share of GDP (*PRIVY*) reacts negatively to all the institution variables at a point in time. For instance, the response of *PRIVY* to one standard deviation innovation shocks on rule of law (*LAWRULE*) begins in the second period in a negative territory. The reaction begins with 11 per cent reduction in *PRIVY*, and it becomes explosive for the rest of the period covered. Although, the trend of the response is chaotic and unstable, thereby making the postulation on the speed of adjustment very difficult. However, there is a prima facie proposition that the speed of adjustment back to the equilibrium point is low.

For *POLITY*, the domestic credit to private sector as a share of GDP (*PRIVY*) reacts to one standard deviation innovation shocks positively in the second period by 19 per cent. However, the reaction turns negative in the third period by 98 per cent and it becomes explosive from the fourth period. The explosive negative reaction continues till the last period under consideration, and the trend is unstable. One can thus suggest that the early positive response is not enough to offset the explosive negative responses that follow. Further, the slow speed of adjustment to the point of equilibrium suggests that policy intervention intended to improve *POLITY* may backfire on *PRIVY* if it is not guardedly orchestrated.

The reaction of domestic credit to private sector as a share of GDP (*PRIVY*) to one standard deviation innovation shocks on annual percentage change in consumer prices (*INFLATION*) is more positive than being negative. For instance, the initial positive reaction occurs between the second and the fourth periods, ranging from 79, 32 and eight per cent in the second, third and fourth periods respectively. The negative reaction experienced in the fifth period reduced the domestic credit to private sector as a share of GDP (*PRIVY*) by 73 per cent and the variable quickly recovers back to positive territory in the sixth period at 68 per cent. Periods seven and eight recorded explosive positive responses before the reaction enters a negative territory in periods nine and 10.

Although, the reaction of *PRIVY* to one standard deviation innovations shock on *INFLATION* are negative in three instances, the intensity of the positive reaction offsets the negative impacts. This may imply that an improvement in the macroeconomic policy focused on improving annual increase in consumer prices may enhance the value and development of domestic credit to private sector as a share of GDP (*PRIVY*) in West Africa region.

Further, the domestic credit to private sector as a share of GDP (*PRIVY*) reacts negatively and explosively too (in most cases), to one standard deviation innovation shocks on regulatory quality (*QLEGAL*). The negative reaction begins at 87 per cent in the second period and progresses to 97 per cent in the third period, before the reaction becomes explosive. The trend of the responses depicts an uneven pattern that possibly advice on a slow speed of adjustment back to the point of equilibrium.

The reaction of domestic credit to private sector as a share of GDP (*PRIVY*) to one standard deviation innovation shocks on corruption perception is extensively positive, except for a 21 per cent negative response generated in period nine. From the second period, the responses are positive and explosive with minimum reaction being the 75 per cent recorded in period five. In all other instances, the trends of the responses are unevenly bumpy. This kind of a trend indicates a possibly slow speed of adjustment back to the point of equilibrium and anti-corruption policy intervention should be tamed with caution.

The impulse response analysis contained in table 5.36 suggests that the domestic credit to private sector as a share of GDP (*PRIVY*) in West Africa will react negatively to policy interventions that are aimed at improving the functionality of some institutional frameworks, such as the rule of law (*LAWRULE*), polity score (*POLITY*), and regulatory quality

(*QLEGAL*) and the speed of adjustment is slow. However, the capital market variable will respond positively to anti-corruption policy interventions (*CORRUPTION*) and macroeconomic reforms that are aimed at reducing annual percentage change in consumer prices (*INFLATION*).

East Africa

Table 5.37: Impulse Response Estimates for Equation 4 (1980-2012): East Africa Regional data (Response of PRIVY to Institutional Variables)

Period	LAWRULE	POLITY	INFLATION	QLEGAL	CORRUPTION
1	0.000000	0.000000	0.000000	0.000000	0.000000
2	-0.805449	-0.397203	0.438769	0.257613	0.061088
3	-0.812584	-0.025164	1.209322	0.738818	1.273150
4	-0.583797	0.015508	0.819577	-0.048436	0.751627
5	-0.523632	-0.061322	1.545609	-0.195937	0.714629
6	-0.664573	-0.272773	1.460078	0.915628	0.735367
7	-0.688219	-0.194734	1.433664	1.201322	1.247648
8	-0.444187	-0.078579	0.957435	0.226215	0.546737
9	-0.620918	-0.203864	1.495795	0.163863	0.429072
10	-0.857838	-0.209850	1.263396	0.963080	0.967650
One standard deviation innovations					

The East African analysis presented in Table 5.37 will conclude the regional impulse response analysis for equation 4. According to the results contained in Table 5.37, it is evident that the domestic credit to private sector as a share of GDP (*PRIVY*) reacts both negatively and positively to the institutional variables. In specific, *PRIVY* responds negatively to one standard deviation innovation shocks on rule of law (*LAWRULE*) throughout the period under investigation.

The trend of the responses contained in Table 5.37 starts with 81 per cent decrease in *PRIVY* in the first period, reaches its minimum level of 52 per cent in the fifth period, then increased to 86 per cent in the 10th period. With this kind of responses, it is evident that the speed of adjustment of the variable is slow. As such, any policy intervention aimed at improving the regulatory quality in East African region should be moderated in order not to unsettle *PRIVY*.

Just like *LAWRULE*, *PRIVY* responds negatively to one standard deviation innovation shocks on *POLITY* from the second period throughout the period under consideration. The negative reaction begins in the second period with a 40 per cent decrease in the domestic credit to private sector as a share of GDP (*PRIVY)* as a result of the innovation shocks on *POLITY*. The response reduces to barely three per cent in the third period, before the only positive response of two per cent is recorded in the fourth period. Thereafter, the negative response grows from six per cent in the fifth period to 21 per cent in period 10.

Unlike in the case of *LAWRULE*, the response pattern of *PRIVY* to innovation shocks on *POLITY* suggests that the speed of adjustment is high. Although, policy intervention to improve the polity score of East Africa may trigger negative reactions from the domestic credit to private sector as a share of GDP (*PRIVY)*, the effects of the reaction may not be devastating, and the speed of adjustment back to the pre-intervention period (point of equilibrium) will be high.

The reaction of domestic credit to private sector as a share of GDP (*PRIVY)* to one standard deviation innovation shocks on annual percentage change in consumer prices (*INFLATION*) is positive from the first period, and throughout the entire period under consideration. From as little as 42 per cent in the second period, the response grows to 155 per cent in the fifth period, before ending at 126 per cent increase in period 10. With this kind of explosive responses, the speed of adjustment is observed to be slow; suggesting that policy intervention in this regard should be carefully considered in order not to unnerve *PRIVY* an important capital market component and one of the major capital market determinants of the attractiveness of East Africa to inflow of FDI.

The domestic credit to private sector as a share of GDP (*PRIVY)* reacts positively in general to one standard deviation innovations shock on regulatory quality (*QLEGAL*), except in periods four and five when negative responses of five and 20 per cent are recorded. The impulse response begins gently in the second period with a 26 per cent reaction that grows to 74 per cent in the third period and reaches a maximum of 120 per cent in period seven and ends up at 96 per cent in period 10.

The analysis contained in Table 5.37 buttresses the importance of institutional framework on the development of domestic credit to private sector as a share of GDP (*PRIVY)*, which forms an important component of the capital market in East Africa. Judging from the speed of adjustment of the institutional variables to equilibrium, it is evident that policy makers should be cautious on introducing too many reforms within a short space of time because such an intervention may trigger instability on *PRIVY*, which may take a long time to redress.

Having investigated the responses of *BANK* and *PRIVY* as capital market variables to the institutional variables under consideration in this study, we now proceed to investigate the responses of claims on domestic real nonfinancial sector by the Central Bank as a share of

GDP (*NONFIN*). The results of the analyses will be presented in the usual manner – starting with the pooled analysis and followed by the regional analyses.

Pooled Estimation

Table 5.38: Impulse Response Estimates for Equation 5 (1980-2012): Pooled data (Response of NONFIN to Institutional Variables)

Period	LAWRULE	POLITY	INFLATION	QLEGAL	CORRUPTION
1	0.000000	0.000000	0.000000	0.000000	0.000000
2	0.210879	0.080354	0.509829	-0.328235	0.033103
3	0.243108	-0.094704	0.708713	-0.504938	0.121599
4	0.271497	-0.171474	0.516717	-0.499584	0.154041
5	0.276248	-0.141651	0.439388	-0.494834	0.186372
6	0.257988	-0.135188	0.398130	-0.474156	0.191625
7	0.258477	-0.141477	0.363520	-0.475376	0.195152
8	0.255134	-0.146501	0.355420	-0.477503	0.201669
9	0.254561	-0.148808	0.349569	-0.480164	0.204168
10	0.254335	-0.149241	0.341367	-0.480796	0.206581
One standard deviation innovations					

The analysis contained in Table 5.38 suggests that the response of claims on domestic real nonfinancial sector by the Central Bank as a share of GDP (*NONFIN*) to one standard innovations shock on the institutional variables will yield mixed reactions – negative and positive. To start with, we investigate the impulse response of *NONFIN* to one standard deviation innovations shock on rule of law (*LAWRULE*) and observe that claims on domestic real nonfinancial sector by the Central Bank as a share of GDP (*NONFIN*) reacts positively to innovation shock on rule of law from the second period through to the end.

In specific, the positive reaction starts at 21 per cent in the second period, reaches a maximum of 28 per cent in the fifth period and begins to regress till the 10th period where a 25 per cent response from *NONFIN* is realised. The trend of the responses suggests that the speed of adjustment to equilibrium is high and any upset caused by policy intervention in this regard will only have short-run effects.

Claims on domestic real nonfinancial sector by the Central Bank as a share of GDP (*NONFIN*) reacts positively in the second period to one standard innovations shock on *POLITY* with eight per cent. In the third period, the response changes to negative with nine per cent reduction in *NONFIN*. The periods from the fourth experienced incremental negative responses that gets to the climax (15 per cent) in period 10. The trend of these results indicate that the speed of adjustment of the responses is high and the negative effects of any policy intervention intended to improving the polity scores of the sampled African countries will be limited to short run.

The reaction of claims on domestic real nonfinancial sector by the Central Bank as a share of GDP (*NONFIN*) to one standard deviation innovations shock on annual percentage change in consumer prices (*INLFATION*) is positive from the second period and the responses remain in the positive territory for the duration of the period under investigation. In the second period, change of 51 per cent is recorded, and it grows to 71 per cent in the third period. The response begins to regress from the fourth period and the reversion continues till the end of the period under study. Judging from the trend of the responses, it appears that the speed of adjustment to the point of equilibrium is high and the effects of policy intervention to ameliorate increases in consumer prices will yield positive results. However, the positive results may not last for too long.

The next important institutional variable under consideration here is regulatory quality (*QLEGAL*). From the results presented in Table 5.38, evidence suggests that claims on domestic real nonfinancial sector by the Central Bank as a share of GDP (*NONFIN*) reacts negatively to one standard innovations shock on regulatory quality from the second period, and the effect continues till the end of the period under study.

In specific, the negative reaction starts in the second period with 33 per cent reduction in *PRIVY*, and the reactions stabilises at 50 per cent in the third and fourth periods. Thereafter, the responses retrograded from 49 per cent in period five to 48 per cent in period 10. Although, the speed of adjustment to the point of equilibrium is slow, the trend of the response is stable.

The last institutional variable of interest in this analysis is corruption perception (*CORRUPTION*). According to the analysis contained in Table 5.38, the impulse responses of claims on domestic real nonfinancial sector by the Central Bank as a share of GDP (*NONFIN*) to one standard deviation innovations shock on corruption perception (*CORRUPTION*) is progressively positive. From three per cent increase in *NONFIN* in the second period, the reaction grows to 21 per cent in the 10^{th} period.

One important observation from the impulse response results presented in Table 5.39 is that none of the responses is explosive and the trend of the responses are stable and their speeds of adjustment are high in almost all the cases. As such, the realisation that claims on domestic real nonfinancial sector by the Central Bank as a share of GDP (*NONFIN*) forms an important component of capital market in Africa, and that this variable is an important determinant of FDI inflow to Africa, hints on the need for innovations to improve the functionality of the institutional framework. In the paragraphs that follow, we will present material on the regional analysis.

North Africa

Table 5.39: Impulse Response Estimates for Equation 5 (1980-2012): North Africa Regional data (Response of NONFIN to Institutional Variables)

Period	LAWRULE	POLITY	INFLATION	QLEGAL	CORRUPTION
1	0.000000	0.000000	0.000000	0.000000	0.000000
2	0.181571	-0.131922	0.318590	-0.721929	-0.090993
3	0.619056	-0.047002	0.120452	-1.220911	0.050041
4	0.947110	-0.086615	0.424282	-1.442884	0.041765
5	1.055692	-0.202895	0.719200	-1.474707	0.045813
6	1.011986	-0.187837	0.779905	-1.402389	-0.058429
7	1.002356	-0.153797	0.763718	-1.365630	-0.085817
8	0.930085	-0.125624	0.740640	-1.304620	-0.080609
9	0.912642	-0.126293	0.722120	-1.276168	-0.089961
10	0.884171	-0.118097	0.705407	-1.262237	-0.080093
One standard deviation innovations					

From the impulse response analysis contained in Table 5.39, it is imperative that claims on domestic real nonfinancial sector by the Central Bank as a share of GDP (*NONFIN*) reacts both positively and negatively to innovations shock on the institutional variables. Looking at individual variables, the claims on domestic real nonfinancial sector by the Central Bank as a share of GDP (*NONFIN*) reacts positively to one standard deviation innovations shock on the rule of law (*LAWRULE*). The reaction starts on the second period at 18 per cent and it continued throughout the periods covered in this study. The impulse response grows from 62 per cent in the third period to 95 per cent in the fourth period, and reaches an explosive climax in fifth period. The responses starts declining thereafter and it reaches a minimum of 88 per cent in period 10.

From Table 5.39, the shape of the response trend is "bell-shaped" and therefore, the speed of adjustment appears to be high. It could thus be suggested that policy intervention in North Africa towards improving the functionality of rule of law may positively influence the expediency and development of claims on domestic real nonfinancial sector by the Central Bank as a share of GDP (*NONFIN*). Given that the speed of adjustment is high, any policy misjudgement would not last for a long period of time.

The reaction of *PRIVY* to *POLITY* in North Africa regional analysis indicates that *PRIVY* responds negatively to one standard deviation innovations shock on *POLITY* from the second period and the negative reaction continues throughout the periods under investigation. From 13 per cent decrease in the value of claims on domestic real nonfinancial sector by the

Central Bank as a share of GDP (*NONFIN*) in the second period, the response grows to 20 per cent in the fifth period, before reducing to 12 per cent in the 10th period. With this smooth and gentle slope, the speed of adjustment is not high, but it is steady. Given that *PRIVY* responds negatively to *POLITY* with slow speed of adjustment, policy intervention to improve polity score in North Africa should be adopted guardedly.

The reaction of claims on domestic real nonfinancial sector by the Central Bank as a share of GDP (*NONFIN*) to annual percentage increase in consumer prices (*INFLATION*) is positive and incrementally stable. From 32 per cent increase in claims on domestic real nonfinancial sector by the Central Bank as a share of GDP (*NONFIN*) in the second period, the response regresses to 12 per cent in the third period, and progresses to 42 per cent in the fourth period. Thereafter, the response becomes stable and incremental, and reaches its peak in the sixth period with 78 per cent response rate. After the peak in the sixth period, the response starts decreasing and the decrease lasts until the 10th period where it becomes 71 per cent.

Judging from the trend of the response, it is evident that the speed of adjustment to equilibrium is low and policy interventions in North Africa that are aimed at better managing annual percentage change in consumer prices (*INFLATION*) should exploit the opportunity of the positive reactions as well as slow speed of adjustment to equilibrium.

Converse to the reverting negative responses generated in the case of *POLITY*, the responses of claims on domestic real nonfinancial sector by the Central Bank as a share of GDP (*NONFIN*) to regulatory quality (*QLEGAL*) is negative from the second period and it continued in the negative territory unabated till the end of the period under consideration. It is noteworthy that from 72 per cent reduction in *PRIVY* in the second period, the negative response grows to 148 per cent in the fifth period and it reduces gradually to 126 per cent in period 10.

With this kind of smooth trend and systematic increase in the value of the responses, it becomes apparent to note that the speed of adjustment to equilibrium is slow and the recovery of the responses from negative to positive will take some time. To that extent, any policy intervention to improve regulatory quality should be treated with sensitivity and care, especially considering its potential effects on one of the major components of the capital market, and an important determinant of the attractiveness of North Africa to inflow of FDI.

The claims on domestic real nonfinancial sector by the Central Bank as a share of GDP (*NONFIN*) begins its response to one standard deviation innovations shock on corruption perception (*CORRUPTION*) negatively in the second period at nine per cent decrease in *NONFIN*. Thereafter, the response becomes positive between the third and the fifth periods at an average of five per cent. However, the negative response kicks-in again in the sixth period at six per cent, and it reaches eight per cent in the 10th period.

Form the results of analysis contained in Table 5.39, the negative trend is stable and the speed of adjustment is slow. This kind of response pattern suggests the possibility of trial and error in the approach of government towards regulatory innovations, especially as regards *CORRUPTION* in North Africa.

Southern Africa

Table 5.40: Impulse Response Estimates for Equation 5 (1980-2012): Southern Africa Regional data (Response of NONFIN to Institutional Variables)

Period	LAWRULE	POLITY	INFLATION	QLEGAL	CORRUPTION
1	0.000000	0.000000	0.000000	0.000000	0.000000
2	-0.005637	-0.168333	-0.042122	-0.055833	0.105234
3	0.143463	-0.324458	-0.106256	-0.259048	-0.116638
4	0.234794	-0.240952	-0.015981	-0.382794	-0.275627
5	0.240696	-0.125265	0.001269	-0.406034	-0.230712
6	0.224854	-0.109886	-0.038455	-0.368806	-0.127416
7	0.194709	-0.138060	-0.028674	-0.327675	-0.068814
8	0.178103	-0.161290	-0.031187	-0.307275	-0.044940
9	0.190711	-0.161568	-0.042596	-0.319997	-0.072242
10	0.204332	-0.160889	-0.033785	-0.327546	-0.092606
One standard deviation innovations					

According to the results of the analysis presented in Table 5.40, claims on domestic real nonfinancial sector by the Central Bank as a share of GDP (*NONFIN*) reacts negatively to innovations shock on all the institutional variables under study. Even rule of law (*LAWRULE*) that reacts largely in a positive manner begins its reaction in the second period in a negative territory. However, the impact of the reaction is less than one percentage point. From the third period through to the 10th period, *NONFIN* reacts positively to one standard deviation innovations shock on *LWARULE* positively. From 14 per cent in the third period, the response reaches its peak in fifth period at 24 per cent. The response decreased thereafter until its upsurge again in the 10th period.

The trend of the response indicates that the speed of adjustment of this response is slow, thereby offering the political class an opportunity to exploit various options in policy innovations that are aimed at improving the respect for, and upholding of rule of law in Southern Africa.

The claims on domestic real nonfinancial sector by the Central Bank as a share of GDP (*NONFIN*) reacts negatively to one standard deviation innovations shock on *POLITY* throughout the period under study. From 17 per cent decrease in the claims on domestic real nonfinancial sector by the Central Bank as a share of GDP (*NONFIN*) in the second period, the effect grows to 32 per cent in the third period, before reducing to 24 per cent in the fourth period. Thereafter, the response reduces to 11 per cent in the sixth period, recorded an upsurge in the seventh period (14 per cent) and it increased thereafter until the last period under study.

The trend in the response pattern of claims on domestic real nonfinancial sector by the Central Bank as a share of GDP (*NONFIN*) to *POLITY* suggests a slow speed of adjustment to equilibrium. This is a serious warning for policy intervention in that the effects of *POLITY*-related policy misjudgement on *NONFIN* will take a long time to be corrected.

The reaction of claims on domestic real nonfinancial sector by the Central Bank as a share of GDP (*NONFIN*) to one standard deviation innovations shock on annual percentage change in consumer prices (*INFLATION*) is generally negative, except for the less than one per cent positive response that is recorded in the fifth period. From the second period, *NONFIN* begins its negative response to *INFLATION* with four per cent response, and the response intensifies to 11 per cent in the third period. Thereafter, the negative response begins to wane and it ends at three per cent in period 10.

The trend of the results presented in Table 5.40 indicates that the speed of adjustment to the point of equilibrium is slow. In that situation, policy interventions in line with addressing upsurge in annual percentage increase in consumer prices should be guardedly orchestrated. More importantly, the fact that *NONFIN* is an important component of capital market in Southern Africa and an important determinant of the attractiveness of Southern Africa to inflow of FDI (according to Table 5.7), any miscalculation in *INFLATION*-related policy intervention may unnerve edgy capital market, thereby negatively affecting the attractiveness of the region to inflow of FDI.

The impulse response of claims on domestic real nonfinancial sector by the Central Bank as a share of GDP (*NONFIN*) to regulatory quality (*QLEGAL*) is negative from the second period to the end of the period under investigation. The negative response begins in the second period with six per cent decrease in the value of *NONFIN*. The negative response further increases to 26, 38 and 41 per cent in the third, fourth and fifth periods respectively before it start declining. From 37 per cent in period seven, it reduces to 33 per cent in period 10.

As suggested in the explanation offered above, it is evident that the speed of adjustment back to the point of equilibrium is slow. It thus becomes important to apply caution when formulating or implementing policies that relates to regulatory quality. The fact that we record an inverse relationship between regulatory quality and claims on domestic real nonfinancial sector by the Central Bank as a share of GDP (*NONFIN*) is a clear indication that the availability of encyclopaedic regulations is not enough without adequate implementation.

The last variable of interest in this analysis is corruption perception (*CORRUPTION*). According to Table 5.40, apart from the 11 per cent positive response of *NONFIN* to one standard deviation innovations shock on corruption perception in the second period, the responses thereafter were negative. The response grows from 12 per cent in the third period to 28 per cent in the fourth period, but regresses to 23 per cent in the fifth period. The negative response ends at nine per cent in period 10.

Looking at the trend in the response pattern of *NONFIN* to *CORRUPTION*, it can be argued that the speed of adjustment is slow but steady. As such, anti-corruption policy interventions should be orchestrated carefully in order not to upset this important component of the capital market. Further, the negative relationship between corruption and *NONFIN* is an indication that any robust changes in anti-corruption regulations will further improve the performance of claims on domestic real nonfinancial sector by the Central Bank as a share of GDP (*NONFIN*) and ultimately, the attractiveness of the region to inflow of FDI.

The Southern Africa regional analysis indicates that only rule of law has positive impulse relationship with claims on domestic real nonfinancial sector by the Central Bank as a share of GDP (*NONFIN*). To that extent, the more the principles of rule of law is reinforced in the region, the more *NONFIN* will develop in the region, and ultimately, the more the region will be attractive to inflow of FDI. As for the remaining institutional variables, more needs to be done to improve these institutional framework and, to ameliorate their negative impacts on the development of capital market in the region. Although, the region boasts the best capital market on the African continent, its capitalisation is still very small on the global average and this needs to be improved through institutional intervention.

West Africa

Table 5.41: Impulse Response Estimates for Equation 5 (1980-2012): West Africa Regional data (Response of NONFIN to Institutional Variables)

Period	LAWRULE	POLITY	INFLATION	QLEGAL	CORRUPTION
1	0.000000	0.000000	0.000000	0.000000	0.000000
2	1.002730	0.854391	1.227845	0.809043	-0.360513
3	-0.041843	-0.034693	2.025540	1.790880	-0.617575
4	0.083905	0.088274	1.443804	1.682989	-0.834599
5	0.335723	0.194655	1.332603	1.259762	-0.835666
6	0.035845	0.092882	1.776077	1.465403	-0.537614
7	-0.069526	-0.022141	1.840223	1.537685	-0.582341
8	0.253332	-0.046741	1.752192	1.571490	-0.888887
9	0.031829	-0.065580	1.776956	1.708693	-0.888449
10	-0.061208	0.058705	1.705620	1.613713	-0.750245
One standard deviation innovations					

The impulse response result for equation 5 that is generated for West Africa as contained in Table 5.41 indicates that claims on domestic real nonfinancial sector by the Central Bank as a share of GDP (*NONFIN*) responds outright positively to one standard deviation innovations shock on *INFLATION* as well as *QLEGAL*, and outright negatively to *CORRUPTION*. However, the responses generated for *LAWRULE* and *POLITY* are combinations of both positive and negative reactions.

The claims on domestic real nonfinancial sector by the Central Bank as a share of GDP (*NONFIN*) begins its response to rule of law (*LAWRULE*) positively in the second period by an explosive response of 100 per cent. The reaction becomes negative in the third period with a four per cent reduction in the value of claims on domestic real nonfinancial sector by the Central Bank as a share of GDP (*NONFIN*). By the fourth period, the response changes to positive and eight per cent increase is recorded. The positive reaction continues for the rest of the period studied except for the negative responses that occurs in the seventh (seven per cent) and period 10 (six per cent).

One important observation is that the responses generated in the analyses result in an uneven trend, and the speed of adjustment back to the point of equilibrium is slow. Further, the results indicate that although there are some negative responses, the statistical importance of the positive responses is noticeable. As such, it is expedient to suggest that policy intervention that is aimed at improving the appreciation of rule of law in West Africa should be encouraged.

In the case of *POLITY*, *NONFIN* responds to one standard deviation innovations shock more positively than negatively and the effects of the positive responses are stronger than those of the negative responses. In specific, the reaction of claims on domestic real nonfinancial sector by the Central Bank as a share of GDP (*NONFIN*) to one standard deviation innovations shock on *POLITY* begins positively on the second period at 85 per cent but the reaction turned negative immediately thereafter at three per cent. The response increases to nine per cent in the fourth period and further to 19 per cent in the fifth period. The response reduces to nine per cent in the sixth period before turning negative in the seventh, eighth and ninth periods. Although, the negative responses for the three consecutive periods have statistical implication, the impact is barely at four per cent on the average, and the response ends at six per cent on a positive note in period 10.

One important observation from this analysis is that the bumpy trend in the responses as well as the low speed of adjustment should be taken into consideration when formulating policies that are aimed at improving the policy score of West Africa region. This is especially important because miscalculations in the choice of policy may be costly to the development of claims on domestic real nonfinancial sector by the Central Bank as a share of GDP (*NONFIN*). It must be recalled from the analysis contained in table 5.7 that *NONFIN* is an important component of capital market in the region, and one of the determinants of the attractiveness of the region to inflow of FDI.

However, claims on domestic real nonfinancial sector by the Central Bank as a share of GDP (*NONFIN*) reacts positively to one standard deviation innovations shock on annual percentage change in consumer prices (*INFLATION*) from the second period to the last period. For instance, the reaction begins in the second period with an explosive 123 per cent and it grows to 203 per cent in the third period before regressing to 144 and 133 per cent in the fourth and fifth periods, and it increases steadily thereafter for the remaining duration of the impulse response analysis.

One important observation from the trend of these results is that policy interventions that are aimed at ameliorating annual percentage change in consumer prices may enhance financial deepening through the claims on domestic real nonfinancial sector by the Central Bank as a share of GDP (*NONFIN*) nexus. However, given that the speed of adjustment is slow, cognisance should be given to the sensitivity of the variable to innovation shocks and the possible long-run impacts that such an innovation shock will have on *NONFIN*.

The response of claims on domestic real nonfinancial sector by the Central Bank as a share of GDP (*NONFIN*) to one standard deviation innovations shock on regulatory quality (*QLEGAL*) is positive throughout the period under study and it becomes explosive from the third period. This explosive trend continues with systematic increase in the value of the responses from the third period through to the end of the analysis, although with exceptions in the third, fourth and 10th periods where the pattern of systematic increase is altered.

The fact that *NONFIN* responds positively to innovations shock on this institutional variable lends credence to the strategic importance of appropriate policy intervention that are capable of enhancing the efficiency of regulatory quality in West Africa. Further, the systematic increment in the value of the response suggests that the speed of adjustment to equilibrium is slow, and it will take a protracted period for the impact of any bad regulatory-related policy initiative to ease-off on *NONFIN*.

The last variable of interest in West Africa analysis in this section is corruption perception (*CORRUPTION*). According to the analysis contained in Table 5.41, the response of claims on domestic real nonfinancial sector by the Central Bank as a share of GDP (*NONFIN*) to one standard deviation innovations shock is negative from the second period through to the end of the period covered in the study. More importantly, the responses are systematically incremental, except for two instances (sixth and 10th periods) where the trend of systematic increment is broken. However, there is a strong indication that the speed of adjustment of the variable to the point of equilibrium is slow.

In addition, corruption appears to play an important role on the functionality/development of claims on domestic real nonfinancial sector by the Central Bank as a share of GDP (*NONFIN*) in West Africa. To the effect that this variable is an important component of capital market formation in the region and it doubles as an important determinant of FDI inflow to the region as contained in Table 5.7, it becomes expedient to initiate appropriate anti-corruption policy initiatives that are capable of ameliorating the effects of corruption on this component of capital market, as a strategic way of improving the attractiveness of the region to inflow of FDI through the capital market nexus.

East Africa

Table 5.42: Impulse Response Estimates for Equation 5 (1980-2012): East Africa Regional data (Response of NONFIN to Institutional Variables)

Period	LAWRULE	POLITY	INFLATION	QLEGAL	CORRUPTION
1	0.000000	0.000000	0.000000	0.000000	0.000000
2	0.161663	-0.372698	1.015540	0.391623	-0.150884
3	0.033808	-0.507554	1.797452	1.119238	-0.389336
4	-0.302336	-0.350133	1.196822	1.162602	-0.741855
5	-0.332517	-0.297605	0.523974	0.665032	-0.569356
6	-0.062394	-0.292864	0.611754	0.378815	-0.175802
7	-0.033946	-0.203786	0.973393	0.451582	-0.008692
8	-0.149688	-0.199702	0.885948	0.557324	-0.081109
9	-0.123124	-0.283884	0.882292	0.600656	-0.206116
10	-0.075389	-0.326532	1.047631	0.678992	-0.351943
One standard deviation innovations					

The impulse response of claims on domestic real nonfinancial sector by the Central Bank as a share of GDP (*NONFIN*) to one standard deviation innovations shock on rule of law (*LAWRULE*) are both positive and negative. In the second period, the response begins on a positive note at 16 per cent. The statistical impact of the response reduced to three per cent in the third period, and it enters into negative territory thereafter. From the fourth period, the negative reaction reaches its peak in the fifth period and the bumpy trend ends at eight per cent in period 10.

Judging from the statistical importance of the negative responses, it is evident that innovations shock on rule of law will have devastating effects on the claims on domestic real nonfinancial sector by the Central Bank as a share of GDP (*NONFIN*) and the speed of adjustment to equilibrium is slow. In short, the realisation that this capital market variable is sensitive to rule of law related policy interventions suggests a guided approach in initiating and applying such institutional interventions.

Looking at the reaction of claims on domestic real nonfinancial sector by the Central Bank as a share of GDP (*NONFIN*) to one standard deviation innovations shock on polity score (*POLITY*), it is apparent that the response enters the negative territory from the second period and it never reverts back to positive territory throughout the period under study. Although, the value of the responses begins to regress from the third period, but the trend is broken in the last period when the trend surged.

In addition, it becomes important to note that the speed of adjustment of the variable to the point of equilibrium is slow, thereby suggesting cautious policy intervention. More so, the negative response of *NONFIN* to innovations shock on *POLITY* indicates that the efficiency and development of claims on domestic real nonfinancial sector by the Central Bank as a share of GDP (*NONFIN*) depends on the improvement in the policy score of the East African region.

The response of claims on domestic real nonfinancial sector by the Central Bank as a share of GDP (*NONFIN*) to annual percentage change in consumer prices (*INFLATION*) is positive from the second period in the analysis to the end. From an explosive 102 per cent increase in the value of *NONFIN* in the second period, the value increases to 180 per cent in the third period, and it begins to decline thereafter. However, an explosive (105 per cent increase) is realised in the 10^{th} period.

The trend of the result indicates that the responses are chaotic in nature and unstable in pattern. With the observed slow speed of adjustment to equilibrium, appropriately guided policy intervention towards improving the effects of inflation on claims on domestic real nonfinancial sector by the Central Bank as a share of GDP (*NONFIN*) is required.

The response of claims on domestic real nonfinancial sector by the Central Bank as a share of GDP (*NONFIN*) to one standard deviation innovations shock on quality of legal (*QLEGAL*) framework is positive from the second year in the analysis to the last period covered in the study. From 39 per cent increase in the value of *NONFIN* in the third period, the response becomes explosive as it increases to 116 in the fourth period, before regressing to 67 per cent increase in the fifth period. Thereafter, the response increases steadily for the rest of the period under study and the pattern of the increase is stable.

It can thus be opined that that the trend of the response indicates slow speed of adjustment, which informs guided approach to policy intervention as regards regulatory quality. Although, the analysis suggests that positive improvement in the regulatory quality will enhance the development of claims on domestic real nonfinancial sector by the Central Bank as a share of GDP (*NONFIN*), the sensitivity of this capital market variable to regulatory quality indicates that any *QLEGAL*-related policy misjudgement can disintegrate the development of *NONFIN*, and ultimately negatively affect the attractiveness of East African region to inflow of FDI.

The last variable of interest in the impulse response analysis for equation 5 for East African is corruption perception. From the results presented in Table 5.42, it is evident that claims on domestic real nonfinancial sector by the Central Bank as a share of GDP (*NONFIN*) reacts negatively to one standard deviation innovations shock on corruption perception (*CORRUPTION*). In the second period, the reaction begins with a 15 per cent decrease in the value of *NONFIN*, followed by a father decrease of 39 per cent. After reaching its peak of 74 per cent decrease in the value of *NONFIN*, the effects of the negative responses regress till period eight but starts picking again in the ninth and 10th periods.

One important observation is that corruption is a major problem to the development of claims on domestic real nonfinancial sector by the Central Bank as a share of GDP (*NONFIN*) in East Africa. Also, considering the slow speed of adjustment, it is apparent that anti-corruption policy intervention should be guided in order to forestall the possible impacts of inapt policy intervention.

From the East African regional analysis, it is evident that claims on domestic real nonfinancial sector by the Central Bank as a share of GDP (*NONFIN*) will react positively to innovations on annual percentage increase in consumer prices and regulatory quality. This implies that improving these institutional policy mechanisms may enhance the development of *NONFIN* in the region. Further, the negative impact of rule of law, polity score and corruption hints that these institutional frameworks need “to change”, thereby motivating for appropriate innovations shock.

Pooled Estimation

Table 5.43: Impulse Response Estimates for Equation 6 (1980-2012): Pooled data (Response of EQCAP to Institutional Variables)

Period	LAWRULE	POLITY	INFLATION	QLEGAL	CORRUPTION
1	0.000000	0.000000	0.000000	0.000000	0.000000
2	0.759689	0.878543	0.312208	0.107361	-0.857393
3	0.779007	0.104361	0.717957	-0.327813	-1.225653
4	0.570949	-0.344457	0.557683	-0.163624	-0.960106
5	0.511176	0.051489	0.587758	-0.164885	-0.872622
6	0.577565	0.277545	0.640619	-0.127244	-0.885400
7	0.586468	0.226452	0.665449	-0.140303	-0.924312
8	0.594189	0.154886	0.677470	-0.144241	-0.922840
9	0.579949	0.173487	0.694200	-0.137700	-0.913850
10	0.586053	0.209627	0.699262	-0.134549	-0.911059
One standard deviation innovations					

The impulse response analysis contained in Table 5.43 suggests that the total value of all listed shares in a stock market as a percentage of GDP (*EQCAP*) responds positively to three institutional variables (*LAWRULE, POLITY* and *INFLATION*) and negatively to the rest two. From the Table, the response of *EQCAP* to one standard deviation innovations shock on *LAWRULE* begins positively at 78 per cent in the second period and it increases to 78 per cent in period three, before regressing to 57 per cent in the fourth period. The response grows from 51 per cent in the fifth period to 59 per cent in the eighth period, before regressing again to 58 per cent in the ninth period. The response increases slightly in the 10th period as it grows to 59 per cent.

From the results presented in that Table, it becomes evident that innovations shock on the rule of law (*LAWRULE*) does have positive impacts on the total value of all listed shares in a stock market as a percentage of GDP (*EQCAP*). Further, with the slow speed of adjustment, there is a possibility for adequate policy manoeuvre in order to improve the regulatory environment of rule of law in the sampled African countries.

Looking at the reaction of total value of all listed shares in a stock market as a percentage of GDP (*EQCAP*) to one standard deviation innovations shock on polity score (*POLITY*), the response begins on a positive note in the second period at 88 per cent but reduces to 10 per cent in the third period. The response recorded its only negative response in the fourth period (34 per cent). Thereafter, the response jumps from five per cent in the fifth period to 28 per cent in the sixth period, and it reduces further to 23 per cent in the seventh period. Towards the concluding stage, the response increases from 15 per cent in the eighth period to 21 per cent in the 10th period.

One important lesson from the result is that although, negative reaction may creep-in at a point in time, the response of *EQCAP* to innovations shock on *POLITY* is generally positive. Further, the trend of the response suggests an uneven pattern that does not negate the possibility of slow speed of adjustment. In addition, policy initiatives aimed at improving the polity status of the sampled African countries may improve the motivation for investors to take available listing opportunities on the platforms of domestic stock market.

Further, the response of total value of all listed shares in a stock market as a percentage of GDP (*EQCAP*) to one standard deviation innovations shock on annual percentage change in consumer prices (*INFLATION*) yields outright positive response from the second period to the last period covered in this study. In the second period, the response begins as this innovations shock improves the appetite to list by 31 per cent and the response grows to 72 per cent in the third period. Although, the response regresses to 56 per cent in the fourth period, it grows thereafter to 70 per cent in period 10.

Judging from the trend of the response, it is evident that the speed of adjustment is slow. This pattern affords the policy makers the opportunity to try a few policy initiatives before they arrive at an optimal one. The fact that the response generated here is purely positive, policy initiatives that are able to ameliorate increases in consumer prices will further encourage listing on the African domestic stock markets.

In addition, the response of total value of all listed shares in a stock market as a percentage of GDP (*EQCAP*) to one standard deviation innovations shock on regulatory quality (*QLEGAL*) starts on a positive note in the second period, but it becomes negative thereafter. In specific, the response starts in the second period with an increase of 11 per cent improvement in *EQCAP*, but the tide turns in the third period to negative reaction at 33 per cent. Between the fourth and the 10^{th} period, the response reduces from 16 per cent to 13; although, the pattern is bumpy with uneven trend.

The negative reaction of *EQCAP* to regulatory quality suggests that innovative intervention is required to improve the impetus to list on the domestic African stock markets. Further, the trend indicates a rapid speed of adjustment between the second and the third periods, suggesting that policy intervention should be carefully orchestrated in order not to unsettle the stock market that appears to be flappable.

The last institutional variable of interest here is corruption perception. According to the result contained in Table 5.43, the response of total value of all listed shares in a stock market as a percentage of GDP (*EQCAP*) to one standard deviation innovations shock on corruption perception (*CORRUPTION*) is negative from the second period and it continues through to the end of the period under investigation. Apart from the first three periods (periods two, three and four) that exhibit uneven trend, the trend from the fifth period is stable and the pattern remains smooth and incremental till the end of the period under investigation.

With absolute negative reaction, the need to improve corruption perception on the continent towards enhancing the impulse to enlist on the platforms of African domestic stock markets is imperative. Given that corruption ratings are ‘perception’ based, regulatory intervention is required to improve transparency within the government structures, reinforce accountability and promote administrative etiquette.

Having looked at the response of total value of all listed shares in a stock market as a percentage of GDP (*EQCAP*) to the institutional variables used in this study, it is considered important to also investigate the regional dynamics in this regard as done for the other responses. The results of the regional analyses are presented in the paragraphs that follow.

North Africa

Table 5.44: Impulse Response Estimates for Equation 6 (1980-2012): North Africa Regional data (Response of EQCAP to Institutional Variables)

Period	LAWRULE	POLITY	INFLATION	QLEGAL	CORRUPTION
1	0.000000	0.000000	0.000000	0.000000	0.000000
2	-0.253631	0.414893	-0.437755	-0.501724	-0.982964
3	-0.238072	1.217256	-1.274567	-2.167960	-1.602015
4	-0.595977	1.602929	-2.839100	-2.693790	-1.688366
5	-0.699150	1.560430	-3.864052	-3.217139	-1.732594
6	-0.883790	1.356917	-4.382495	-3.247320	-1.386422
7	-0.923979	1.031196	-4.517667	-2.970576	-1.127393
8	-0.892719	0.769880	-4.209232	-2.641778	-0.890171
9	-0.850168	0.618775	-3.802048	-2.349952	-0.775774
10	-0.770876	0.581686	-3.437862	-2.164381	-0.778260
One standard deviation innovations					

According to the results presented in Table 5.44, total value of all listed shares in a stock market as a percentage of GDP (*EQCAP*) responds to one standard deviation innovation shocks on only polity score positively. The responses to the other intuitional variables are negative. Beginning with the rule of law (*LAWRULE*), the response of *EQCAP* to one standard deviation innovations shock is negative from the second period through to the end of the periods under investigation. The negative response begins in the second period with a 25 per cent decrease in *EQCAP*. The decrease continues systematically until the seventh period, and it begins to regress thereafter.

With the significance of the negative reaction and its implication on the viability of the stock market, there is the need to initiate policy measures that are capable of improving the application of rule of law in North Africa, as a way of improving the equity market platforms in order to encourage listing. Using Table 5.7 as a term of reference, it must be recalled that *EQCAP* is an important determinant of the attractiveness of the region to inflow of FDI. As such, policy initiatives towards improving the efficiency of the equity platform may further the attractiveness of the region to inflow of FDI.

Conversely, the reaction of *EQCAP* to one standard deviation innovations shock on polity score (*POLITY*) is positive, and the effect begins in the second period when total value of all listed shares in a stock market as a percentage of GDP (*EQCAP*) grows by 41 per cent. The trend becomes explosive from the third period through to the seventh period, before it regresses slowly to 58 per cent in the 10th period.

A good lesson from this result is that the positive response of *EQCAP* to *POLITY* is a good indication that by improving the polity score of the region, there is a high possibility that investor confidence in the equity market will grow. Due to an improvement in investor confidence, listing on the equity platforms will be improved and inflow of FDI will be enhanced concomitantly. More so, fear should not be entertained on possible negative reaction to policy intervention because the speed of adjustment is slow.

The next institutional variable considered here is annual percentage increase in consumer prices (*INFLATION*). According to the results presented in Table 5.44, evidence suggests that the total value of all listed shares in a stock market as a percentage of GDP (*EQCAP*) reacts negatively from the second period and that reaction to one standard deviation innovations shock on *INFLATION* continues throughout the period under consideration,.

The negative reaction begins in the second period as *EQCAP* drops by 44 per cent as a result of the innovations shock on *INFLATION*. The trend continues in the third period with an explosive reaction. However, the tide changes in period four in an incremental pattern that endured up until period eight. Period nine and 10 are more regressive in nature. With this kind of response, it is deduced that policy intervention is required to ameliorate the impact of purportedly unchequered *INFLATION* on the equity market, with specific attention being directed to *EQCAP*.

Still on the North Africa impulse response analysis, the response of *EQCAP* to regulatory quality (*QLEGAL*) is not different from the result obtained for *INFLATION*, albeit with a moderately divergent trend. The response of *EQCAP* to one standard deviation innovations shock on regulatory quality (*QLEGAL*) begins in the second period with 50 per cent reduction in *EQCAP*. By the third period, the response becomes explosive with systematic increment and that trend lasted until the sixth period. By the seventh period, the response starts to regress and that decline continues until period 10.

From the results presented above, it is evident that the regulatory quality has to be improved in order to spur investor confidence in the equity market, especially in relation to listing on the trading platforms. With slow speed of adjustment recorded in the response pattern, there is an ample opportunity to try a few options in the regulation formation process, before choosing the optimal intervention.

The last institutional variable of interest in the North Africa impulse response analysis for equation 6 is corruption perception. From Table 5.44, it is observed that the total value of all listed shares in a stock market as a percentage of GDP (*EQCAP*) begins to respond in the second period to one standard deviation innovations shock on corruption perception in a negative way. In specific, the impact of the innovations shock on *EQCAP* is as much as 98 per cent in the second period. The trend increases continuously in the negative territory till period five. From period six onward, the trend starts declining and the decline did not recover for the duration of the period under study.

One important finding here is that weak regulatory quality does affect investor confidence and ultimately, heightens investor inertia to commit to the equity market, especially listing on the trading platforms. It is thus suggested that policy intervention is required to strengthen regulatory quality in the region. The impulse response results presented here is in line with the reality that Table 5.7 espouses, thereby reinforcing the rationalisation to improve institutional framework in the North African region.

Sequel to the impulse response analysis for North African region, we now look at the outcome of similar analysis for the other regions under study, beginning with Southern Africa. The results of those analyses are presented in the subsequent paragraphs.

Southern Africa

Table 5.45: Impulse Response Estimates for Equation 6 (1980-2012): Southern Africa Regional data (Response of EQCAP to Institutional Variables)

Period	LAWRULE	POLITY	INFLATION	QLEGAL	CORRUPTION
1	0.000000	0.000000	0.000000	0.000000	0.000000
2	14.45165	1.588334	-9.259126	-8.855540	-3.042026
3	16.30129	1.070840	-6.054284	-11.70457	-12.87307
4	10.30657	-10.91559	-2.659983	-14.29175	-12.34265
5	16.75175	-4.411089	-7.534568	-20.77671	-13.87898
6	16.55199	3.716254	-3.362451	-20.89064	-19.30865
7	15.85911	-5.175259	-4.695045	-23.42330	-17.97000
8	21.79946	-3.873108	-8.110607	-27.74178	-20.72304
9	19.17072	-1.637803	-3.262610	-27.03481	-24.22475
10	19.42719	-5.565572	-5.793708	-30.22037	-22.70521
One standard deviation innovations					

The impulse response result presented in Table 5.45 indicates that the total value of all listed shares in a stock market as a percentage of GDP (*EQCAP*) responds negatively to four out of the five institutional variables under consideration. In specific, the total value of all listed shares in a stock market as a percentage of GDP (*EQCAP*) responds positively and explosively too, to one standard deviation innovations shock on rule of law (*LAWRULE*) from the second period through to the last period in the study. In the second period, one standard deviation innovations shock on rule of law results in 14 per cent increase in *EQCAP*.

The incremental improvement in *EQCAP* over the periods is not without occasional breaks. For instance, there is a brief break in the systematic incremental pattern of the trend in the fourth period, seventh period and the ninth period. However, one can deduce from the trend that the speed of adjustment is slow. One important lesson from the analysis is that rule of law plays an important role in the development of equity market, especially the platforms for listing and trading. To that extent, it is suggested that complementary development policies be initiated to support the existing ones.

Further, the impulse response of total value of all listed shares in a stock market as a percentage of GDP (*EQCAP*) to one standard deviation innovations shock on polity score begins positively for the first two periods, before turning negative in the fourth period. At the initial stage, *EQCAP* responds positively to the innovations shock on polity score (*POLITY*), but the response turns negative from the fourth period and the negative response continues throughout the period under consideration, except for period six that experiences a positive response.

One can therefore suggest that the policy intervention that is aimed at improving the behaviour of this institutional variable should be cautiously orchestrated, given its rapid speed of adjustment. Further, the intermittent positive response of *EQCAP* to the innovations shock suggests that the equity market is very sensitive to impulses from the region's polity.

Another variable of interest in the impulse response analysis for equation 6 in Southern Africa is annual percentage change in consumer prices (*INFLATION*). According to Table 5.45, the total value of all listed shares in a stock market as a percentage of GDP (*EQCAP*) responds negatively and explosively too, to one standard deviation innovations shock on the annual percentage change in consumer prices (*INLFATION*). Through an uneven pattern and unstable trend, the impulse response of *EQCAP* to *INFLATION* demonstrates the need to intervene through policy initiatives, to reduce the effects of *INFLATION* on the equity market, especially *EQCAP*. With the slow speed of adjustment, government may easily adopt various approaches to curb the negative effects of *INFLATION* on this important component of capital market in Southern Africa.

Further, the response of *EQCAP* to one standard deviation innovations shock on regulatory quality (*QLEGAL*) is negative, but more importantly, systematically incremental and explosive. From 885 per cent decrease in the second period, the effects reaches 2089 per cent in period six and ended up at 3022 per cent in period 10. The intensity of the response sensitises the need to urgently improve regulatory quality in the region, especially considering the potential impacts of its deficiency on the equity platform.

Corruption is the last institutional variable under consideration here. According to Table 5.45, the response pattern of *EQCAP* to *CORRUPTION* is very similar to the way *EQCAP* responds to *QLEGAL*. Beginning with 304 per cent decrease in *EQCAP* in the second period, the response grows to 1931 in the sixth period and ended up at 2271 in the last period. The policy implication and possible suggestions are therefore aligned with those offered above in the case of *INFLATION*.

West Africa

Table 5.46: Impulse Response Estimates for Equation 6 (1980-2012): West Africa Regional data (Response of EQCAP to Institutional Variables)

Period	LAWRULE	POLITY	INFLATION	QLEGAL	CORRUPTION
1	0.000000	0.000000	0.000000	0.000000	0.000000
2	1.219516	0.312688	-0.165269	0.439643	1.239574
3	-2.185249	0.580558	0.488169	5.783404	2.591076
4	0.166172	-0.026188	-0.032691	2.904951	3.103906
5	1.478211	-0.263505	-0.572329	0.493545	1.141671
6	0.717867	-0.269882	0.659037	1.052397	1.538025
7	0.349637	-0.167775	0.415005	0.847454	2.874772
8	0.647322	-0.051525	-0.217057	1.674689	2.978721
9	-0.012271	-0.268570	0.561751	2.973524	2.603210
10	0.789740	-0.379155	0.406441	1.811264	2.681888
One standard deviation innovations					

The impulse response analysis for West Africa begins with the investigation of how the total value of all listed shares in a stock market as a percentage of GDP (*EQCAP*) respond to one standard deviation innovations shock on rule of law (*LAWRULE*). From the result contained in table 5.46, it is evident that the equity capital variable responds more positively than negatively to the institutional variables used in this study.

From the second period, *EQCAP* responds to innovations shock on *LAWRULE* positively and in an explosive manner. In the third period, the response turned the tide to negative that is also explosive. From the fourth period, the responses become positive till the end of the period under study, but not without the one per cent decrease in *EQCAP* in period nine. The bumpy nature of the trend is a clear indication of rapid speed of adjustment, which will be an indictment on policy intervention. The fact that the response is comprised of intermittent positive and negative reactions suggests that any policy intervention in this regard has to be carefully thought through.

Looking at the reaction of *EQCAP* to *POLITY*, it is interesting to note that the response begins positively in the second period as innovations shock on polity contributes 31 per cent to *EQCAP*, and the improvement reaches 58 per cent in the third period, before the response turns negative in the fourth period. The negative response gains momentum between the fourth and the sixth periods, and it grows further from seventh period onward.

With this chaotic reaction and high speed of adjustment, it is suggested that policy initiatives toward improving the performance of total value of all listed shares in a stock market as a percentage of GDP (*EQCAP*) through institutional framework needs to be given adequate attention because *EQCAP* may respond negatively and rapidly too, to any policy misjudgement.

Another important impulse response analysis is the one that looks at the response of total value of all listed shares in a stock market as a percentage of GDP (*EQCAP*) on one standard deviation innovations shock on annual percentage increase in consumer prices. From Table 5.46, it is clear that *EQCAP* responds negatively on four instances, as compared to five positive responses to innovations shock on *INFLATION*. In specific, the response begins with a negative response on the second period and the response reduces *EQCAP* by 17 per cent. This is reversed rapidly in period three with 49 per cent increase in the value of *EQCAP*. The fourth and fifth period witnesses negative responses, just like period nine. However, irrespective of the intermittent negative responses, the positive response in period 10 suggest that the variable responds more positively than negatively to annual percentage change in consumer prices (*INFLATION*).

To that extent, one may opine that the response of equity market to consumer price changes is an indication that the institutional variable is an important determinant of the development of the equity trading platform, and by extension, a determinant of the attractiveness of the region to inflow of FDI (judging from the results contained in Table 5.7).

The last institutional variable of interest here is corruption perception. According to Table 5.46, evidence suggests that there is a strong positive relationship between corruption perception and the performance of the equity trading platform. More importantly, the response is explosive from the second period and the momentum is sustained till the fourth period before a temporary shock sets in in the fifth period. The systematic increment begins again in the sixth period and it continues unabated till the final period.

Given the extent and strength of the responses to the innovations shock on the institutional variable, it becomes logical to observe a possible trend of insider trading and other forms of opportunistic behaviour in the equity platform. In order to advance the performance of the equity platform and to improve the attractiveness of the region to inflow of FDI, it is important to manage incidence of corruption in that region.

East Africa

Table 5.47: Impulse Response Estimates for Equation 6 (1980-2012): East Africa Regional data (Response of EQCAP to Institutional Variables)

Period	LAWRULE	POLITY	INFLATION	QLEGAL	CORRUPTION
1	0.000000	0.000000	0.000000	0.000000	0.000000
2	-0.273701	2.772917	4.366493	2.303186	4.226819
3	1.513067	3.847979	6.122239	4.346511	7.922135
4	2.708637	2.470518	4.304898	3.224734	5.511739
5	3.440270	1.755947	4.797170	5.232510	2.383467
6	2.425006	1.371025	6.574181	9.125325	2.588212
7	1.704554	1.794921	5.363023	8.554814	4.294812
8	1.702996	2.562667	4.273245	4.724798	4.427118
9	2.139234	2.929394	4.770764	3.847024	4.376951
10	2.805408	2.368602	5.150096	5.647208	4.316562
One standard deviation innovations					

The East African impulse response result for equation 6 is quite interesting. The response of equity capital to the institutional variables is all positive, except for the second period where *EQCAP* begins its response to rule of law in the negative territory, but it recovers immediately and the response becomes positive. It is also important to note that all the responses, except for negative response to rule of law in the second period, are also explosive in nature.

Looking at the response of total value of all listed shares in a stock market as a percentage of GDP (*EQCAP*) to one standard deviation innovations shock on rule of law (*LAWRULE*) in

East Africa, it is interesting to note that the response begins with a 27 per cent reduction in *EQCAP* in the second period. Thereafter, the response changes to positive and it becomes explosive continuously. The explosive positive response grows till period five and it regresses thereon till period eight, after which it begins to grow again.

With this kind of response, it is evident that innovations shock on rule of law plays a significant deterministic role on the response of the total value of all listed shares in a stock market as a percentage of GDP (*EQCAP*). It therefore calls for a more robust approach to improve the institutional precincts of rule of law continuously. Although, such an intervention may send a panicky signal at the beginning, the negative effects will not last for a long time but it should be reminded that the speed of adjustment of this variable is high and the response of equity market listing platform to unfavourable policy intervention could be instantaneous.

The next response of interest is the response of total value of all listed shares in a stock market as a percentage of GDP (*EQCAP*) to one standard deviation innovations shock on polity score (*POLITY*). The response grows from 277per cent in the second period to 385 per cent in the third period, and it regresses to 247 per cent in the third year. Although, the trend picks again from the sixth period till the end of the period under consideration, the trend is simply uneven.

Although, the speed of adjustment if low, it is important to note that policy intervention that is aimed at improving the polity score of East Africa will most like improve the performance of the total value of all listed shares in a stock market as a percentage of GDP (*EQCAP*). Also, given that this variable is an important component of capital market and by extension, a strong determinant of the attractiveness of the region to inflow of FDI; it becomes important to initiate policies that are capable of improving its development.

Although, the response of total value of all listed shares in a stock market as a percentage of GDP (*EQCAP*) to one standard deviation innovations shock on the annual percentage change in consumer prices (*INFLATION*) is positive, the response is characterised by uneven explosive trend. The fact that chaotic explosive trend reposes in the positive territory indicates that the speed of adjustment is low and policy intervention in that regard could benefit from extensive leeway before arriving at the most optimal option.

Further, looking at the response of total value of all listed shares in a stock market as a percentage of GDP (*EQCAP*) to one standard deviation innovations shock on regulatory quality (*QLEGAL*), it becomes obvious that the trend is systematically incremental from the second period till the sixth period. Although, the gap between the sixth and the seventh period is high, the trend assumes an incremental pattern thereafter till the end of the period under investigation. This is an important finding because, although the trend is uneven at a point, the swing reverts back to the positive incremental pattern immediately. Policy intervention towards improving regulatory quality as an institutional framework should be tamed with caution.

The response of total value of all listed shares in a stock market as a percentage of GDP (*EQCAP*) to corruption perception is positive from the second period to the end of the period under study. However, the trend is uneven, and chaotic. Beginning with 422 per cent increase in the second period, the response grows to 792 per cent in the third period before regressing to 551 per cent in the fourth period. Although, the trend suggests an upward swing between fifth and eight periods, the last two periods are stable. It becomes important therefore, to ensure policy intervention that is capable of stimulating stability in the response of the equity market variable in order to improve investor confidence in the equity market continuously.

A good lesson from these results for East Africa is that we are able to establish strong response relationships between the total value of all listed shares in a stock market as a percentage of GDP (*EQCAP*) and the institutional variables. As such, policy intervention that will enhance positive response from equity platforms is encouraged in order to improve the development of equity platforms in the region.

Having concluded the impulse response analysis for equation 6, we now proceed to equation 7. The same pattern and technique that is followed in equations 3 to 6 will also be followed here. We begin with the pooled estimation for all the sampled African countries, and then proceed to the regional analysis. The results of those analyses will be presented in the paragraphs that follow.

Pooled Estimation

Table 5.48: Impulse Response Estimates for Equation 7 (1980-2012): Pooled data (Response of TURNOVER to Institutional Variables)

Period	LAWRULE	POLITY	INFLATION	QLEGAL	CORRUPTION
1	0.000000	0.000000	0.000000	0.000000	0.000000
2	-0.395172	0.144899	-0.125949	-0.402671	0.036391
3	-0.509359	0.515972	-0.469862	-0.995633	0.125163
4	-0.469696	1.210939	-1.143441	-1.417827	0.091464
5	-0.232170	2.023641	-1.907641	-1.723796	0.059341
6	0.017562	2.733046	-2.628534	-1.845760	0.007632
7	0.299373	3.276291	-3.215114	-1.869001	-0.047760
8	0.528450	3.645626	-3.630007	-1.797884	-0.097105
9	0.708118	3.850346	-3.875430	-1.689646	-0.135319
10	0.819623	3.912850	-3.974670	-1.565192	-0.160574
One standard deviation innovations					

The result for impulse response analysis conducted for the sampled African countries in the pooled data indicates that the total value of all traded shares in a stock market as a percentage of GDP (*TURNOVER*) responds both positively and negatively to the institutional variables, except in the case of combined polity score, where the response is exclusively positive and in the case of annual percentage increase in consumer prices as well as regulatory quality, the responses are negative.

Looking at the response of *TURNOVER* to individual institutional variables, and beginning with rule of law (*LAWRULE*), it is observed that *TURNOVER* begins its impulse response to one standard deviation innovations shock on *LAWRULE* negatively with a 40 per cent reduction in the value of *TURNOVER* in the second period. The response decreased further to 51 per cent in the third period and decreasing returns is experienced in the trend of the response between the fourth and fifth periods.

The response switches to positive direction in the sixth period and the trend of that response becomes systematically incremental, starting from barely two per cent increase in the sixth period through to 82 per cent increase in period 10. The result of the analysis contained in Table 5.48 suggests that policy intervention toward improving the functionality of rule of law must be tamed with utmost caution, especially because of the high speed of adjustment that is exhibited by the response variable.

Further, the total value of all traded shares in a stock market as a percentage of GDP (*TURNOVER*) responds positively to one standard deviation innovations shock on polity score (*POLITY*) from the second period through to the last period under investigation. It is important to note that the positive response is incremental throughout the period under investigation. This trend suggests that the speed of adjustment in this instance is slow. Although, policy intervention may be conceived to further the positive effect of *POLITY* on *TURNOVER*, there is no critical need for such an intervention judging from the trend.

Looking at the impulse response of total value of all traded shares in a stock market as a percentage of GDP (*TURNOVER*) to one standard deviation innovations shock on the annual percentage change in consumer prices (*INFLATION*), it is observed that the response is converse to the response to *POLITY*. The response begins in the second period with a 13 per cent reduction in the value of *TURNOVER*; the reduction grows to 191 per cent in the fifth period and reaches its peak in period 10 at 397 per cent. This trend suggests that a policy intervention is required, and urgently too, to address the negative impulse reactions of *TURNOVER* to *INFLATION*. One can arguably observe that inflation is indeed, a problem in the sampled African countries.

The impulse response of total value of all traded shares in a stock market as a percentage of GDP (*TURNOVER*) to one standard deviation innovations shock on regulatory quality (*QLEGAL*) reflects an explosive negative response as recorded for *POLITY* and *INFLATION*. However in this instance, the trend is not smooth. The negative reaction begins with 40 per cent in the second period, and it regresses further to 172 per cent in the fifth period before reaching its peak in the 10^{th} period.

Looking at the pattern of the response, one would suggest that policy intervention is urgently required to improve the response of *TURNOVER* to *QLEGAL* in the sampled African countries. The obvious reality from the result is that regulatory quality as regards trading on the African platforms is generally weak. As such, institutional intervention towards reversing the current situation is highly advocated.

The last institutional variable in this aspect of the impulse response analysis is corruption perception (*CORRUPTION*). Here, we investigate the impulse response of total value of all traded shares in a stock market as a percentage of GDP (*TURNOVER*) to one standard deviation innovations shock on corruption perception (*CORRUPTION*). The result of the analysis contained in Table 5.48 indicates that the response of *TURNOVER* to *CORRUPTION* begins positively and it becomes negative from period seven.

More specifically, the impulse response of *TURNOVER* begins in the second period with four per cent increase in the value of *TURNOVER*. This increase reaches a peak of nine per cent in the fourth period, and it starts to regress thereafter. It is however noticeable that the negative response is incremental from the onset till the end of the period under investigation. One important observation from the result is the high speed of adjustment. To that extent, any policy intervention towards improving the response should be tamed with caution in order not to further upset the edgy trading platform.

Looking at the results of impulse response for equation 7 in the pooled estimation, it is evident that *POLITY* is the only variable that generates absolute positive response from *TURNOVER*, while *INFLATION* and *QLEGAL* generates absolute negative responses. Further, the speeds of adjustment of *LAWRULE* and *CORRUPTION* are high thereby suggesting cautionary policy-related interventionist approach.

Having looked at the impulse response outcome of the pooled estimation for equation 7, we now proceed to the regional analysis. The results of the impulse response analysis for the regions are presented in the paragraphs that follow, beginning with the North African analysis.

North Africa

Table 5.49: Impulse Response Estimates for Equation 7 (1980-2012): North Africa Regional data (Response of TURNOVER to Institutional Variables)

Period	LAWRULE	POLITY	INFLATION	QLEGAL	CORRUPTION
1	0.000000	0.000000	0.000000	0.000000	0.000000
2	-2.331737	0.445282	0.019975	-0.148323	-0.461154
3	-4.544215	0.154326	-0.204249	-0.790561	-0.323185
4	-4.177737	0.462457	-1.058459	-1.007563	0.211484
5	-1.797793	0.984874	-1.275856	-1.045789	0.569642
6	0.220755	1.161637	-0.908228	-0.890830	0.510534
7	0.536318	0.912741	-0.535419	-0.758417	0.165244
8	-0.476442	0.613283	-0.430369	-0.830409	-0.092291
9	-1.611159	0.514881	-0.613038	-0.996373	-0.078293
10	-1.910771	0.631080	-0.875732	-1.129787	0.104384
One standard deviation innovations					

The impulse response analysis for North Africa as presented in Table 5.49 indicates a series of mixed negative and positive responses. In exception of *POLITY* that records positive response to *TURNOVER*, the response of this capital market variable to all institutional variables generates mixed reactions. Looking at the reaction of total value of all traded shares in a stock market as a percentage of GDP (*TURNOVER*) to one standard deviation innovations shock on rule of law (*LAWRULE*), it is observed that the response begins with an explosive 233 per cent negative reaction that regresses further until the fourth period.

The 22 per cent and 54 per cent positive responses recorded in the sixth and seventh period did not last as negative reactions set in again in an incremental manner from the eighth period till the end of the period under investigation. From the results presented in table 5.49, it is evident that policy intervention is required to improve regulatory quality in North Africa. However, the policy intervention should be embraced with carefulness given the high speed of adjustment that is pertinent to this response.

Looking at the impulse response of total value of all traded shares in a stock market as a percentage of GDP (*TURNOVER*) to one standard deviation innovations shock on polity score (*POLITY*), it is observed that this response is the only one in the North African analysis that generates positive reaction. The reaction is positive from the beginning (second period) through to the last period under investigation. However, the trend of the response is uneven as it is characterised by intermittent high and low trends. Although, policy intervention is required in order to improve the score of the region on polity, this should be done with caution in order not to trigger negative reaction from the equity trading platform.

The impulse response of total value of all traded shares in a stock market as a percentage of GDP (*TURNOVER*) to one standard deviation innovations shock on annual percentage change in consumer prices (*INFLATION*) begins in the second period in a positive territory (two per cent), but it inverts immediately and becomes negative in the third period with a 20 per cent decrease in the value of *TURNOVER*, decreases further to 128 per cent in the fifth period before reducing gently to 91 per cent in the sixth period. The trend becomes incremental from the eighth period till the end of the period studied.

Given the uneven trend in the pattern of the responses, especially with the swift reversal from positive to negative reactions, it is reasonable to suggest a rapid speed of adjustment. As such, the drive to ensure adequate institutional improvement to *INFLATION* in North African region should not be adopted without cautionary notes on the rapid speed of adjustment of the equity trading platform to this macroeconomic force.

Looking at the impulse response of total value of all traded shares in a stock market as a percentage of GDP (*TURNOVER*) to one standard deviation innovations shock on regulatory quality (*QLEGAL*), it is observed that the response is negative from the beginning of the period under investigation till the end of the period considered in the study. From a low 15 per cent negative response in the second period, the response decreases to 105 in the fifth period and increases to 89 per cent in the sixth period. The response grows further in the negative territory from the seventh period till the end of the period under study.

Looking at the pattern of the response, it is evident that the response is deeply rooted in the negative territory with occasional explosive reactions. Further, the fact that the response is irreversibly rooted in the negative territory suggests that policy intervention is required urgently to redress the negative trend. This is essentially so because the total value of all traded shares in a stock market as a percentage of GDP (*TURNOVER*) is an important component of the capital market and it is found in Table 5.7 to be an important determinant of the attractiveness of the region to inflow of FDI. As such, policy intervention towards improving the regulatory quality in the region may enhance the development of capital market, thereby improving the attractiveness of the region to inflow of FDI.

The impulse response of total value of all traded shares in a stock market as a percentage of GDP (*TURNOVER*) to one standard deviation innovations shock on corruption perception (*CORRUPTION*) generates mixed responses. The response begins negatively at 46 per cent in the second period and reduces to 32 per cent in the third period. The response changes rapidly to 21 per cent in the fourth period and further to 57 per cent in the fifth period before reducing to 51 per cent and 17 per cent in the sixth and seventh periods respectively. The negative responses recorded in the eighth and ninth periods are regressive at an average of 9 per cent, while the positive response recorded in the 10th period is as high as 10 per cent increase in the value of *TURNOVER*.

From the result contained in 5.49, it is clear that the speed of adjustment of the variable to equilibrium point is high. Further, with the uneven trend, it is evident that response to anti-corruption innovations will yield more positive than negative reactions. However, there is a stringent need to accommodate the possibility of intermittent swings in the reaction of equity platforms to those policy initiatives.

Southern Africa

Table 5.50: Impulse Response Estimates for Equation 7 (1980-2012): Southern Africa Regional data (Response of TURNOVER to Institutional Variables)

Period	LAWRULE	POLITY	INFLATION	QLEGAL	CORRUPTION
1	0.000000	0.000000	0.000000	0.000000	0.000000
2	2.433725	-1.788324	-2.960782	5.619635	3.824028
3	6.277915	-2.141884	-4.208684	5.282410	3.419285
4	7.498113	-5.221345	-7.494967	11.40670	7.797723
5	8.345492	-5.452623	-6.031137	7.988525	5.672684
6	9.236091	-6.647635	-7.181602	10.19577	6.938326
7	8.159853	-4.950222	-5.751282	8.376845	6.040464
8	7.895901	-5.203052	-5.150926	6.431185	4.704439
9	6.880766	-4.925525	-4.773124	7.383792	5.453197
10	6.432485	-3.628766	-3.457566	3.692523	3.022628
One standard deviation innovations					

The impulse response analysis for equation 7 as contained in Table 5.50 demonstrates that the total value of all traded shares in a stock market as a percentage of GDP (*TURNOVER*) responds more positively than negatively to one standard deviation innovations shock on the institutional variables. In fact the positive responses are absolute for three variables (*LAWRULE*, *QLEGAL* and *CORRUPTION*), while the two absolute negative reactions are recorded on *POLITY* and *INFLATION*.

In specific, the total value of all traded shares in a stock market as a percentage of GDP (*TURNOVER*) responds to one standard deviation innovations shock on rule of law (*LAWRULE*) positively from the second period, and the positive reaction continues until the 10^{th} period. The reaction begins in an explosive manner in the second period, becomes incremental and reaches its maximum in the sixth period. The period thereafter records regressive trend but still in explosive manner.

Looking at the response of total value of all traded shares in a stock market as a percentage of GDP (*TURNOVER*) to one standard deviation innovations shock on *POLITY*, it is observed that the response begins strongly in the negative territory in the second period and remains in the negative region throughout the period under investigation. However, the trend is incremental in nature from the second period till period six. Afterwards, the trend becomes erratic.

The deeply-rooted negative reaction of *TURNOVER* to *POLITY* is an impetus for an urgent policy intervention to improve the polity score of the region. Although, the trend of the response is uneven at a point, the strength of the reaction in the negative territory is a clear testimonial to the slow speed of adjustment of the variable to the point of equilibrium. This slow speed of adjustment thus allows for flexibility in the institutional approach to reinforcing the polity score of the Southern Africa region.

The next variable of interest in the Southern Africa regional impulse response estimation for equation 7 is annual percentage change in consumer prices (*INFLATION*). Looking at the impulse response of total value of all traded shares in a stock market as a percentage of GDP (*TURNOVER*) to one standard deviation innovations shock on annual percentage change in consumer prices (*INFLATION*), it is observed that *TURNOVER* responds negatively and explosively too, to innovations shock on *INFLATION*. Although, the response is incremental between the second and the fourth periods, the trend from period six is regressive in nature and the wobbly pattern continues till the end of the period studied.

Judging from the result that is presented in Table 5.50, it is clear that urgent policy intervention is required to curb the unchequered effects of *INFLATION* on the equity trading platform. The rigid abrasion of *TURNOVER* in the negative territory is a clear testimony in this regard.

In addition to the above, the impulse response of total value of all traded shares in a stock market as a percentage of GDP (*TURNOVER*) to one standard deviation innovations shock on regulatory quality (*QLEGAL*) is absolutely positive and explosive throughout the period under consideration. With erratic swings between the second and the fifth periods, the trend becomes systematically retrogressive from the sixth period till the end of the period; although, it remains strong in the positive territory.

A good lesson from this result is that the current policy initiatives are evidently supportive to the equity trading platform in Southern Africa; any possible improvement in the existing policy would most probably yield better response, especially given the slow speed of adjustment and the inelasticity of the response in the positive territory.

The last institutional variable of interest in this section is corruption perception (*CORRUPTION*). From the result contained in Table 5.50, it is evident that the total value of all traded shares in a stock market as a percentage of GDP (*TURNOVER*) responds to one standard deviation innovations shock on corruption perception (*CORRUPTION*) positively from the second period through to the last period under study. Beginning with 382 per cent increase in the second period, the response grows to 780 in the fourth period, before sliding to 302 in the last period. However, the trend is uneven and the pattern is unstable.

Although, the reaction is rigidly in the positive territory, the trend is not devoid of sporadic swings. From the result, while the response is positive, there are always rooms for policy improvement, especially the regulatory environment of the capital market. Government can thus benefit from slow speed of adjustment in the policy formulation and implementation process.

West Africa

Table 5.51: Impulse Response Estimates for Equation 7 (1980-2012): West Africa Regional data (Response of TURNOVER to Institutional Variables)

Period	LAWRULE	POLITY	INFLATION	QLEGAL	CORRUPTION
1	0.000000	0.000000	0.000000	0.000000	0.000000
2	-0.076576	0.041305	0.049094	0.452100	0.024844
3	-1.081529	0.127804	0.132823	2.229735	0.192404
4	-1.515633	0.141451	0.055277	2.758412	0.554877
5	-0.422651	0.050012	-0.107818	1.028770	0.403715
6	0.902170	-0.100137	-0.182638	-1.160101	-0.150959
7	1.360942	-0.105076	-0.063422	-1.983380	-0.210155
8	0.318708	0.015671	0.151027	-0.072418	0.212700
9	-2.078832	0.112102	0.241312	3.958326	0.564487
10	-3.182704	0.134888	0.110882	5.567812	0.719627
One standard deviation innovations					

The impulse response analysis for equation 7 for West Africa generates interplay of positive and negative reactions from total value of all traded shares in a stock market as a percentage of GDP (*TURNOVER*) to institutional variables. Starting with the reaction of *TURNOVER* to one standard deviation innovations shock on rule of law (*LAWRULE*), it is observed that the response begins in the second period from a negative territory (eight per cent decrease in *TURNOVER*). With an incremental and explosive pattern between the third and fourth periods, the response slackens to 42 per cent in the fifth period. The sixth, seventh and eighth periods witness positive responses (90, 136 and 32 per cent perspective). However, the trend ended in the negative territory in the ninth and 10^{th} periods.

The results presented in Table 5.51 indicate a high speed of adjustment to innovations shock. The swings from negative response in period five to positive response in period six, as well as the swing from positive in period eight to negative in period nine clearly buttresses the argument in support of high speed of adjustment and the need to tame policy interventions with restraint.

Looking at the response of total value of all traded shares in a stock market as a percentage of GDP (*TURNOVER*) to one standard deviation innovations shock on polity score (*POLITY*), absolute positive response is evident, in exception of a negative response that is recorded in the seventh period. Except for the incremental trend that is recorded between the second and fourth periods, the trend of the rest responses is uneven and chaotic.

Judging from the possible impact of the high speed of adjustment that is pertinent to this result, it is expedient to suggest a cautionary policy formulation and implementation approach in order not to exacerbate the spontaneity that characterises this interaction between the equity trading platform and polity score.

The response of total value of all traded shares in a stock market as a percentage of GDP (*TURNOVER*) to one standard deviation innovations shock on annual percentage increase in consumer prices (*INFLATION*) is of important consideration. The response begins in the second period with five per cent positive increase in the value of *TURNOVER*. The response grows to 13 per cent in the third period and reduces to six per cent in the fourth period. The period between fifth and seventh periods generated negative responses and the response switches to the positive territory in in the eighth period, where it reposes till the end of the period under study.

The simple lesson from this analysis is that policy intervention is required to ensure stability in the relationship between these variables. Given that the outcome of the innovations shock would generate a high speed of adjustment, such a policy intervention should be cautiously orchestrated in order not to upset the trading platform of the equity market.

The next variable of interest in this section is regulatory quality (*QLEGAL*). According to Table 5.51, the response of total value of all traded shares in a stock market as a percentage of GDP (*TURNOVER*) to one standard deviation innovations shock on regulatory quality (*QLEGAL*) is positive for most of the instances, with three negative responses in the sixth, seventh and eight periods.

The trend of the response is incremental between the second and the fourth period, reduces in the fifth period and enters negative territory in the sixth period. The trend only reverts back to the positive territory in the ninth period, and the positive swing is incremental in pattern. This result indicates that although regulatory intervention will yield both negative and positive results, the intensity of the positive responses are stronger than the negative ones. Further, careful attention should be paid to the high speed of adjustment when orchestrating policy intervention in order not to upset the trading platform on the equity market.

The last variable of interest in this section is corruption perception (*CORRUPTION*). From the result presented in Table 5.51, it is evident that total value of all traded shares in a stock market as a percentage of GDP (*TURNOVER*) will react to one standard deviation innovations shock more positively than negatively. In specific, out of the nine periods under consideration, *TURNOVER* will react positively to innovations shock on *CORRUPTION* seven times as compared to two negative responses.

Beginning with a positive response of two per cent in the second period, the positive reaction grows to 55 per cent in the fourth period. Thereafter, the response reduced to 40 per cent increase in the value of *TURNOVER* in the fifth period, before entering the negative territory in the sixth and seventh periods. The periods between the eighth and the last period under investigation witnesses incremental positive responses.

From the result, it is clear that innovations shock will trigger some instability in the equity market, but the resultant responses will be more positive than negative. However, policy makers should be wary of the high speed of adjustment and the high susceptibility of the equity trading platform to volatility.

East Africa

Table 5.52: Impulse Response Estimates for Equation 7 (1980-2012): East Africa Regional data (Response of TURNOVER to Institutional Variables)

Period	LAWRULE	POLITY	INFLATION	QLEGAL	CORRUPTION
1	0.000000	0.000000	0.000000	0.000000	0.000000
2	0.220343	-0.114240	0.393916	0.279222	0.544374
3	0.366994	-0.292809	0.811603	0.807944	1.076318
4	0.415636	-0.378198	0.954608	0.997213	1.078758
5	0.296511	-0.229614	0.553640	0.775772	0.449084
6	0.037316	-0.017560	-0.157130	0.219182	-0.355417
7	-0.113447	0.191403	-0.634399	-0.312268	-0.696999
8	-0.039483	0.161960	-0.377344	-0.368829	-0.223138
9	0.238987	-0.109517	0.495504	0.259605	0.865402
10	0.539285	-0.467926	1.381880	1.153168	1.749029
One standard deviation innovations					

The last regional impulse response analysis for equation 7 is done for East Africa and the result is presented in Table 5.52. According to Table 5.52, the response of total value of all traded shares in a stock market as a percentage of GDP (*TURNOVER*) to one standard deviation innovations shock on the institutional variables generates a mixture of negative but more positive responses.

Looking at the impulse response of total value of all traded shares in a stock market as a percentage of GDP (*TURNOVER*) to one standard deviation innovations shock on rule of law (*LAWRULE*), it is observed that although the response is a combination of both negative and positive reactions, the response is more positive than negative. Beginning with a positive 22 per cent increase in the value of *TURNOVER* in the second period, the increasing response continues until the fourth period at 42 per cent.

The response slides to 30 per cent in the fifth period and further to four per cent in the sixth period before the response becomes negative in the seventh and eight periods. The positive response recorded in the ninth and 10th periods are incremental from 24 per cent in the ninth period to 54 per cent in period 10. One can therefore opine that innovative shocks on rule of law will generate positive response from the trading platform in the equity market. However, the impuissance of the innovation would lie in the high speed of adjustment that characterises the response.

Looking at the impulse response of total value of all traded shares in a stock market as a percentage of GDP (*TURNOVER*) to one standard deviation innovations shock on polity score (*POLITY*), it is observed that the response begins in the negative territory in the second period through a reduction of 11 per cent in *TURNOVER*, and it decreases further to 29 and 38 per cent in the third and fourth periods. However, the intensity of the negative response reduces from the fifth period to the seventh period. Despite the overwhelming negative response, positive responses are observed in the seventh and eight periods, and the negative reactions generated from the ninth to the 10th periods are incremental in nature.

From the result, it is clear that the responses are dominated by negative reactions, but the two positive responses are of significance as they establish high speed of adjustment of the variable to the point of equilibrium. Further, the fact that response is characterised by uneven trend buttresses the fear of sporadic reactions that has to be carefully considered when orchestrating the policy intervention.

Further to the results presented above, we look at the response of total value of all traded shares in a stock market as a percentage of GDP (*TURNOVER*) to one standard deviation innovations shock on the annual percentage change in consumer prices (*INFLATION*). The result indicates that *TURNOVE*R responds to the innovations shock positively and progressively from the second period (40 per cent) to the fourth period (95 per cent). After sliding to 55 per cent in the fifth period, the reaction becomes negative in the sixth period and the negative reaction only ended in the eighth period. Periods nine and 10 show incremental positive reaction.

The result indicates that *TURNOVER* will respond more positively than negatively to innovations shock on *INFLATION* in East Africa. While policy intervention to curb negative influence of *INFLATION* on *TURNOVER* is desirable, attention should be paid to the high speed of adjustment and its consequential implication on the trading platform of the equity market.

The response of total value of all traded shares in a stock market as a percentage of GDP (*TURNOVER*) to one standard deviation innovations shock on regulatory quality (*QLEGAL*) yields responses that are overwhelmingly dominated by positive responses than negative responses. From the second period though to the fourth period, the positive response increases from 28 per cent to 100 per cent. The response slid from 78 per cent in the fifth period to 22 per cent in the sixth period, before reversing to negative territory in the seventh and eighth periods. The response becomes positive again in the ninth period and the trend is incremental till the 10th period.

The result suggests that innovations shock on regulatory quality will result in improvement in investor confidence in the platform; thereby improving the performance of the trading platform, which may ultimately improve the attractiveness of the region to inflow of FDI (judging from the result presented in Table 5.7). However, the issue of high speed of adjustment has to be considered when formulating the policy; such that the trading platform on the stock market is not bristled.

The last variable of interest in this section is corruption perception (*CORRUPTION*). We investigate the impulse response of total value of all traded shares in a stock market as a percentage of GDP (*TURNOVER*) to one standard deviation innovations shock on corruption perception (*CORRUPTION*) and discover incremental positive responses from the second period (54 per cent) till the fourth period (108 per cent). Thereafter, the response reduces to 45 per cent in the fifth period before entering negative period in the sixth, seventh and eighth periods. The positive responses generated in the ninth period (87 per cent) and the 10th period (175 per cent) is incremental in trend.

It is clear from the result that anti-corruption policy intervention will enhance the performance of the trading platform of the equity market (*TURNOVER*), thereby justifying the need for such an interventionist approach. With the speedy alternation of positive and negative responses, any policy intervention should be carefully implemented in order not to unsettle the trading platform in the equity market.

Having investigated the impulse response of capital market variables (dependent variables) to innovations shock on institutional variables (the explanatory variables, it is considered important to proceed to the causality test. However, it is important to first determine the long run relationship among the variables. As such, we first perform cointegration tests before the causality test.

5.4.6 Cointegration tests for equations 3 to 7

Having analysed the speed of adjustment of the variables, we now proceed to the test of causality. However, it is essential to establish cointegration among the variables before a reliable causality test can be ran (as done for equation 2). The same method of cointegration test that is applied for equation 2 is also applied here (in the cointegration regression). The result of the cointegration test is presented in Table 5.53.

Table 5.53: Cointegration Regression for equations 3 to 7 (1980-2012): Pooled Data Institution Framework on Capital Market Development (Dependent – Capital Market Development Variables)

	Equation 1	Equation 2	Equation 3	Equation 4	Equation 5
	BANK	**PRIVY**	**NONFIN**	**EQCAP**	**TURNOVER**
LAWRULE	-36.60960 (0.567047)***	-29.82095 (9.011966)***	20.00138 (3.948701)***	-56.98173 (28.76873)**	-32.95201 (13.88936)**
POLITY	0.764181 (0.127158)***	0.982096 (0.250915)***	-0.579677 (0.109941)***	3.568395 (0.617508)***	1.499542 (0.386714)***
INFLATION	-0.297018 (0.052991)***	-0.452429 (0.104566)***	0.164043 (0.045817)***	-0.783342 (0.283380)***	-0.192054 (0.161158)***
QLEGAL	2.223509 (4.642042)*	5.936373 (9.159950)*	-4.707583 (4.013543)*	22.77786 (0.71018)*	27.69409 (14.11744)**
CORRUPTION	-2.439727 (1.604944)*	-6.040708 (3.166970)**	-0.996265 (1.387646)*	-30.85355 (0.457633)***	-18.34082 (4.880977)***
Observations	192	192	192	192	192
Number of countries	6	6	6	6	6

*Robust standard errors are in parentheses. *** p<0.01, ** p<0.05, * p<0.1. Method: Panel Fully Modified Ordinary Least Squares (FMOLS). First-stage residuals use heterogeneous long-run coefficients. Long-run covariance estimates (Prewhitening with lags = 1, Bartlett Kernel, Integer Newey-West fixed bandwidth).*

In the cointegration regression contained in Table 5.53, our estimates are based on pooled estimation using only a constant as the cross-section specific trend regressor. In our coefficient covariance matrix computation, we computed an estimator of the long-run variance using a Bartlett Kernel and fixed Newey-West bandwidth. We report results based on robust standard errors. As indicated by their *p-values,* the results of the cointegration tests for the pooled sampled African countries suggest that we reject the Null of no cointegration. Although in some instances, this decision-making is tamed with caution. For example, the decision criteria to reject the Null hypothesis of no cointegration are weaker for domestic credit to private sector as a percentage of GDP (*PRIVY*) and quality of legal framework (*QLEGAL*), but these two variables are still cointegrated at 10 per cent error levels. The same condition applies to *QLEGAL* and *BANK*, *CORRUPTION* and *BANK*, *QLEGAL* and *NONFIN* as well as *CORRUPTION* and *NONFIN*.

5.4.7 Granger causality test for equations 3 to 7

Having tested for cointegration among the variables, we now proceed to examine if there exists causality relationship among the variables. The results of the Granger causality test are presented in Table 5.54.

Pooled Estimation

Table 5.54: Granger Causality Test for Equations 3 to 7 (1980-2012): Pooled Data (lag of 2)

Direction of causality →									
Equation 3		Equation 4		Equation 5		Equation 6		Equation 7	
BANK	LAWRULE	PRIVY	LAWRULE	NONFIN	LAWRULE	EQCAP	LAWRULE	TURNOVER	LAWRULE
(0.67495)		(0.23961)		(0.45792)		(1.02123)		(0.44585)	
LAWRULE	BANK	LAWRULE	PRIVY	LAWRULE	NONFIN	LAWRULE	EQCAP	LAWRULE	TURNOVER
(2.56900)**		(1.35684)		(0.38619)		(1.11991)		(1.82375)	
BANK	POLITY	PRIVY	POLITY	NONFIN	POLITY	EQCAP	POLITY	TURNOVER	POLITY
(1.81689)		(3.09766)*		(1.01303)		(3.03060)**		(0.82352)	
POLITY	BANK	POLITY	PRIVY	POLITY	NONFIN	POLITY	EQCAP	POLITY	TURNOVER
(1.23510)		(0.98276)		(0.24320)		(1.02228)		(1.33714)	
BANK	INFLATION	PRIVY	INFLATION	NONFIN	INFLATION	EQCAP	INFLATION	TURNOVER	INFLATION
(3.55020)**		(2.10837)		(8.06930)***		(0.13800)		(0.18972)	
INFLATION	BANK	INFLATION	PRIVY	INFLATION	NONFIN	INFLATION	EQCAP	INFLATION	TURNOVER
(0.31271)		(1.62788)		(1.94291)		(0.01448)		(0.20419)	
BANK	QLEGAL	PRIVY	QLEGAL	NONFIN	QLEGAL	EQCAP	QLEGAL	TURNOVER	QLEGAL
(1.47234)		(2.31879)*		(0.35151)		(0.70342)		(0.13499)	
QLEGAL	BANK	QLEGAL	PRIVY	QLEGAL	NONFIN	QLEGAL	EQCAP	QLEGAL	TURNOVER
(2.05354)		(2.09335)		(0.77691)		(1.31094)*		(1.92144)	
BANK	CORRUPTI	PRIVY	CORRUPTI	NONFIN	CORRUPTI	EQCAP	CORRUPTI	TURNOVER	CORRUPTI
(1.35765)		(2.36952)*		(0.73655)		(0.32212)		(1.63717)	
CORRUPTI	BANK	CORRUPTI	PRIVY	CORRUPTI	NONFIN	CORRUPTI	EQCAP	CORRUPTI	TURNOVER
(1.58507)		(0.58942)		(0.38176)		(0.68465)		(0.35155)	
Observation	186	186	186	186	186	186	186	186	186
Number of countries	6	6	6	6	6	6	6	6	6

*F-statistics are in parentheses. *** p<0.01, ** p<0.05, * p<0.1.*

From Table 5.54, there is only one unidirectional causal relationship between an institutional variable (*LAWRULE*) and a capital market development variable (*BANK*) for equation 3. This causal relationship suggests that an improvement in the rule of law may reinforce the confidence level of domestic banks to increase their financial support for the private sector. This may imply that default rate is high in the sampled African capital markets, thereby raising the risk profile of the private sector, and ultimately leading to adverse selection and credit rationing.

Arguably, the ownership structure of most of the banks in Africa has the tendency to propel a regulatory environment that is investor-friendly, but these financial institutions are weakly regulated. The weak institutional framework (especially in respect of the rule of law) has been singled out as the major culprit for the lingering adverse selection and moral hazards that characterise most of African banks (Cronje & Roux, 2010). Still on Table5.54, some capital market variables show reverse causal relationships with a few of the institutional variables under consideration. In equation 3, the financial resources provided to the private sector by domestic money banks as a share of GDP (*BANK*) has a reverse causal relationship with annual percentage change in consumer prices (*INFLATION*). This may imply that the more funds is channelled to the private sector by the commercial banks, the more the money in circulation and ultimately the more susceptible the economy is to inflation.

Further in equation 4, domestic credit to private sector as a percentage of GDP (*PRIVY*) is seen to have reverse causal relationships with polity score (*POLITY*), regulatory quality (*QLEGAL*) and corruption perception (*CORRUPTION*). In all these instances, *PRIVY* is seen to have direct causal effect on these institutional variables. To that extent, *PRIVY* is seen to be causing improvement in polity score and an improvement in the regulatory quality.

However surprisingly, *PRIVY* is also seen to be causing corruption. This may imply that a larger portion of such funds is channelled towards the business interests of political affiliates. Examples of policy initiatives such as Broad Based Black Economic Empowerment (BBBEE) in South Africa, the National Economic Empowerment and Development Strategy (NEEDS I & II), as well as the State Economic Empowerment and Development Strategies (SEEDS) programmes in Nigeria readily comes to mind. The staunch business interest of the military in Egypt is another relevant example. According to literature, there is no documented study yet that tests the causality between institutional framework and capital market development on the African capital markets and more importantly, on regional basis. Amongst others, this forms an important contribution of this study to the body of existing literature.

In equation 5, claims on domestic real nonfinancial sector by the Central Bank as a percentage of GDP (*NONFIN*) is also found to be causing annual percentage change in consumer prices (*INFLATION*). While the total value of all listed shares in a stock market as a percentage of GDP is seen to be causing improvement to polity score of the sampled countries in equation 6, the quality of regulatory environment is also observed to be causing the development of total value of all listed shares in a stock market as a percentage of GDP. No causal relationship (either direct or reverse) is established in equation 7.

Having looked at the casual relationship between the capital market variables and the institutional variables in pooled equitation, we now investigate regional dynamics in this regard. The results of the regional causality tests are presented in the paragraphs that follow, beginning with North Africa.

North Africa

Table 5.55: Granger Causality Test for Equations 3 to 7 (1980-2012): North Africa (lag of 2)

Direction of causality →									
Equation 3		Equation 4		Equation 5		Equation 6		Equation 7	
BANK	LAWRULE	PRIVY	LAWRULE	NONFIN	LAWRULE	EQCAP	LAWRULE	TURNOVER	LAWRULE
(0.94386)		(0.77515)		(0.50487)		(4.61666)**		(1.11255)	
LAWRULE	BANK	LAWRULE	PRIVY	LAWRULE	NONFIN	LAWRULE	EQCAP	LAWRULE	TURNOVER
(0.56841)		(0.22734)		(0.35511)		(0.77037)		(11.2786)***	
BANK	POLITY	PRIVY	POLITY	NONFIN	POLITY	EQCAP	POLITY	TURNOVER	POLITY
(2.84355)*		(0.95769)		(0.66360)		(0.55442)		(0.85887)	
POLITY	BANK	POLITY	PRIVY	POLITY	NONFIN	POLITY	EQCAP	POLITY	TURNOVER
(2.43473)*		(1.07071)		(0.62423)		(0.14954)		(0.95429)	
BANK	INFLATION	PRIVY	INFLATION	NONFIN	INFLATION	EQCAP	INFLATION	TURNOVER	INFLATION
(1.19533)		(0.53801)		(5.94683)***		(0.69519)		(0.17902)	
INFLATION	BANK	INFLATION	PRIVY	INFLATION	NONFIN	INFLATION	EQCAP	INFLATION	TURNOVER
(1.74749)		(0.54562)		(1.34180)		(0.99339)		(0.11994)	
BANK	QLEGAL	PRIVY	QLEGAL	NONFIN	QLEGAL	EQCAP	QLEGAL	TURNOVER	QLEGAL
(0.72061)		(1.60845)		(1.83258)		(0.41492)		(1.48006)	
QLEGAL	BANK	QLEGAL	PRIVY	QLEGAL	NONFIN	QLEGAL	EQCAP	QLEGAL	TURNOVER
(0.14490)		(0.22911)		(3.84960)**		(5.49886)***		(3.31188)**	
BANK	CORRUPTI	PRIVY	CORRUPTI	NONFIN	CORRUPTI	EQCAP	CORRUPTI	TURNOVER	CORRUPTI
(0.04535)		(0.11752)		(0.96859)		(0.14392)		(0.90076)	
CORRUPTI	BANK	CORRUPTI	PRIVY	CORRUPTI	NONFIN	CORRUPTI	EQCAP	CORRUPTI	TURNOVER
(0.22122)		(1.76424)		(0.79589)		(2.37021)*		(2.35525)*	
Observation	93	93		93		93		93	
Number of countries	3	3		3		3		3	

*F-statistics are in parentheses. *** p<0.01, ** p<0.05, * p<0.1.*

From Table 5.55, there is one direct causal relationship between polity score (*POLITY* and the financial resources provided to the private sector by domestic money banks as a percentage of GDP (*BANK*), which is equation 3. This causal relationship suggests that *POLITY* does influence *BANK* in North Africa, thereby suggesting possible innovations shock in this regard. Lucky enough, the result of such an innovation is more likely going to yield positive result as contained in the impulse response results that were presented in Table 5.29. Further in the same equation, there is one reverse causality – running from *BANK* to *POLITY*. This suggests that an improvement in the private sector by domestic money banks as a percentage of GDP (*BANK*) will result in improving the polity score of the region. No causal relationship is recorded for equation 4.

For equation 5, quality of regulatory framework (*QLEGAL*) is seen to have causal effect on the claims on domestic real nonfinancial sector by the Central Bank as a percentage of GDP (*NONFIN*). By implication, an improvement in regulatory framework would augment the development of claims on domestic real nonfinancial sector by the Central Bank as a percentage of GDP (*NONFIN*). As suggested by the impulse response result that is presented in Table 5.39, innovations shock on *QLEGA*L would trigger negative reaction, but the speed of adjustment is low thereby ascertaining resilience in case of policy miscalculation.

Conversely, there is a reverse causal relationship between *NONFIN* and *INFLATION*. In specific, the development of claims on domestic real nonfinancial sector by the Central Bank as a percentage of GDP (*NONFIN*) would trigger an increase in the annual percentage change in consumer prices. This furthers the argument of *BANK'*s featherbedding that is advanced in the pooled estimation above.

For equation 6, the total value of all listed shares in a stock market as a percentage of GDP (*EQCAP*) is seen to have reverse causal effect on regulatory quality (*QLEGAL*). By implication, this result suggests that a developed equity market is capable of forcing improvement on regulatory environment in the region. This improvement may possibly come through integration with more developed equity markets that have well-established regulatory standards. These global organisations largely demand conformity to those regulations. Disclosure policies, listing requirements and arbitration procedures that are prerequisite for becoming members of global stock market associations are good examples.

Further, regulatory quality (*QLEGAL*) is seen to have direct causal effect on the total value of all listed shares in a stock market as a percentage of GDP (*EQCAP*). Although, an improvement in the regulatory environment may be desirable, the result of impulse response contained in Table 5.44 suggests that *EQCAP* will react negatively to innovations on *QLEGAL*. To that extent, caution should be taken as regards regulatory reforms in the region.

In addition, corruption perception (*CORRUPTION*) is observed to have direct causal effect on the total value of all listed shares in a stock market as a percentage of GDP (*EQCAP*). This finding buttresses the observation of insider trading that has been alleged in some North African countries in the past. To curb the effects of corruption on the equity market, policy intervention may be necessary. However, the result of impulse response estimation that is presented in Table 5.44 suggests that *EQCAP* will react negatively to innovations shock on regulatory quality (*QLEGAL*).

For equation 7, three institutional variables (*LAWRULE*, *QLEGA*L and *CORRUPTION*) are found to have direct causal effects on the total value of all traded shares in a stock market exchange as a percentage of GDP (*TURNOVER*). In the first instance, rule of law (*LAWRULE*) is found to have direct causal effect on the total value of all traded shares in a stock market exchange as a percentage of GDP *(TURNOVER)*. This suggests that an improvement in the application of rule of law in the region will enhance the development of the equity market. However, the speed of adjustment in the impulse response analysis contained in Table 5.49 hints on the need to tame policy intervention with caution.

The quality of regulatory environment (*QLEGAL*) is also observed to have a direct causal effect on the total value of all traded shares in a stock market exchange as a percentage of GDP (*TURNOVER*). By implication, the better the regulatory environment the more developed the *TURNOVER*. This finding therefore hints on the need for policy intervention to improve the regulatory environment of the equity market. However, the impulse response result contained in Table 5.49 suggest that such an innovation may generate negative response from *TURNOVER*, but the incidence of slow speed of adjustment allays the fear of inflexibility in varying institutional response in this regard.

Still on equation 7, corruption perception (*CORRUPTION*) is observed to have direct causal effects on the total value of all traded shares in a stock market exchange as a percentage of GDP (*TURNOVER*). This result indicates that anti-corruption policy intervention may enhance the development of the equity market. However, the impulse response result that is presented in Table 5.49 suggests that innovations shock on regulatory quality (*QLEGAL*) will unsettle the total value of all traded shares in a stock market exchange as a percentage of

GDP (*TURNOVER*). With the high speed of adjustment, policy intervention should be carefully orchestrated in order not to upset the skittish equity market.

Table 5.56: Granger Causality Test for Equations 3 to 7 (1980-2012): Southern Africa (lag of 2)

Direction of causality →									
Equation 3		Equation 4		Equation 5		Equation 6		Equation 7	
BANK	LAWRULE	PRIVY	LAWRULE	NONFIN	LAWRULE	EQCAP	LAWRULE	TURNOVER	LAWRULE
(0.30510)		(0.79171)		(1.12180)		(0.61159)		(0.24596)	
LAWRULE	BANK	LAWRULE	PRIVY	LAWRULE	NONFIN	LAWRULE	EQCAP	LAWRULE	TURNOVER
(0.85880)		(1.99861)		(0.06294)		(2.39096)*		(1.25397)	
BANK	POLITY	PRIVY	POLITY	NONFIN	POLITY	EQCAP	POLITY	TURNOVER	POLITY
(3.56911)*		(4.12657)**		(0.88549)		(2.18722)		(2.18658)	
POLITY	BANK	POLITY	PRIVY	POLITY	NONFIN	POLITY	EQCAP	POLITY	TURNOVER
(1.18502)		(0.05384)		(1.15474)		(0.85720)		(0.47486)	
BANK	INFLATION	PRIVY	INFLATION	NONFIN	INFLATION	EQCAP	INFLATION	TURNOVER	INFLATION
(3.46692)*		(3.50076)*		(2.45280)*		(0.09915)		(0.16354)	
INFLATION	BANK	INFLATION	PRIVY	INFLATION	NONFIN	INFLATION	EQCAP	INFLATION	TURNOVER
(3.81265)*		(0.99496)		(0.50547)		(2.04839)		(2.39970)*	
BANK	QLEGAL	PRIVY	QLEGAL	NONFIN	QLEGAL	EQCAP	QLEGAL	TURNOVER	QLEGAL
(1.05399)		(0.44075)		(0.34461)		(1.39263)		(0.75617)	
QLEGAL	BANK	QLEGAL	PRIVY	QLEGAL	NONFIN	QLEGAL	EQCAP	QLEGAL	TURNOVER
(1.13598)		(1.07241)		(0.41279)		(1.44665)		(3.43058)*	
BANK	CORRUPTI	PRIVY	CORRUPTI	NONFIN	CORRUPTI	EQCAP	CORRUPTI	TURNOVER	CORRUPTI
(10.5265)***		(4.05611)**		(1.26529)		(1.04935)		(17.9987)***	
CORRUPTI	BANK	CORRUPTI	PRIVY	CORRUPTI	NONFIN	CORRUPTI	EQCAP	CORRUPTI	TURNOVER
(4.30812)**		(1.25202)		(1.27588)		(3.78447)*		(2.62799)*	
Observation	31	31		31		31		31	
Number of countries	1	1		1		1		1	

*F-statistics are in parentheses. *** p<0.01, ** p<0.05, * p<0.1.*

The causality tests presented in Table 5.56 depicts at least one causal relationship in each of the equations. For equation 3, there are two direct causal relationships between the institutional variables and the capital market variable (*BANK*). However, there are three reverse causal relationships running from the capital market variable (*BANK*) to the institutional variables. In the first instance, annual percentage increase in consumer prices (*INFLATION*) has a direct causal effect on *BANK*, suggesting that higher percentage change in consumer prices would enhance the development of financial resources provided to the private sector by domestic money banks as a percentage of GDP (*BANK*).

However, the result of the impulse response presented in Table 5.30 indicates that innovations shock on polity score (*POLIT*Y) will generate positive reactions from the financial resources provided to the private sector by domestic money banks as a percentage of GDP (*BANK*). Given the slow speed of adjustment that characterises such an innovations shock, the possibility of policy flexibility is higher and success rate of such a policy intervention is also high, thereby making it desirable.

In addition, corruption perception (*CORRUPTION*) is also seen to have direct causal effect on the financial resources provided to the private sector by domestic money banks as a percentage of GDP (*BANK*). This may imply that proceeds of corruption are deposited into commercial banks, which eventually make such monies available to the private sector. The impulse response result presented in Table 5.30 reinforces the observed positive relationship between *BANK* and *CORRUPTION*, where the result of a possible innovations shock on corruption yield absolute positive result.

Still in equation 3, the financial resources provided to the private sector by domestic money banks as a percentage of GDP (*BANK*) is seen to have reverse causality on polity score (*POLITY*). This may be interpreted that a developed *BANK* would enforce some regulatory intervention that will ultimately improve the polity score of the region. The financial resources provided to the private sector by domestic money banks as a percentage of GDP (*BANK*) is also observed to have causal effect on annual percentage change in consumer prices (*INFLATION*). This may suggest that most of the funds provided to the private sector are consumed directly and immediately. The funds do not appear to be invested in capital assets. In addition, *BANK* is also seen to strongly influence corruption. This result hints on the possibility of inefficient financial deepening whereby access to finance is a sole province of a few favoured private firms.

Looking at the causal relationship between the institutional variables and the domestic credit to private sector as a percentage of GDP (*PRIVY*), it is observed that the three causal relationships that exist between these variables are reverse causality – running from *PRIVY* to the institutional variables.

In specific, causality runs from *PRIVY* to *POLITY*, suggesting that the more financial resources are directed to the private sector, the more the polity score of the region would improve. Similar causality is established by *BANK* in equation 3. Further, *PRIVY* is seen to have causal effect on *INFLATION*, buttressing the proposition of inefficient financial deepening observed in equation 3. Further, *PRIVY* is seen to have causal effect on *CORRUPTION*. This finding suggests that certain class of people benefit from such funding arrangement in an illegitimate manner, thereby buttressing the proposition of inefficient financial deepening that has been advanced above.

For equation 5, there is only one causal relationship and it runs from claims on domestic real nonfinancial sector by the Central Bank as a percentage of GDP (*NONFIN*) to annual percentage increase in consumer prices (*INFLATION*). This result suggests that such funds are directed into immediate consumption and are not invested in long-term investment or directed towards future-orientated capital formation.

Causality test for equation 6 yields two direct causal relationships from rule of law (*LAWRULE*) to the total value of all listed shares in a stock market as a percentage of GDP (*EQCAP*) as well as from corruption perception (*CORRUPTION*) to the total value of all listed shares in a stock market as a percentage of GDP (*EQCAP*). In the first instance, an improvement in the respect for rule of law would cause an improvement in investor confidence to list on the stock market platform. Given that the impulse response result that is presented in Table 5.45 suggests an absolute positive reaction from *EQCAP* to innovations shock on *LAWRULE*, such a policy intervention would be valuable.

Further, corruption perception is found to have causal effect on *EQCAP*. The possible interpretation would be that there are incidences of corrupt practices that dissuade organisations from getting listed on the equity platform. If so, the possibility of curbing some of those corruption-related practices would increase investor confidence in getting listed on the platform. In addendum, the result of impulse response analysis presented in Table 5.45 suggests an absolute negative reaction from *EQCAP* if anti-corruption innovations shock is applied, thereby making such an intervention precarious.

The causality test conducted for equation 7 yields three direct causal relationships and one reverse causality. For instance, annual percentage increase in consumer prices (*INFLATION*) is found to have direct causal effect on the total value of all traded shares in a stock market exchange as a percentage of GDP (*TURNOVER*). This is very practical in that the value of the listed shares will be inflated as the value of the domestic currency reduces.

Also, regulatory quality (*QLEGAL*) is seen to have causal effect on the total value of all traded shares in a stock market exchange as a percentage of GDP (*TURNOVER*). The result suggests that the more the regulatory quality improves, the more the listing platform will be attractive to investors to commit to the equity market. This finding is in line with previous studies such as the one conducted by La Porta, Lopez-de-Silanes, Shleifer & Vishny (2000).

However, the result of impulse response contained in Table 5.50 hints on the possibility of absolute positive reaction from the equity platform if there are innovations shock on regulatory quality. This therefore, makes any such policy intervention expedient. The impulse response result also suggests slow speed of adjustment, which further hints on improbable negative response to policy intervention in the short run.

In addition, corruption perception (*CORRUPTION*) is also seen to have causal effect on the total value of all traded shares in a stock market exchange as a percentage of GDP (*TURNOVER*). This may imply that some degree of insider trading or other related opportunistic behaviour may be happening in the equity market. The fact that the causality is only significant at 10 per cent error level may indicate a low probability of such occurrence, and thereby not necessarily send a red alert in this regard. Further, the impulse response analysis contained in Table 5.50 indicates an absolute positive reaction to anti-corruption innovations, thereby motivating for such a possible intervention.

The only reverse causality runs from the total value of all traded shares in a stock market exchange as a percentage of GDP (*TURNOVER*) to corruption perception (*CORRUPTION*). This result indicates that the more capitalised the stock market becomes, the more the possibility of corrupt practices. The fact that this causal relationship is highly statistically significant should be worrying, but the result of the impulse response that suggests absolute necessity for such an intervention should ally our fears on the possible outcome.

In the Southern Africa causality tests, out of the possible five instances, corruption is found to have causal effects on the capital market variables in three instances. This is a signal that corruption is a serious problem and it retards the development of the capital market in the region. Given that the impulse response analysis supports such interventions, it becomes expedient to engage such possibilities.

West Africa

Table 5.57: Granger Causality Test for Equations 3 to 7 (1980-2012): West Africa (lag of 2)

Direction of causality →

Equation 3		Equation 4		Equation 5		Equation 6		Equation 7	
BANK	LAWRULE	PRIVY	LAWRULE	NONFIN	LAWRULE	EQCAP	LAWRULE	TURNOVER	LAWRULE
(0.18305)		(0.32116)		(0.75563)		(1.14698)		(0.47765)	
LAWRULE	BANK	LAWRULE	PRIVY	LAWRULE	NONFIN	LAWRULE	EQCAP	LAWRULE	TURNOVER
(5.97089)***		(0.92232)		(1.67349)		(4.07555)**		(1.12390)	
BANK	POLITY	PRIVY	POLITY	NONFIN	POLITY	EQCAP	POLITY	TURNOVER	POLITY
(0.16460)		(0.24451)		(3.97511)*		(1.34128)		(0.57171)	
POLITY	BANK	POLITY	PRIVY	POLITY	NONFIN	POLITY	EQCAP	POLITY	TURNOVER
(1.24500)		(0.61160)		(0.37190)		(0.55709)		(1.09604)	
BANK	INFLATION	PRIVY	INFLATION	NONFIN	INFLATION	EQCAP	INFLATION	TURNOVER	INFLATION
(0.52331)		(1.01163)		(5.18363)**		(1.01674)		(0.61960)	
INFLATION	BANK	INFLATION	PRIVY	INFLATION	NONFIN	INFLATION	EQCAP	INFLATION	TURNOVER
(0.17339)		(0.71652)		(0.90521)		(0.40403)		(0.21048)	
BANK	QLEGAL	PRIVY	QLEGAL	NONFIN	QLEGAL	EQCAP	QLEGAL	TURNOVER	QLEGAL
(1.30115)		(1.39232)		(0.44590)		(1.40058)		(1.53953)	
QLEGAL	BANK	QLEGAL	PRIVY	QLEGAL	NONFIN	QLEGAL	EQCAP	QLEGAL	TURNOVER
(0.79474)		(1.14006)		(0.62889)		(0.02332)		(0.95618)	
BANK	CORRUPTI	PRIVY	CORRUPTI	NONFIN	CORRUPTI	EQCAP	CORRUPTI	TURNOVER	CORRUPTI
(0.07164)		(0.31881)		(3.83376)*		(0.57498)		(1.04621)	
CORRUPTI	BANK	CORRUPTI	PRIVY	CORRUPTI	NONFIN	CORRUPTI	EQCAP	CORRUPTI	TURNOVER
(6.27018)***		(5.16030)**		(0.37044)		(6.07232)***		(11.0193)***	
Observation	31	31		31		31		31	
Number of countries	1	1		1		1		1	

*F-statistics are in parentheses. *** p<0.01, ** p<0.05, * p<0.1.*

In the West Africa causality tests and in equation 3, two institutional variables (*LAWRULE* and *CORRUPTION*) are found to have causal effects on the financial resources provided to the private sector by domestic money banks as a percentage of GDP (*BANK*). In the first instance, rule of law (*LAWRULE*) is seen to have direct causal effect on the financial resources provided to the private sector by domestic money banks as a percentage of GDP (*BANK*).

That is, the more effective the rule of law, the more the commercial banks will have the confidence to channel funds to the private sector. This result hints on the possibility of high default rate and extensive protection of debtors, which calls for policy intervention. The fact that the impulse response analysis points to the possibility of absolute positive response further reinforces the justification for policy intervention and the surety that the outcome of the intervention will be desirable.

The second causal effect comes from corruption perception (*CORRUPTION*) to the financial resources provided to the private sector by domestic money banks as a percentage of GDP (*BANK*). This result may suggest that proceeds of corruption are channelled to *BANK*. However, looking at the impulse response analysis contained in Table 5.31, anti-corruption policy intervention is justified on the basis of potential absolute positive response from *BANK* to such an innovations shock, and the slow speed of adjustment further hints on policy flexibility.

The causality test for equation 4 only turns one causal relationship that runs from corruption perception (*CORRUPTION*) to the domestic credit to private sector as a percentage of GDP (*PRIVY*). This result indicates that proceeds of corruption are directed to *PRIVY* and the more corrupt the financial system is, the more funds are directed to *PRIVY*. Once again, the impulse response result contained in Table 5.36 suggests an absolute positive response from *PRIVY* to innovations shock on *CORRUPTION*, thereby justifying policy intervention in that regard.

The causality test conducted for equation 5 suggests three reverse causalities, namely from *NONFIN* to *POLITY, INFLATION* and *CORRUPTION*. These results suggest that the claims on domestic real nonfinancial sector by the Central Bank as a percentage of GDP (*NONFIN*) causes improvement to polity score of the region. By implication, the more developed *NONFIN* is, the more the polity environment improves.

Further, annual percentage change in consumer prices (*INFLATION*) is another variable that is directly influenced by *NONFIN*. The fact that *NONFIN* is found to cause *INFLATION* is an indication that these funds are consumed immediately and they fuel the stock of money in circulation. In addition, the claims on domestic real nonfinancial sector by the Central Bank as a percentage of GDP (*NONFIN*) are observed to cause *CORRUPTION*. From the result, apart from the inefficient financial deepening that is advanced above, these funds are also found not to be directed into capital formation or any form of long-term investment.

The results of causality tests conducted for equation 6 indicate two direct causal effects from the institutional variables (*LAWRULE* and *CORRUPTION*) on *EQCAP*. By implication, improvement in the application and respect for rule of law is important to improve investor confidence in the equity trading platform. Judging from the result of impulse response that is presented in Table 5.46, the reaction of *EQCAP* to innovations shock on *LAWRULE* may yield mixed reactions and the speed of adjustment is high. As such, policy intervention should be tamed with caution.

Further, *CORRUPTION* is also found to influence the total value of all listed shares in a stock market as a percentage of GDP (*EQCAP*). This may reinforce the possibility of corrupt practices within the stock market. In practice, the largest equity market in West Africa was accused of insider trading during 2010 and 2011, and that allegation seriously affected the capitalisation of the stock market at the time. The result of the impulse response presented in Table 5.46 suggests that *EQCAP* will react absolutely positively to innovations shock on *CORRUPTION*, thereby reinforcing the justification for policy intervention in that regard.

For equation 7, corruption perception (*CORRUPTION*) is also seen to have direct causal effect on the total value of all listed shares in a stock market as a percentage of GDP (*EQCAP*). The practical implication is similar to the one observed above in the case of *EQCAP*. However, the result of the impulse response analysis presented in Table 5.51 indicates that equity market is very responsive to innovations shock from *CORRUPTION* and the speed of adjustment is very high, thereby cautioning on optimal interventionist approach.

The general observation from the West African causality tests is that *CORRUPTION* is indeed, a serious deterrent to capital market development in that region. Among other institutional variables, corruption perception stands out as the main hindrance to capital market development as the institutional variable exhibits direct causal effects on four of the five capital market variables (except for *NONFIN*).

East Africa

Table 5.58: Granger Causality Test for Equations 3 to 7 (1980-2012): East Africa (lag of 2)

Direction of causality →									
Equation 3		Equation 4		Equation 5		Equation 6		Equation 7	
BANK	LAWRULE	PRIVY	LAWRULE	NONFIN	LAWRULE	EQCAP	LAWRULE	TURNOVER	LAWRULE
(1.13426)		(1.41987)		(0.55020)		(0.61825)		(1.26216)	
LAWRULE	BANK	LAWRULE	PRIVY	LAWRULE	NONFIN	LAWRULE	EQCAP	LAWRULE	TURNOVER
(0.08985)		(2.27689)		(1.49340)		(1.61062)		(0.02873)	
BANK	POLITY	PRIVY	POLITY	NONFIN	POLITY	EQCAP	POLITY	TURNOVER	POLITY
(1.10525)		(2.15594)		(0.75313)		(1.28560)		(0.92017)	
POLITY	BANK	POLITY	PRIVY	POLITY	NONFIN	POLITY	EQCAP	POLITY	TURNOVER
(2.14677)		(0.29196)		(5.70186)***		(6.04520)***		(4.69643)**	
BANK	INFLATION	PRIVY	INFLATION	NONFIN	INFLATION	EQCAP	INFLATION	TURNOVER	INFLATION
(4.55040)**		(4.76009)**		(5.69072)***		(0.19695)		(0.24539)	
INFLATION	BANK	INFLATION	PRIVY	INFLATION	NONFIN	INFLATION	EQCAP	INFLATION	TURNOVER
(0.96016)		(0.58329)		(1.85881)		(0.83959)		(0.54638)	
BANK	QLEGAL	PRIVY	QLEGAL	NONFIN	QLEGAL	EQCAP	QLEGAL	TURNOVER	QLEGAL
(2.93621)*		(3.41865)*		(3.95345)**		(1.67207)		(8.44555)***	
QLEGAL	BANK	QLEGAL	PRIVY	QLEGAL	NONFIN	QLEGAL	EQCAP	QLEGAL	TURNOVER
(1.07606)		(0.43894)		(3.62089)**		(4.30405)**		(12.7611)***	
BANK	CORRUPTI	PRIVY	CORRUPTI	NONFIN	CORRUPTI	EQCAP	CORRUPTI	TURNOVER	CORRUPTI
(2.38470)		(6.04218)***		(0.31106)		(0.67925)		(0.52331)	
CORRUPTI	BANK	CORRUPTI	PRIVY	CORRUPTI	NONFIN	CORRUPTI	EQCAP	CORRUPTI	TURNOVER
(0.26341)		(1.34382)		(0.50129)		(1.44352)		(0.40935)	
Observation	31	31		31		31		31	
Number of countries	1	1		1		1		1	

*F-statistics are in parentheses. *** p<0.01, ** p<0.05, * p<0.1.*

The causality tests for East Africa, especially for equation 3 as presented in Table 5.57, indicates that there are two reverse causalities from *BANK* to *INFLATION* and to *QLEGAL*. Just like the pooled African causality test (Table 5.54) as well as Southern African (Table 5.56) causality tests, the East African causality test reflects that the financial resources provided to the private sector by domestic money banks as a percentage of GDP (*BANK*) do directly influence the annual percentage change in consumer prices (*INFLATION*). This may connote that the funds that are channelled through commercial banks to the private sectors are not invested into long-term usage by the recipients.

In addition, the reverse causality from *BANK* to regulatory quality (*QLEGAL*) hints that the advancement in financial deepening though *BANK* would precipitate an improvement in the regulatory quality. This is probably an indication that efficient *BANK* would create more middle class that are enlightened and relentless about regulatory entreaty, thereby influencing improvement in the regulatory quality.

In equation 4, *PRIVY* is also seen to influence *INFLATION* and *QLEGAL* as in equation 3. In addition, *PRIVY* is also seen to influence *CORRUPTION*. This result is also similar to the one obtained for the pooled African estimation as well as Southern Africa result. As suggested in the previous instances, it could be inferred from this result that the beneficiaries of funds generated through domestic credit to private sector as a percentage of GDP (*PRIVY*) do not apply the fund to capital formation or long-term investment.

In equation 5, there are two bidirectional causalities between *POLITY* and *NONFIN* as well as between *NONFIN* and *QLEGAL*. In both instances, the statistical significance of the causalities is the same. In the first instance, *POLITY* is found to influence *NONFIN*. The argument may be that an improved polity score for the region would precipitate an improvement in the claims on domestic real nonfinancial sector by the Central Bank as a percentage of GDP (*NONFIN*). As the *NONFIN* fund develops, it would further improve the polity score of the region. This finding is in line with the studies of Demetriades and Hussein (1996), as well as the work of Shan and Jianhong (2006).

Further, *QLEGAL* is observed to have direct causal effect on *NONFIN* and there is also an observation of reverse causality from *NONFIN* to *QLEGAL*. The argument here falls in line with the one presented above in the instance of *NONFIN* and *POLITY*, which is supported in literature.

For equation 6, two institutional variables (*POLITY* and *QLEGAL*) have direct causal effects on *EQCAP*. In the case of *POLITY*, an improvement in the region’s polity score is seen as capable of improving investor confidence in the equity market. Further, the quality of regulatory environment influences the attractiveness of the equity market to investment, thereby justifying the need for policy intervention to improve the efficiency of these institutional variables.

According to the impulse response results presented in Table 5.47, the impulse response of *EQCAP* to innovations shock on both variables is absolutely positive, suggesting that policy intervention would be desirable. Further, the fact that the speed of adjustment is slow in both instances allows for some degree of policy manoeuvring.

The results of causality test for equation 7 proposes that *POLITY* does have a direct causal effect on *TURNOVER*. That is, an improvement in the polity score of the region would ultimately improve investor confidence in the equity market, thereby enhancing trading on the equity platform. However, the impulse response result that is presented in Table 5.52 depicts mixed reaction from *TURNOVER* when *POLITY* experiences innovations shock. In addition, the high speed of adjustment that is espoused by the impulse response results, further cautions on the process of the policy intervention.

Further, there is an indication of bidirectional causal relationship between *QLEGAL* and *TURNOVER*. While an improved regulatory quality is seen as a direct determinant of the behaviour of the equity trading market, the market is also observed to have the same deterministic effect on *QLEGAL*. As such, the findings of Demetriades and Hussein (1996), as well as the work of Shan and Jianhong (2006) are relevant points of reference here.

In the East African causality tests, it is observed that regulatory quality and polity score are important institutional determinants of the efficiency of capital market in that region. Given that the impulse response results are in support of policy intervention, it will be desirable to improve these institutional frameworks in order to improve the development of capital market in the region and ultimately, to improve the attractiveness of the region to inflow of FDI.

5.5 Part C: Model specification for institutional efficiency and inflow of FDI to Africa

As indicated in chapter four under research methodology, the same estimation technique is used throughout this study. This is considered essential in order to ensure reliability and to achieve consistency. As done in the previous Parts (A and B), each estimation is preceded by the descriptive statistics. However, it must be recalled that the descriptive statistics conducted in Part B for equations 3 to 7 (Table 5.16) contained the descriptive statistics for equation 8 as well. Given that the only difference between equations 3 to 7 and equation 8 are the dependent variables, merging the descriptive statistics for both Parts is considered expedient. The regional effects of the descriptive statistics are also presented in Appendix A2-1 to A2-4.

The same reason holds for not representing unit root test for this Part, given that all the variables used in this Part has already been tested for unit root in Parts A and B.

5.5.1 Vector error correction estimates for equation 8

Having advanced arguments for the need not to represent both descriptive statistics and unit root tests here, we now proceed to the vector error correction estimation as done in the preceding Parts, using the same estimation technique that is used in Parts A and B. The results of the vector error correction estimation are presented in the following tables:

Pooled Estimation

Table 5.59: Vector Error Correction Estimates for Equation 8 (1980-2012): Pooled data (Dependent variable – inflow of FDI - FDINFL)

	Error correction estimation results					
	FDINFL	LAWRULE	POLITY	INFLATION	QLEGAL	CORRUPTION
Lag 1	1.000000	-1.650600 (0.76573) [-2.15560]**	-0.136559 (0.04527) [-3.01631]***	-0.039536 (0.02590) [-1.52672]	4.929467 (0.95135) [5.18155]***	-0.439426 (0.31665) [-1.38773]
Differenced	-0.452565 (0.07409) [-6.10870]***	-0.002546 (0.00426) [-0.59774]	0.157626 (0.11843) [1.33090]	-0.357770 (0.53096) [-0.67382]	-0.000339 (0.00531) [-0.06372]	-0.027448 (0.01155) [-2.37653]*
Differenced in lag 1	-0.132632 (0.07954) [-1.66750]*	-2.324570 (1.44035) [-1.61389]*	0.006520 (0.04693) [0.13895]	0.004849 (0.01047) [0.46335]	0.372452 (1.21208) [0.30728]	-0.024569 (0.51284) [-0.04791]
Differenced in lag 2	0.039525 (0.07031) [0.56217]	-1.121479 (1.51887) [-0.73836]	-0.021979 (0.04712) [-0.46643]	0.034473 (0.01047) [3.29259]***	1.708497 (1.15245) [1.48249]	-1.085068 (0.51411) [-2.11058]**

Estimated coefficients on the first line, standard errors in parenthesis (); and t-statistics in brackets [].
The results are computed separately for each equation using the appropriate residuals
**** p<0.01, ** p<0.05, * p<0.1 {Emphasis are placed on *** p<0.01, ** p<0.05}*

For equation 8 in the pooled African data, out of 1080 total system (balanced) observations, only 180 observations are included in the systems *p-value* determinant estimation. The Durbin-Watson that ranges between 1.9 and 2.12 alludes to the stability of the model. From the OLS *p-value* determinant estimation, 12 out of the possible 84 combinations are statistically significant and nine of those statistically significant variables appear in Table 5.59.

According to the error correction model for the pooled data as contained in Table 5.59, inflow of FDI (*FDINFL*) is statistically significant in first difference. Further, the rule of law (*LAWRULE*) is statistically significant in lag 1 and the coefficient is negative but explosive suggesting a massive adjustment to equilibrium with the first year. *POLITY* is similarly statistically significant in lag 1 but the negative coefficient indicates that just about 14 per cent of the disequilibrium will be corrected within the first year. Further, *INFLATION* is statistically significant when differenced in lag 2. This indicates that barely three per cent of the disequilibrium in the interaction of the variable with *FDINFL* will be corrected in the second year; however, structural change (such as policy intervention) would be keen to the speed of error correction.

Still on Table 5.59, *QLEGAL* is statistically significant in lag 1, with an explosive positive coefficient, while *CORRUPTION* is statistically significant when differenced in lag 2, with an explosive negative coefficient. This result indicates that the speed of adjustment to equilibrium will be high in the second period, but structural anti-corruption policy reforms will be keen to that recovery.

North Africa

Table 5.60: Vector Error Correction Estimates for Equation 8 (1980-2012): North Africa Regional effects (Dependent variable – inflow of FDI - FDINFL)

	Error correction estimation results					
	FDINFL	LAWRULE	POLITY	INFLATION	QLEGAL	CORRUPTION
Lag 1	1.000000	1.167287 (1.97756) [0.59027]	-0.378007 (0.13453) [-2.80979]***	-0.020303 (0.04528) [-0.44841]	0.056450 (2.15799) [0.02616]	0.286941 (0.35334) [0.81208]
Differenced	-0.656805 (0.12490) [-5.25868]***	-0.004255 (0.00697) [-0.61009]	-0.101926 (0.06519) [-1.56361]	0.186849 (0.34391) [0.54331]	0.011033 (0.00855) [1.28995]	-0.038748 (0.01966) [-1.97136]**
Differenced in lag 1	0.163843 (0.12934) [1.26678]	-2.164521 (2.11858) [-1.02169]	-0.022369 (0.23821) [-0.09390]	0.048179 (0.03944) [1.22147]	-0.591222 (1.69695) [-0.34840]	-0.312853 (0.73067) [-0.42817]
Differenced in lag 2	0.319134 (0.11669) [2.73485]**	0.300626 (2.39168) [0.12570]	-0.053137 (0.31969) [-0.16621]	0.058899 (0.03627) [1.62389]*	0.433236 (1.63168) [0.26552]	-1.377696 (0.72693) [-1.89523]**

Estimated coefficients on the first line, standard errors in parenthesis (); and t-statistics in brackets [].
The results are computed separately for each equation using the appropriate residuals
**** p<0.01, ** p<0.05, * p<0.1 {Emphasis are placed on *** p<0.01, ** p<0.05}*

According to the *p-value* determinant estimation for North Africa in equation 8, it is observed that the Durbin-Watson statistics ranges from 1.9 to 2.11, thereby lending credence to the stability of the model. Further, from 540 total system (balanced) observations, 90 were included in the systems. In addition, 13 out of a possible 84 combinations are statistically significant and six of those statistically significant variables feature in Table 5.60.

Looking at individual variables, *FDINFL* is statistically significant in first difference, with a coefficient that suggests that 66 per cent of the disequilibrium in the variable would be corrected through structural improvement. Further, the variable is also statistically significant when differenced in lag 2, with a coefficient that suggests that about 32 per cent of the disequilibrium expressed by the variable will be corrected by the second period through structural change. This finding hints that reversal in disequilibrium experienced by this variable will be speedy, provided appropriate structural reforms are engaged.

Further, *POLITY* is statistically significant in lag 1, with a coefficient that indicates 38 per cent reversal in the variable's disequilibrium within the first year. Moreover, *CORRUPTION* is statistically significant in the first difference with a negative coefficient that suggests barely four per cent of reversal in the disequilibrium expressed by the variable though structural reforms. The variable is also statistically significant when difference in lag 2 with an explosive negative coefficient that suggests a speedy reversal to equilibrium. It must be pointed out that these statistically significant variables are important determinants of the behaviour of *FDINFL* in the models specified.

Southern Africa

Table 5.61: Vector Error Correction Estimates for Equation 8 (1980-2012): Southern Africa Regional effects (Dependent variable – inflow of FDI - FDINFL)

	Error correction estimation results					
	FDINFL	LAWRULE	POLITY	INFLATION	QLEGAL	CORRUPTION
Lag 1	1.000000	514.9658 (19.8015) [26.0065]***	0.163557 (0.14030) [1.16573]	0.946565 (0.14881) [6.36110]***	11.15451 (5.72597) [1.94805]**	4.818874 (3.49390) [1.37923]
Differenced	0.084628 (0.02903) [2.91555]***	-0.004795 (0.00078) [-6.12440]***	-0.010281 (0.11774) [-0.08732]	0.075109 (0.05362) [1.40083]	-0.002073 (0.00142) [-1.46193]	0.003200 (0.00439) [0.72851]
Differenced in lag 1	-0.488417 (0.17482) [-2.79382]***	-32.28763 (11.7029) [-2.75895]***	0.034130 (0.05507) [0.61980]	-0.068858 (0.12979) [-0.53052]	-8.254485 (3.25230) [-2.53804]**	0.753123 (1.90954) [0.39440]
Differenced in lag 2	-0.588288 (0.16385) [-3.59044]***	-24.35295 (7.99956) [-3.04429]***	-0.019395 (0.05398) [-0.35931]	-0.056902 (0.07294) [-0.78013]	-0.104271 (4.30142) [-0.02424]	-3.705066 (2.55510) [-1.45007]

Estimated coefficients on the first line, standard errors in parenthesis (); and t-statistics in brackets [].
The results are computed separately for each equation using the appropriate residuals
**** $p<0.01$, ** $p<0.05$, * $p<0.1$ {Emphasis are placed on *** $p<0.01$, ** $p<0.05$}*

The stability of the *p-value* determinant estimation for Southern Africa in equation 8 is established through the Durbin-Watson statistics that ranges from 1.8 to 2.2, thereby lending credence to the stability of the model. Further, from 180 total system (balanced) observations, 30 were included in the systems. In addition, 24 out of a possible 84 combinations are statistically significant and 10 of those statistically significant variables feature in Table 5.61.

Looking at individual variables, *FDINFL* is statistically significant in first difference (0.08), differenced in lag 1 (-0.49), as well as differenced in lag 2 (-0.59). The coefficients of the variables suggest that eight per cent of the deviation of the variable from equilibrium will be corrected through structural reforms. In addition, the coefficients also indicate that 49 per cent of the deviations from equilibrium will be corrected within the first year through structural reforms and 59 per cent of those variations will be corrected within two years through structural reforms.

Looking at rule of law (*LAWRULE*), the variable is statistically significant in lag 1 with an explosive positive coefficient. The statistical significance of the variable in first difference yields a coefficient that is less than one per cent, whereas the variable is statistically significant when differenced in lag 1 as well as when differenced in lag 2 bearing explosive negative coefficients in both instances. These explosive coefficients are indications of high speed of adjustment to equilibrium. In lag 1, *INFLATION* is found to be statistically significant with a positive coefficient that suggests 95 per cent reversal of the variable to equilibrium within the first year. Further, *QLEGAL* is observed to be statistically significant in lag 1 with an explosive positive coefficient, while the same variable is statistically significant in first difference in lag 1 with an explosive negative coefficient. These explosive coefficients are indications of high speed of adjustment in the variation expressed by the variable.

West Africa

Table 5.62: Vector Error Correction Estimates for Equation 8 (1980-2012): West Africa Regional effects (Dependent variable – inflow of FDI - FDINFL)

	Error correction estimation results					
	FDINFL	LAWRULE	POLITY	INFLATION	QLEGAL	CORRUPTIO N
Lag 1	1.000000	4.615056 (2.84834) [1.62026]*	0.092298 (0.02367) [3.89891]***	-0.086228 (0.00811) [-10.6322]	10.83577 (2.02599) [5.34838]***	-6.244486 (0.44710) [-13.9667]***
Differenced	-0.611754 (0.25676) [-2.38261]**	-0.038526 (0.01656) [-2.32628]**	0.063301 (0.71177) [0.08893]	-4.044983 (4.63976) [-0.87181]	-0.095274 (0.01860) [-5.12101]***	-0.089894 (0.03520) [-2.55381]***
Differenced in lag 1	-0.301114 (0.19326) [-1.55806]	3.285061 (3.68428) [0.89164]	0.070912 (0.09511) [0.74557]	-0.017607 (0.02275) [-0.77396]	0.536404 (3.18363) [0.16849]	-0.313454 (2.07379) [-0.15115]
Differenced in lag 2	-0.123549 (0.14576) [-0.84762]	4.442969 (3.52417) [1.26071]	0.045302 (0.09513) [0.47622]	0.036172 (0.01739) [2.07972]**	-0.949351 (2.66738) [-0.35591]	-2.764151 (1.55232) [-1.78065]*

Estimated coefficients on the first line, standard errors in parenthesis (); and t-statistics in brackets [].
The results are computed separately for each equation using the appropriate residuals
**** p<0.01, ** p<0.05, * p<0.1 {Emphasis are placed on *** p<0.01, ** p<0.05}*

The stability of the *p-value* determinant estimation for West Africa in equation 8 is established through the Durbin-Watson statistics that ranges from 1.7 to 2.4, thereby lending credence to the stability of the model. Further, from 180 total system (balanced) observations, 30 were included in the systems. In addition, 25 out of a possible 84 combinations are statistically significant and 11 of those statistically significant variables feature in Table 5.62.

Looking at the individual variables, *FDINF*L is statistically significant in first difference, with a negative coefficient that suggests 61 per cent reversal of the disequilibrium expressed by the variable trough structural reforms. In addition, *LAWRULE* is statistically significant in first difference but the negative coefficient is low at four per cent. As for *POLITY*, the variable is statistically significant in lag 1 but the coefficient is low as well (barely nine per cent).

A look at *INFLATION* suggests that the variable is statistically significant in lag 1 with a negative coefficient that is in single digit. The variable is also statistically significant when differenced in lag 2 but the coefficient is also small. This results point to the possibility of low reversal of *INFLATION* to equilibrium but the variable remains an important determinant of the attractiveness of the region to inflow of FDI.

Looking at the *QLEGAL*, the variable is statistically significant in lag 1 with an explosive positive coefficient. This explosive coefficient suggests that the variation in the variable will be corrected within the first year in a speedy manner. The variable is also statistically significant in first difference but the negative coefficient is barely 10 per cent. The low coefficient here is an indication that very little reversal will be made by the variation expressed in the variable through structural reform. Here, time is observed to be of essence to the recovery of the variable back to the point of equilibrium.

CORRUPTION is seen to be statistically significant in lag 1 and the negative coefficient is explosive in nature. The variable is also statistically significant in first difference but the low negative coefficient suggests that barely nine per cent of the variation in the variable will be corrected through structural reforms. The explosive coefficient is an indication of speedy recovery from the point of disequilibrium that is experienced by the variable, especially through period effects.

East Africa

Table 5.63: Vector Error Correction Estimates for Equation 8 (1980-2012): East Africa Regional effects (Dependent variable – inflow of FDI - FDINFL)

	Error correction estimation results					
	FDINFL	LAWRULE	POLITY	INFLATION	QLEGAL	CORRUPTION
Lag	1.000000	17.23005 (3.24267) [5.31353]***	-0.585039 (0.05864) [-9.97677]***	0.064676 (0.02672) [2.42080]**	48.33187 (5.84262) [8.27230]***	-14.80211 (3.51370) [-4.21268]***
Differenced	-0.076476 (0.13902) [-0.55012]	-0.009628 (0.01316) [-0.73170]	1.198126 (0.27217) [4.40212]***	2.008865 (1.46256) [1.37352]	-0.004427 (0.00729) [-0.60712]	0.001044 (0.02752) [0.03793]
Differenced in lag 1	-0.610908 (0.26030) [-2.34696]**	3.493940 (3.11202) [1.12272]	-0.045863 (0.09379) [-0.48898]	0.046879 (0.02546) [1.84143]*	14.80574 (8.45829) [1.75044]*	0.582894 (2.40663) [0.24220]
Differenced in lag 2	-0.292037 (0.22387) [-1.30447]	0.922173 (3.09311) [0.29814]	0.126791 (0.10218) [1.24089]	-0.010036 (0.02992) [-0.33538]	5.545816 (5.60137) [0.99008]	0.198954 (2.04888) [0.09710]

Estimated coefficients on the first line, standard errors in parenthesis (); and t-statistics in brackets [].
The results are computed separately for each equation using the appropriate residuals
**** p<0.01, ** p<0.05, * p<0.1 {Emphasis are placed on *** p<0.01, ** p<0.05}*

According to the *p-value* determinant estimation for East Africa in equation 8, it is observed that the Durbin-Watson statistics ranges from 1.6 to 2.20, thereby lending credence to the stability of the model. Further, from 180 total system (balanced) observations, 30 were included in the systems. In addition, 13 out of a possible 84 combinations are statistically significant and nine of those statistically significant variables feature in Table 5.60.

Looking at individual variables, *FDINFL* is statistically significant when differenced in lag 1. The negative coefficient suggests that more than 60 per cent of the variation expressed by the variable will be corrected during the first year; however, structural reform will also be keen to realise that reversal. Further, *LAWRUL*E is found to be statistically significant in lag 1 and the coefficient is positively explosive thereby suggesting a speedy recovery back to the point of equilibrium through period.

Looking at *POLITY*, the variable is statistically significant in lag 1 and the negative coefficient suggests that 59 per cent of the variation expressed by the variable will be corrected within the first year. The variable is also statistically significant in first difference with an explosive coefficient that suggests a speedy recovery back to the point of equilibrium.

INFLATION is also seen to be statistically significant when differenced in lag 1; however, the coefficient is low thereby suggesting slow speed of correction to the deviation of the variable from equilibrium. Further, *QLEGAL* is found to be statistically significant in lag 1 with an explosive positive coefficient that suggests speedy reversal of the deviation expressed by the variable in the first year, without any attention being paid to structural reforms. In addition, *CORRUPTION* is found to be statistically significant in lag 1 with an explosive negative coefficient that suggests speedy reversal of the deviation from equilibrium by the variable to be corrected within the first year. In the East African error correction estimation, it is clear that all the statistically significant variables are important determinants of FDI inflow to the East African region.

5.5.2 Dynamic panel estimation for equation 8

Having determined the error terms in equation 8, we now proceed to the regression analysis. As suggested earlier in this chapter, the same method of analysis that is adopted in the previous Parts will also be adopted here, using exactly the same set of techniques. This said, we now present the results of the regression analysis in Table 5.64:

Pooled Estimation

Table 5.64: The Pooled GMM Panel Regression for Equation 8 (1980-2012)
Institutional Framework on Inflow of FDI (Dependent Variable – Inflow of FDI)

	I	II	III	IV	V
LAWRULE	-1.405324 (1.061886)***				
ENFORCE	0.592872 (0.314056)*				
Sargan Test (Prob >chi2)	0.139				
POLITY		0.022590 (0.023912)			
ENFORCE		0.540096 (0.321346)*			
Sargan Test (Prob >chi2)		0.753			
INFLATION			0.019298 (0.013180)		
ENFORCE			0.663190 (0.308592)*		
Sargan Test (Prob >chi2)			0.763		
QLEGAL				2.170225 (6.115357)**	
ENFORCE				0.427533 (0.321822)	
Sargan Test (Prob >chi2)				0.465	
CORRUPTION					-1.210333 (0.400422)***
ENFORCE					0.934569 (0.327002)*
Sargan Test (Prob >chi2)					0.236
Observation	192	192	192	192	192
Number of countries	6	6	6	6	6
Orthogonal Deviation	Yes	Yes	Yes	Yes	Yes

*Robust standard errors are in parentheses. *** p<0.01, ** p<0.05, * p<0.1. Cross-section weights instrument weighting matrix and Convergence was achieved after 1 weight iterations. Cross-section weights (PCSE) standard errors & covariance (no d.f. correction).*
Maximum lags of dependent and predetermined variables for use as instruments are limited to 1.
Period fixed (dummy variables) applied in the estimation

In Table 5.64, columns I, II, III, IV and V shows the output for each of the institutional variables, namely *LAWRULE, POLITY, INFLATION, QLEGAL,* and *CORRUPTION* as regressed on *FDINFL*. According to Table 5.64, only two institutional variables (*LAWRULE* and *CORRUPTION*) are statistically significant at one per cent error level and they bear negative coefficients. However, *QLEGAL* is statistically significant at five per cent error level but with a positive coefficient.

The remaining two variables bear positive coefficients with the dependent variable but they are not statistically significant. More specifically, the negative coefficient borne by *LAWRULE* and *CORRUPTION* signal that the rule of law (*LAWRULE*) and corruption perception (*CORRUPTION*) both negatively affect the attractiveness of the sample countries to inflow of FDI, thereby suggesting improvement to these institutional mechanisms. Given that corruption is statistically significant in the estimation could suggest that the higher the level and prevalence of corruption in these sampled countries; the more discouraged are foreign investors to commit on long-term basis (FDI) to those economies. The level of statistical significance of this variable (1%) suggests that corruption is a major deterrent to FDI inflow to the sampled African countries. the same interpretation could be offered for *LAWRULE*.

Furthermore, out of the remaining three variables of institutional framework that bear positive relationships with the dependent variable, only quality of legal framework (*QLEGAL*) is statistically significant (5%). This indicates that the stronger the rule of law, the higher the probability of the sampled African countries attracting more inflow of FDI. The dynamic panel estimation is also conducted to investigate the regional effects. The result of the regional estimates is provided in Table 5: 65 below:

Regional GMM Estimation

Table 5.65: The Regional-Effect GMM panel Regression for equation 8 (1980-2012)
Institutional Framework on Inflow of FDI (Dependent Variable – Inflow of FDI)

	I	II	III	IV
LAWRULE	-0.941305 (1.485864)***	-5.042377 (5.078222)***	-0.960253 (0.226554)***	-0.791149 (0.315873)***
ENFORCE	1.285910 (0.970767)	0.331073 (0.155006)**	0.523775 (0.059244)***	-0.042377 (0.071252)
Sargan Test (Prob >chi2)	0.1433	0.2634	0.949462	0.694260
POLITY	0.408484 (0.114463)***	0.130069 (0.054614)**	-0.162739 (0.085733)***	0.017693 (0.004686)***
ENFORCE	0.764807 (0.860712)	0.015173 (0.093441)	0.874699 (0.070095)***	0.125190 (0.008717)***
Sargan Test (Prob >chi2)	0.3121	0.1491	0.794744	0.582930
INFLATION	-0.010907 (0.030276)	-0.145305 (0.035468)***	0.034255 (0.010711)***	0.024068 (0.011100)**
ENFORCE	1.496864 (0.717976)**	0.63378 (0.122137)***	0.670315 (0.041769)***	0.074781 (0.032331)**
Sargan Test (Prob >chi2)	0.5062	0.09135	0.934655	0.009911
QLEGAL	2.426604 (1.638575)*	3.954251 (2.185000)***	-0.601781 (0.526093)*	1.461623 (0.664041)**
ENFORCE	1.334564 (0.888133)	-0.282334 (0.276013)	0.656320 (0.087384)***	0.212858 (0.026315)**
Sargan Test (Prob >chi2)	0.7424	0.1405	0.664653	0.242236
CORRUPTION	-1.639814 (0.613480)***	-1.381918 (0.544432)***	0.192985 (0.570771)	0.410660 (0.197269)**
ENFORCE	1.256534 (0.862177)	1.949757 (0.654096)**	0.674754 (0.235038)***	-0.069350 (0.097408)
Sargan Test (Prob >chi2)	0.3311	0.00132	0.417756	0.932186
Observation	96	33	33	33
Number of countries	3	1	1	1
Orthogonal Deviation	Yes	No	No	No
Newey-West (HAC)	No	Yes	Yes	Yes

*Robust standard errors are in parentheses. *** p<0.01, ** p<0.05, * p<0.1. Cross-section weights instrument weighting matrix and Convergence was achieved after 1 weight iterations. Cross-section weights (PCSE) standard errors & covariance (no d.f. correction). Maximum lags of dependent and predetermined variables for use as instruments are limited to 1.*

From Table 5.65, columns I, II, III and IV represent North, Southern, West and East African regions respectively. In all the estimations, the Sargan Tests are statistically insignificant.

Although, the Sargan test is statistically significant in the case of Southern Africa, but we still accept the result as being stable as conditioned on robust standard error.

North Africa

The result of the dynamic panel estimation presented in Table 5.65 for the regions indicate that *LAWRULE*, *POLITY*, *QLEGAL* and *CORRUPTION* are statistically significant in North Africa estimation. While *LAWRULE* and *CORRUPTION* bear negative coefficients, the other two statistically significant variables bear positive coefficients. Looking at the relationship between *FDINFL* and *LAWRULE*, it is observed that the lack of respect for rule of law is hindering the attractiveness of that region to inflow of FDI. To improve the attractiveness of the region to inflow of FDI, policy reforms that reinforces respect for rule of law is required.

Further, a look at the relationship between inflow of FDI and *POLITY* suggests that *POLITY* improves the attractiveness of North Africa to inflow of FDI and about 41 per cent of FDI inflow to the region is influenced by this institutional variable. It is suggested, therefore, that improvement to polity score in the region will further enhance the attractiveness of the region to inflow of FDI.

A look at positive coefficient that is borne by regulatory quality suggests that an improvement to regulatory quality in the region will further the attractiveness of the region to inflow of FDI. More importantly, the explosive nature of the coefficient is a clear indication that policy reforms that are targeted towards reinforcing regulations and its implementation would highly influence the attractiveness of the region to inflow of FDI.

Corruption perception (*CORRUPTION*) is also seen as an important determinant of FDI inflow to the North African region. With an explosive negative coefficient, it is observed that corruption increases the attractiveness of the region to inflow of FDI. This finding should not be surprising, given the observation of Africa Progress Report (2013) where corruption is seen as a too that is popularly used in negotiation by many foreign investors that venture into a number of the resource-rich African countries (and regions).

Southern Africa

The dynamic panel estimation for Southern Africa indicates that all the institutional variables play significant role in determining the attractiveness of the region to inflow of FDI. Starting with the rule of law (*LAWRULE*), the variable is statistically significant at one per cent error level, and it bears an explosive negative coefficient. This suggests that the current state of rule of law in the region does negatively affect the attractiveness of the region to inflow of FDI.

In addition, polity score (*POLITY*) is found to be statistically significant but the positive coefficient is low in explanatory power (13 per cent). However, the positive coefficient does indicate that polity score in Southern Africa region does enhance the attractiveness of the region to inflow of FDI. For *INFLATION*, the variable bears a negative coefficient with the dependent variable but the explanatory power of the coefficient is low (15 per cent).

Moreover, the relationship between *QLEGAL* and inflow of FDI is positive and the coefficient is explosive. This relationship suggests that regulatory quality does highly enhance the attractiveness of the region to inflow of FDI. Conversely, *CORRUPTION* shares a negative relationship with inflow of FDI and the coefficient is explosive in nature. This kind of relationship suggests that *CORRUPTION* does negatively affect the attractiveness of the region to inflow of FDI.

It can be reasonably suggested that the attractiveness of Southern African region to inflow of FDI is significantly influenced by the institutional variables used in this study. The fact that Southern Africa region is the only region in Africa that currently attracts FDI inflow in almost all important sectors of the real economy would reinforce the strategic importance of institutional framework, which is important to safeguard long-term investors' interests.

West Africa

For West Africa, all the institutional variables are statistically significant except for *CORRUPTION*. In the case of rule of law (*LAWRULE*), it is observed that the institutional variable is a strong determinant of FDI inflow to the region. The variable is statistically significant at one per cent error level and the negative coefficient suggests that the variable most likely accounts for about 96 per cent of divestment that occur in the region. Although, polity score (*POLITY*) is statistically significant in the estimation, its negative coefficient is somehow negligible, suggesting that the variable is responsible for about 16 per cent of divestment that occurs in that region. It may be suggested that an improvement in these two variables would enhance the attractiveness of the region to inflow of new FDI investments while help to retain the existing ones.

Annual percentage change in consumer prices (*INFLATION*) is another variable of interest in the estimation. According to the result, it is observed that this variable contributes positively (about three per cent) to inflow of FDI to the West African region. The quality of regulatory framework (*QLEGAL*) is another variable of interest in this study. The variable shares negative coefficient with the dependent variable, thereby suggesting that poor regulatory quality is possibly responsible for about 60 per cent of the divestment that occur in the region.

The dynamic panel estimation for West Africa in equation 8 indicates that most of the institutional variables examined have strong deterministic effects on inflow of FDI to the region. In specific, *LAWRULE*, *POLITY* and *QLEGAL* exhibit negative influences on inflow of FDI and the effects of the negative coefficients are stronger in the case of *LAWRULE* and *QLEGAL*. Although, the negative effect of *POLITY* is low, the variable is also statistically significant at one per cent error level thereby making it an important determinant of the attractiveness of the region to inflow of FDI.

East Africa

The dynamic panel estimation for East Africa indicates that the entire institutional variables are important determinants of the attractiveness of the region to inflow of FDI. Beginning with the rule of law (*LAWRULE*), this variable is statistically significant at one per cent error level and its negative coefficient suggests that the variable is responsible for about 79 per cent of possible divestments from the region. It must be pointed out that this is the only variable that bears a negative coefficient in the East African estimation.

POLITY is another institutional variable of strategic importance in the East African dynamic panel estimation. According to Table 5.65, the variable is statistically significant at one per cent error level and its coefficient suggests that the variable contributes about 18 per cent to inflow of FDI to the region. Annual percentage increase in consumer prices (*INFLATION*) is also found to be statistically significant in the estimation. At five per cent error level, the statistical significance of the variable indicates that the variable contributes about two per cent to inflow of FDI to the region.

Further, regulatory quality (*QLEGAL*) is also found to be statistically significant at five per cent error level in the estimation and the variable bears a positive coefficient that proposes an explosive increase to inflow of FDI to the region through an improved regulatory intervention. Further, corruption perception (*CORRUPTION*) does influence the flow of FDI to the region as suggested by the high statistical significance of the variable (five per cent error level). With the coefficient that suggests the possibility of 41 per cent increase in inflow of FDI to the region, this variable is considered an important determinant of inflow of FDI to the region.

In the East African dynamic panel estimation, it is observed that all the institutional variables used in the estimation prove to contribute significantly to explaining the variations expressed by the inflow of FDI in the region. Having reported the results of the dynamic panel estimation, we now proceed to investigate the speed of adjustment of FDI inflow to the region as a result of innovation shocks on these institutional variables. The result of these impulse response estimations is presented in the following paragraphs.

5.5.3 Impulse response analyses for equation 8

Having estimated equation 8 using the dynamic panel approach, we now look at the impulse response of the dependent variable (*FDINFL*) to one standard deviation innovations shock on the institutional variables. The results of the impulse response are presented in the tables below:

Pooled Estimation

Table 5.66: Impulse Response Estimates for Equation 8 (1980-2012): Pooled data (Response of FDINFL to Institutional variables)

Period	LAWRULE	POLITY	INFLATION	QLEGAL	CORRUPTION
1	0.000000	0.000000	0.000000	0.000000	0.000000
2	-0.123507	0.148708	0.221911	-0.181449	0.036997
3	-0.029762	0.164429	0.436619	-0.041633	-0.204135
4	-0.020467	0.235194	0.151286	-0.259123	0.017760
5	0.049534	0.245981	0.130498	-0.199162	0.019360
6	0.066697	0.229026	0.244022	-0.284362	0.039691
7	0.078208	0.229266	0.169866	-0.240253	0.034927
8	0.095618	0.251622	0.165914	-0.279920	0.060794
9	0.098206	0.243905	0.180130	-0.266279	0.056639
10	0.102394	0.243446	0.172603	-0.279841	0.062847
One standard deviation innovations					

From Table 5.66, inflow of FDI responds both negatively and positive to one standard deviation innovations shock on the rule of law. This result indicates that innovations shock on rule of law (*LAWRULE*) will generate both negative and positive response from inflow of FDI (*FDINFL*). Beginning in the second period, *FDINFL* begins its response in a negative territory with a coefficient that suggests a reduction of about 12 per cent in inflow of FDI to the sampled African countries as a result of the innovations shock on rule of law.

The negative response continues in the third period with a coefficient that suggests about three per cent reduction in inflow of FDI to the sampled countries on the continent and a further two per cent reduction in the fourth period. Inflow of FDI to the sampled countries reverted to positive territory in the fifth period with a coefficient that suggests an increase in inflow of FDI to Africa to the tune of five per cent and the trend becomes incremental thereafter till the end of the period under consideration. In period 10, the positive influence of rule of law (*LAWRULE*) on inflow of FDI climbs to 10 per cent.

Some of the important lessons from this result are that the speed of adjustment by FDI inflow to innovations shock on rule of law is rapid. As such, it is important to be cautious when designing the innovations shock. Further, the fact that inflow of FDI responds both negatively and positive to innovations shock on rule of law indicate that the variable is an important determinant of inflow of FDI to the sampled African countries.

The response of FDI inflow to one standard deviation innovations shock on polity score (*POLITY*) returns an absolute positive record. From the second period through to the last period, the response of FDI inflow to innovations shock on *POLITY* yields positive result that is incremental in trend till period five. From 15 per cent increase in inflow of FDI in period two, the increase grows to 25 per cent in the fifth period. Thereafter, the trend becomes unstable, however, it remains positive. This absolute positive response suggests that policy intervention towards improving the ranking of the sampled countries will attract more FDI to the African countries. The slow speed of adjustment allows for possible manoeuvring towards achieving optimal policy framework.

A look at the response of inflow of FDI to innovations shock on annual percentage change in consumer prices (*INFLATION*) suggests an absolute positive reaction just as in the case of *POLITY*. However, the trend is more chaotic here that in the previous estimation. The coefficient of the variable suggests that one standard deviation innovations shock on *INFLATION* would generate an increase of 22 per cent in inflow of FDI in the second period, and this increase will grow to 44 per cent in the third period, before it slides back to 15 per cent in the fourth period. Although, the response reaches a maximum of 24 per cent in the sixth period, it ended up at 17 per cent in the 10th period.

The response of FDI inflow to innovations shock on regulatory quality (*QLEGAL*) yields an absolute negative reaction; however, the trend is uneven. From the second period, inflow of FDI to the sampled countries reversed by 18 per cent, but the reduction is barely four per cent in the third period. By the fourth period, the reduction grows to 26 per cent and reversed to 20 per cent in the fifth period. The trend continues to be uneven till the end of the period under investigation in the study.

Looking at the response of inflow of FDI to innovations shock on corruption perception (*CORRUPTION*), it is observed that the response is absolutely positive, except for the negative response that is recorded in the third period. From period one, inflow of FDI responds positively to one standard deviation innovations shock on corruption perception. The coefficient of the response suggests that corruption perception would increase inflow of FDI to the sampled countries by four per cent.

However, the positive response changes to negative in the third period that interprets a possible divestment of about 20 per cent from the sampled countries as a result of the innovations shock. The response changes again to positive in the fourth period, and it suggests about two per cent increase in flow of FDI. The response continues to be positive till the end of the period under investigation, but the trend remains uneven. The high speed of adjustment of inflow of FDI to innovations shock on corruption perception suggests that although, the variable will most likely respond positively, the possibility of rapid negative response should not be ruled out. As done in the previous Parts, the regional analysis will now be presented in the paragraphs that follow.

North Africa

Table 5.67: Impulse Response Estimates for Equation 8 (1980-2012): North Africa Regional data (Response of FDINFL to Institutional variables)

Period	LAWRULE	POLITY	INFLATION	QLEGAL	CORRUPTION
1	0.000000	0.000000	0.000000	0.000000	0.000000
2	-0.237533	0.171105	0.245807	-0.062440	-0.114492
3	-0.057262	0.184883	0.246895	0.058415	-0.346220
4	-0.181702	0.258318	0.112429	-0.021525	-0.074721
5	-0.080466	0.294844	0.040343	0.021833	-0.202646
6	-0.074129	0.283141	0.060336	0.010126	0.004069
7	-0.086490	0.278300	-0.008737	0.035058	-0.058254
8	-0.034494	0.259831	0.019764	0.013520	-0.003365
9	-0.085071	0.254275	0.026651	0.029249	-0.021740
10	-0.048544	0.240784	0.031976	0.017150	-0.037446
One standard deviation innovations					

The result of impulse response for North Africa as presented in Table 5.67 depicts mixed reaction from inflow of FDI to innovations shock on the institutional variables. Looking at the response of inflow of FDI to one standard deviation innovations shock on rule of law, we observe an absolute negative response from the first period through to the last period. It must be pointed out, however, that the trend is uneven. In the first period, the coefficient of the response suggests that the innovations shock would result in about 24 per cent divestment in North Africa.

However, the level of the potential divestment reduced to six per cent in the third period before jumping to 18 per cent in the fourth period. The negative reaction continues subtly till period 10 but the trend is irregular. From the analysis, it is obvious that the reaction is subtle and the speed of adjustment is low, this suggests that policy intervention that would improve the functionality of rule of law in the region should be carefully considered due to the unstable speed of adjustment that characterises the innovations shock.

From Table 5.67, the reaction of inflow of FDI to one standard deviation innovations shock on *POLITY* generates an absolute positive response, and the trend is systematically incremental until the fifth period. From 17 per cent increase in inflow of FDI to North Africa in the second period, the increase grows to 18 per cent in the third period, 26 per cent in the fourth period and 29 per cent in the fifth period. The trend recedes from the sixth period and it continues until period 10. The result indicates a slow speed of adjustment that corroborates possible policy manipulation towards achieving the optimal solution.

One standard deviation innovations shock on annual percentage change in consumer prices (*INLFATION*) generates an absolute response, but for the only negative change that is recorded in the seventh period. From the second period, inflow of FDI responds to the innovations shock with a coefficient that suggests an increase of about 25 per cent increase in inflow of FDI to the region through the innovations shock. The response remains at 25 per cent increase in the third period, before decreasing to 11 per cent in the fourth period. The response averages five per cent between the fifth and sixth period before becoming negative in the seventh period but the coefficient suggests less than one per cent divestment in the seventh period.

Inflow of FDI to North Africa responds more positively to one innovations shock in regulatory quality (*QLEGAL*) except for two negative reactions that are recorded in the first two periods with coefficients that suggest about six per cent divestment from the region. The coefficient of the negative reaction that is recorded in the fourth period also suggests about two per cent reduction in inflow of FDI (or divestment) to the region. The positive response observed in the third period hints on the possibility of increasing inflow of FDI to the region by six per cent, while the response thereafter till the end of the period under investigation suggests less than four per cent increase in inflow of FDI to the region; and the trend of the response is patchy.

The switch between positive and negative values in the result hints on a high speed of recovery and the need to entertain caution when embarking on quality-related regulatory reforms. Further, it must be pointed out that this variable is an important determinant of inflow of FDI to North Africa and any possible innovations shock on *QLEGAL* will most probably improve the attractiveness of the region to inflow of FDI.

The reaction of inflow of FDI to corruption perception (*CORRUPTION*) yields absolute negative reaction. From the second period, the response of FDI inflow to one standard deviation innovations shock on corruption perception leads to 11 per cent divestment from North Africa. In the third period, the divestment reaches 35 per cent, but it reduces to seven per cent in the fourth period before jumping to 20 per cent in the fifth period. The response thereafter becomes low and the maximum percentage is recorded in period 10 (four per cent).

The North Africa impulse response analysis indicates that policy intervention towards improving the institutional environment of the region will yield mixed results. While some will be absolute positive (*POLITY*), others may be absolute negative (*LAWRULE* and *CORRUPTION*), and the possibility of a mixture terrain (*INFLATION* and *QLEGAL*) cannot be ruled out. The Southern Africa analysis is presented next.

Southern Africa

Table 5.68: Impulse Response Estimates for Equation 8 (1980-2012): Southern Africa Regional data (Response of FDINFL to Institutional variables)

Period	LAWRULE	POLITY	INFLATION	QLEGAL	CORRUPTION
1	0.000000	0.000000	0.000000	0.000000	0.000000
2	0.341754	0.218300	0.023309	-0.400664	0.197071
3	0.595298	0.054882	0.075516	0.044848	-0.004975
4	0.386219	-0.088479	0.112518	-0.178500	-0.345134
5	0.316101	-0.255062	0.082212	0.074055	0.876780
6	0.134995	-0.038608	-0.129134	-0.213879	-0.033025
7	0.253525	-0.019003	0.103612	0.096204	0.468199
8	0.514429	0.047283	0.022225	-0.132142	-0.341655
9	0.322910	-0.032408	0.122762	-0.043823	0.430832
10	0.234437	-0.208166	-0.055967	-0.057321	0.197748
One standard deviation innovations					

The impulse response analysis for Southern Africa returns one variable with absolute positive response (*LAWRULE*) and the other four institutional variables are pervaded with mixture of positive and negative reactions. The response of inflow of FDI to one standard deviation innovations shock on rule of law (*LAWRULE*) returns an absolute positive response, with patchy trend. In the second period, the impulse response suggests that inflow of FDI to Southern Africa will probably increase by 37 per cent through the innovations shock on rule of law, and the positive response increases to 60 per cent in the third period.

The response in the fourth period is a bit lower than the one obtained in the third period (37 per cent) and the decrease continues until the sixth period. The positive response grows from 25 per cent in the seventh period to 51 per cent in the eighth period and ended at 23 per cent in the 10th period. Although, the variable is observed to be an important determinant of inflow of FDI to Southern Africa, the speed of adjustment is low and the trend is unsteady. The positive response recorded through the innovations shock is an encouragement to embrace policy intervention towards improving the institutional province of rule of law in Southern Africa.

The response of inflow of FDI to one standard deviation innovations shock on polity score (*POLITY*) generates a mixture of positive and negative responses. In the second period, the response is positive, with a coefficient that indicates about 22 per cent increase in inflow of FDI. In the third period, the intensity of the growth decreases to five per cent and the response becomes negative in the fourth period with a coefficient that suggests a reduction of about nine per cent in inflow of FDI to the region.

The trend of the divestment grows to 26 per cent in the fifth period and it declines thereafter to one per cent in the seventh period. The trend reverts swiftly back to positive in the eighth period with a coefficient that suggests five per cent increase in inflow of FDI to the region, but the ninth and 10^{th} periods recorded negative response that grows from three per cent in the ninth period to 21 per cent in period 10. Although, the innovations shock is observed to generate some positive responses, the significance of the negative response is far stronger. Further, the high speed of adjustment indicates that policy intervention should be pervaded with caution of negative consequence.

Furthermore, the impulse response of FDI inflow to one standard deviation innovations shock on annual percentage change in consumer prices (*INFLATION*) suggests that inflow of FDI in Southern Africa responds positively to innovations shock on *INFLATION* for most of the periods under investigation and records two negative responses on the sixth and the 10^{th} periods. From the second period, inflow of FDI grows by two per cent, increases to eight per cent in the third period, and grows further to 11 per cent in the fourth period. The growth diminishes to eight per cent in the fifth period and the trend enters negative territory in the sixth period, with a coefficient that suggests about 13 per cent divestment.

The trend becomes positive again in the seventh period with a percentage increase of 10 per cent to inflow of FDI. The trend to 12 per cent in the ninth period before it becomes negative again in the 10^{th} period, suggesting about six per cent reduction in inflow of FDI to the region. From the analysis contained in Table 5.68, it is obvious that the reaction of inflow of FDI to innovations shock on annual percentage change in consumer prices exhibit high speed of adjustment, which should caution policy makers when considering policy intervention.

The response of FDI inflow to one standard deviation innovations shock on regulatory quality (*QLEGAL*) is pervaded with intermittent negative and positive responses. The chaotic response begins in the second period when 40 per cent divestment is observed. The response turned positive immediately after that and suggests a growth of four per cent in inflow of FDI to the region. In the fourth period, the response is negative again, with a coefficient that suggests 18 per cent divestment from the region. With a seven per cent growth in inflow of FDI in the fifth period, the response becomes negative in the sixth period with a coefficient that indicates 21 per cent divestment from the region.

The response records a positive reaction in the seventh period, indicating about 10 per cent increase in inflow of FDI to the region. From the eighth period till the last period, the response is negative and the coefficients are between 13, four and six for the eighth, ninth and 10th periods respectively. Apart from the fact that the variables are important determinants of inflow of FDI to the Southern Africa region, their high speed of adjustment indicates that policy intervention should be entertained with caution, because the outcome cannot be reliably predicted.

West Africa

Table 5.69: Impulse Response Estimates for Equation 8 (1980-2012): West Africa Regional data (Response of FDINFL to Institutional variables)

Period	LAWRULE	POLITY	INFLATION	QLEGAL	CORRUPTION
1	0.000000	0.000000	0.000000	0.000000	0.000000
2	0.040094	0.053916	0.854874	-0.594251	0.647133
3	-0.056973	-0.048431	1.514825	-0.502566	-0.009178
4	-0.155980	-0.132027	0.435238	-0.302035	0.276924
5	-0.186312	-0.146285	0.564386	-0.323869	0.509451
6	0.002917	-0.204813	0.718128	-0.491332	0.282149
7	0.104911	-0.163414	0.950673	-0.426659	0.146484
8	-0.228601	-0.144383	0.821929	-0.275645	0.288234
9	-0.111131	-0.102355	0.587281	-0.403813	0.400382
10	0.011309	-0.168779	0.712923	-0.462919	0.282359
One standard deviation innovations					

The impulse response of FDI inflow to one standard deviation innovations shock on rule of law (*LAWRULE*) generates a mixed reaction. With a coefficient that suggests four per cent increase in inflow of FDI to West Africa in the second period, the reaction enters negative territory in the third period and the coefficient suggests about six per cent FDI divestment from West Africa. The divestment grows to 16 per cent and 19 per cent in the fourth and fifth periods respectively. By the sixth period, the reaction suggests an increase of less than one per cent, but the increase grows to 10 per cent in the seventh period.

The eighth and ninth periods experiences negative reactions that suggest 23 and 11 per cent FDI divestments from the region, but the 10th period changes to positive and about one per cent increase is observed. With the uneven trend and this high speed of adjustment, it is obvious that policy intervention should be carefully considered in order not to trigger divestment in the region.

Looking at the response of FDI inflow to one standard deviation innovations shock on polity score (*POLITY*), it is observed that inflow of FDI responds positively to the innovations shock in the second period with an increase of four per cent. However, the third period, through to the last period, experiences negative responses. In the third period, the response hints of about five per cent divestment from the region and the divestment grows to 20 per cent in the fifth period. The divestment becomes slower in the seventh period with a response that shows 16 per cent divestment and it reduces further to 10 per cent in the ninth period, but got worse in the 10^{th} period with 17 per cent divestment. The uneven trend, coupled with high speed of adjustment, hints that policy makers should be careful when reformulating the polity-related interventions such that further upset is avoided.

Looking at the reaction of FDI inflow to one standard deviation innovations shock on annual percentage change in consumer prices (*INFLATION*), it is observed that the response is an absolute positive one. From as high as 85 per cent increase in inflow of FDI in the second period, the increase becomes explosive in the third period but reduces to 44 per cent in the fourth period. The period between fourth and seventh period witnesses continuous increase in FDI inflow. From 95 per cent increase in the seventh period, the growth reduces to 82 per cent in the eighth period and further to 59 per cent in the ninth period. The growth ended at 71 per cent in the 10^{th} period.

Although, the trend of the response is uneven, the statistical relevance of these institutional variables towards explaining the behaviour of FDI inflow in West Africa cannot be disregarded. Further, the fact that inflow of FDI will respond positively towards these institutional variables suggests that policy makers can manoeuvre various exploits before arriving at the optimal one.

The impulse response of FDI inflow to one standard deviation innovations shock on regulatory quality (*QLEGAL*) indicates an absolute negative response. From 59 per cent divestment recorded in the second period, the reduction in inflow of FDI to the region becomes lower in the third period, recording 50 per cent reduction. In the fourth period, the response reduces further to 30 per cent, but grows to 32 per cent in the fifth period. The periods between the sixth (49 per cent) and the eighth (28 per cent) witness some noticeable reactions in the trend of the decrease. However, it is observed that the trend begins to pick again from the eighth period to the 10^{th} period (46 per cent).

It is thus observed that regulatory quality is an important determinant of the reaction of inflow of FDI (*FDINFL*) to West Africa region. Although, the reaction is absolutely negative, policy makers can still manoeuvre policy permutation given the slow speed of adjustment exhibited by the variable. However, it must be noted that any policy that will change the negative tide has to be investor-friendly.

The response of FDI inflow to corruption perception (*CORRUPTION*) is mostly positive, but with a negative response that is less than one per cent in the third period. In the second period, inflow of FDI responds to one standard deviation innovations shock on *CORRUPTION* through an increase of 65 per cent in inflow of FDI. In the fourth period, the growth reduces to 28 per cent, but climbs to 51 per cent in fifth period. The uneven trend continues until the last period under investigation, which records 28 per cent increase in inflow of FDI to the region. The fact that inflow of FDI responds positively to corruption perception is worrying. This suggests that FDI will flow more to the region if corrupt practices are encouraged.

The West African impulse response analysis demonstrates that an improvement in institutional framework will further the attractiveness of the region to inflow of FDI. However, *CORRUPTION* is found to be an exception in that regard.

East Africa

Table 5.70: Impulse Response Estimates for Equation 8 (1980-2012): East Africa Regional data (Response of FDINFL to Institutional variables)

Period	LAWRULE	POLITY	INFLATION	QLEGAL	CORRUPTION
1	0.000000	0.000000	0.000000	0.000000	0.000000
2	0.162056	-0.001727	0.347077	0.458408	0.267106
3	-0.177925	0.120326	-0.066229	0.060528	0.103127
4	0.039910	0.042201	0.049667	0.085181	0.191637
5	0.076009	0.019829	0.262830	0.213434	0.154708
6	0.004222	0.043423	0.089863	0.234302	0.070650
7	-0.037820	0.013712	0.035016	0.199496	0.092868
8	0.036367	0.028616	0.125968	0.167235	0.128272
9	0.024803	0.049299	0.153664	0.190264	0.137971
10	-0.023359	0.052829	0.044302	0.159183	0.136716
One standard deviation innovations					

The impulse response analysis for East Africa indicates that most of the responses of inflow of FDI to institutional variables were positive. For rule of law (*LAWRULE*), inflow of FDI to East Africa responds positively to one standard deviation innovations shock on rule of law (*LAWRULE*). The coefficient of the response indicates 16 per cent increase in inflow of FDI to the region. The third period experiences a reduction of 18 per cent in inflow of FDI to the region. In the fourth period, the inflow grows to four per cent, and later to eight per cent in the fifth period. In the sixth period, the growth is barely one per cent, but the trend becomes negative in the seventh period and the coefficient suggests about four per cent reduction in inflow of FDI to the region.

The positive response recorded in the eighth period suggests barely four per cent increase while the increase in the ninth period is about two per cent. In the 10^{th} period, the response is negative and the coefficient suggests about two per cent divestment. This result indicates that policy intervention towards improving the polity score of the region should be considered with care in order not to upset the investment environment.

Looking at the response of inflow of FDI to the region regarding one standard deviation innovations shock on *POLITY*, it is observed that inflow of FDI responds positively to the innovations shock in exception of the third period when a reduction of seven per cent is recorded on FDI inflow to the region. In the third period, the response becomes positive and the coefficient is at its peak and it suggests about 12 per cent increase in inflow of FDI to the region. Thereafter, the responses are positive and the highest coefficient between the fourth and the last period is recorded in the 10^{th} period (five per cent).

Still on Table 5.70, the response of inflow of FDI to one standard deviation innovations shock on annual percentage change in consumer prices (*INFLATION*) is positive, but for the third period that record the only negative response and the coefficient indicates about seven per cent reduction in inflow of FDI to the region at the time. In the second period, the coefficient of the response indicates that inflow of FDI to the region increases by 35 per cent, it reduced to five per cent in the fourth period, and it increases to 26 per cent in the fifth period.

The increase grows from four per cent in the seventh period to 15 per cent in the ninth period, before reducing to four per cent in the 10^{th} period. This trend, apart from being uneven, also indicates high speed of adjustment that needs to be considered very carefully by policy makers when orchestrating policy intervention. The trend suggests that unguarded policy intervention may unnerve skittish investors to divest from the region.

One standard deviation innovations shock on regulatory quality (*QLEGAL*) is observed to cause an absolute positive reaction from inflow of FDI. In the second period, inflow of FDI grows by 46 per cent as a result of the innovations shock on *QLEGAL*, but the growth reduces to six per cent in the third period. In the fourth period, the growth increases gently to nine per cent and the increase grows to 21, 23 and 20 per cent in the fifth, sixth and seventh periods respectively. The positive response ended up at 16 per cent in the 10^{th} period.

It must be pointed out that the trend of the response is rutted. This trend notwithstanding, the speed of adjustment of the variable is low, thereby offering policy involvement some flexibility to further enhance the mechanisms of rule of law in the region.

The last variable of interest in this impulse response analysis is corruption perception (*CORRUPTION*). The response of inflow of FDI to one standard deviation innovations shock on *CORRUPTION* yields an absolute positive response. However, the trend of the reaction suggests intermittent growth. In the second period, an innovation shock on *CORRUPTION* increases inflow of FDI to East Africa by 27 per cent. The increase slides to 10 per cent in the third period, but it grows to 19 per cent in the fourth period. In the fifth period, the surge declines to 15 per cent and later to nine per cent in the seventh period; the response later increase to 14 per cent in the 10^{th} period.

The East African impulse response analysis suggests that these institutional variables play very important deterministic roles on inflow of FDI to the region. Further, it is suggested that appropriate policy interventions will yield positive results, and the attractiveness of the region to inflow of FDI will be enhanced.

Having concluded the impulse response analysis, we now look at the cointegration test for equation 8. The result of the analysis is presented in table 5.71 and the explanation of the result follows thereafter.

5.5.4 Cointegration tests for equation 8

After the impulse response analyses, we now proceed to the cointegration test. The results of the cointegration tests are presented in Table 5.71.

Table 5.71: Cointegration Regression for equation 8 (1980-2012): Pooled Data

	FDINFL
LAWRULE	-1.553771 (0.951054)*
POLITY	0.037815 (0.026480)*
INFLATION	0.026096 (0.011035)**
QLEGAL	2.631616 (0.966671)***
CORRUPTION	-0.597912 (0.334218)*
Observations	192
Number of countries	6

*Robust standard errors are in parentheses. *** p<0.01, ** p<0.05, * p<0.1. Method: Panel Fully Modified Ordinary Least Squares (FMOLS). First-stage residuals use heterogeneous long-run coefficients. Long-run covariance estimates (Prewhitening with lags = 1, Bartlett Kernel, Integer Newey-West fixed bandwidth). F-statistics are on top and coefficients in parenthesis.*

In Table 5.71, the cointegration regression is done using the same technique that is adopted in the previous Parts. We have discussed the technique used, and the justification for using those techniques in the previous cointegration analyses. It is considered unnecessary to repeat similar material here again. As such, we proceed to the discourse of the statistical relevance of the test that is contained in Table 5.71. It must be noted, however, that a single cointegration test is presented here (as in the other Parts). This decision is premised on the fact that cointegrating series share common generic characteristics as long as the same set of variables are retained in the estimation under the same estimation conditions - be it pooled or regional datasets.

In Table 5.71, the *t-Statistics* are high, coupled with *p-values* that range between 1% and 10%). This is an indication that we reject the null hypothesis of no cointegration. It should be emphasised that the technique used to conduct the cointegration regression test of long-run equilibrium on these variables is reliable. In specific, the Newey-West fixed bandwidth selection and Bartlett Kernel techniques that are built into the regression technique cater for autocorrelation in residuals if it exists in the estimation. An overall conclusion can thus be made that the residuals are well distributed and the error terms are not correlated with the estimated variables.

5.5.5 Granger causality tests for equation 8

Having established cointegration among these variables, we now look at the causal relationship between the dependent and independent variables. The result of the causality test is presented in Table 5.72.

Table 5.72: Granger Causality Test for Equation 8 (1980-2012): Pooled Data (lag of 2)

Direction of causality		Statistical significance
→		
LAWRULE	FDINFL	(1.02458)
FDINFL	LAWRULE	(0.17756)
POLITY	FDINFL	(0.06161)
FDINFL	POLITY	(0.05668)
INFLATION	FDINFL	(1.13158)
FDINFL	INFLATION	(0.45006)
QLEGAL	FDINFL	(4.22984)**
FDINFL	QLEGAL	(1.57187)
CORRUPTION	FDINFL	(0.89638)
FDINFL	CORRUPTION	(2.77080)*
Observation		186
Number of countries		6

*F-statistics are in parentheses. *** p<0.01, ** p<0.05, * p<0.1.*

According to Table 5.72, only one institutional variable (*QLEGAL*) is seen to influence inflow of FDI. This simply suggests that the quality of regulatory environment is capable of influencing inflow of FDI into the sampled African countries. With a statistical significance of 5%, this causal relationship is statistically significant enough to suggest an improvement to the present quality of legal framework in the sampled countries as an institutional process towards attracting more FDI.

Still on Table 5.72, FDI inflow exhibits a reverse influence on one of the variables of institutional framework (*CORRUPTION*). Looking at the statistical significance of this causal relationship, one may cautiously suggest a possibility that inflow of FDI could precipitate corruption in the sampled African countries. In line with this finding, the Africa Progress Report (2013) accuses quite a number of foreign companies that operates in Africa of corruption. According to this report, "The combination of complexity, different disclosure requirements and limited regulatory capacity is at the heart of many of the problems discussed in this report. It facilitates aggressive tax planning, tax evasion and corruption" (Africa Progress Report, 2013:51).

The finding of the causality test in this study thus suggests that attracting inflow of FDI has to be premised on the improvement of the quality of regulatory framework in the host countries (countries in Africa). Having discussed the pooled causality test for equation 8, we now investigate the regional causality dynamics. The results of the Granger causality tests for the regions are presented in Table 5.73 below:

Table 5.73: Granger Causality Test for Equation 8 (1980-2012)
Regional analysis (lag of 2)

Direction of causality		**North Africa**	**Southern Africa**	**West Africa**	**East Africa**
⟶		Statistical significance	Statistical significance	Statistical significance	Statistical significance
LAWRULE	FDINFL	(1.55137)	(1.85811)	(0.08222)	(0.14988)
FDINFL	LAWRULE	(0.78158)	(0.52986)	(0.24734)	(0.65891)
POLITY	FDINFL	(2.30531)*	(2.16887)	(0.69442)	(1.06571)
FDINFL	POLITY	(0.37501)	(1.59579)	(0.56546)	(0.17068)
INFLATION	FDINFL	(0.30203)	(5.40682)***	(6.74712)***	(0.52647)
FDINFL	INFLATION	(1.65866)	(1.68575)	(0.16351)	(0.54261)
QLEGAL	FDINFL	(1.40321)	(5.01969)***	(0.00561)	(1.08178)
FDINFL	QLEGAL	(2.81166)*	(1.11068)	(0.32687)	(1.51077)
CORRUPTION	FDINFL	(0.01541)	(2.36363)	(0.37205)	(0.51082)
FDINFL	CORRUPTION	(3.11975)**	(3.73798)**	(0.08939)	(0.45405)
Observation		93	31	31	31
Number of countries		3	1	1	1

*F-statistics are in parentheses. *** p<0.01, ** p<0.05, * p<0.1.*

From Table 5.73, the causality tests suggest that policy score (*POLITY*) have causal effect on inflow of FDI to North Africa. As such, an improvement in polity score of the region will possibly improve the attractiveness of the region to inflow FDI. Further, two variables are found to have reverse causality with FDI inflow. In the first instance, inflow of FDI improves the quality of regulatory environment in the region. This suggests that an increase in the flow of FDI to the region will enhance the quality of regulatory framework. Surprisingly, inflow of FDI is observed to cause corruption perception (*CORRUPTION*). This result further buttresses the observation of corrupt practices by some foreign investors that is highlighted in Part B.

In Southern Africa analysis, annual percentage change in consumer prices (*INFLATION*) is found to cause inflow of FDI to the region. By implication, inflow of FDI to the region can only improve in the period of high inflation. Further, regulatory quality (*QLEGAL*) is also found to influence inflow of FDI. This finding buttresses the findings of La Porta, Lopez-de-Silanes, Shleifer and Vishny (2000). Ito (1999) also found similar result; again, just as in the case of North Africa, inflow of FDI is also found to intensify *CORRUPTION*. This result buttresses the findings of Africa Progress Report (2013) that quite a number of foreign investors in Africa engage in corrupt practices.

The West Africa causality test suggests that annual percentage change in consumer prices in the only variable that influences inflow of FDI to the region. This result is similar to the one obtained in Southern Africa analysis. For East Africa, none of the institutional variables appears to have causal effect on inflow of FDI and there is no reverse causality from inflow of FDI to the institutional variables either.

5.6 Lessons from the analysis

The analysis contained in this chapter (chapter five) is evaluated briefly in order to present the golden thread that links the analysis with the research questions and research hypotheses. Although, each research question and hypothesis are directly linked to the econometric models that are specified in Parts A, B and C as indicated in chapter four under research methodology, and by extension, in the analysis contained in this chapter, it is still considered important to recap these analyses and their suggested policy implications. The synopsis of these analyses will also be presented in the same order in which the statistical analyses were presented (Parts A, B and C).

5.6.1 Part A: Capital Market Development and Inflow of FDI

The result of the analysis of equation 2, as contained in Tables 5.1 to 5.15, reinforces the hypothesis of the direct influence of capital market development on inflow of FDI in the sampled African countries. More specifically, the result of the descriptive statistics (Tables 5.1 and 5.2) show that inflow of FDI to Africa has been fluctuating and the extent of the fluctuation has been noticeable (from a high of 9.4 per cent of GDP recorded by North Africa in 2006 compared to a divestment of -1.2 per cent of GDP recorded by West Africa in 1980). This is really a cause for concern for a continent that yearns to achieve rapid economic development, which has been proven to be achievable through inflow of FDI.

It is also noteworthy that capital market development has been fluctuating in the same way, as inflow of FDI. The strong relationship that subsists between these macroeconomic indicators lends credence to the observed fact that inflow of FDI is strongly influenced by capital market development in Africa. In addition, the result of the error correction estimations that appear on Tables 5.3 and 5.4 indicate suggests that capital market development influences the attractiveness of African countries to inflow of FDI. The results generated through the dynamic panel regression analysis (Tables 5.6 and 5.7) are in the affirmation of the role of capital market development as a strong determinant of inflow of FDI to Africa.

The dynamic panel regression analysis suggests a strong relationship between four of the five capital market development variables used in this study, and inflow of FDI. In exception of claims on domestic real nonfinancial sector by the Central Bank as a share of GDP (*NONFIN*) in the pooled analysis, all other capital market development variables show strong deterministic influence on inflow of FDI. The regional estimations are also in the affirmative of the roles played by capital market development in attractiveness of African countries to inflow of FDI.

Just as in the case of the impulse response analysis (Tables 5.8 to 5.12) where the role of capital market as strong determinant of inflow of FDI is emphasised, the Granger causality test (Table 5.14 and 5.15) also corroborate this proposition, albeit weakly. More specifically, the pooled causality test hints that there is a direct causal relationship between the total value of all listed shares in a stock market as a percentage of GDP (*EQCAP*), the total value of all traded shares in a stock market exchange as a percentage of GDP (*TURNOVER*) and the financial resources provided to the private sector by domestic money banks as a share of GDP (*BANK*). The regional analysis corroborates this proposition except for West Africa.

This finding corroborates the findings of earlier studies (Caves, 1974, 82, 99, 2007; Chousa, Valdlamannati & Tamazian, 2008; Hailu, 2010) that emphasise the importance of capital market development as a prerequisite to attracting inflow of FDI. This said, this study is able to demonstrate the need to initiate policy interventions that are capable of developing capital markets in Africa as a strategic way of attracting inflow of FDI. It must be recalled that quite a number of studies (such as the studies of Bencivenga, Smith and Starr, 1996; Akinkugbe, 2005; Dupasquier and Osakwe, 2005; Adams, 2009) reviewed in chapters two and three identify inflow of FDI as an important growth driver, especially in the developing countries (an economic grouping where many countries in Africa belongs). If achieved, capital market development will enhance the attractiveness of African countries to inflow of FDI and the cyclical effects of this system will further enhance the growth of domestic capital market.

On the regional basis, the descriptive statistics suggests that Southern Africa boasts a better capital market development as compared to the remaining three regions. However, the standard deviation statistics also indicate that the region's capital market is a lot more volatile than those of the other regions. The error correction estimation, specifically, the impulse response analysis signals to the speed of adjustment of these variables to innovations shock, thereby suggesting cautionary approach to policy intervention.

The regional dynamic panel regression (Table 5.7) corroborates the results of the pooled analysis (Table 5.6).

The regional analysis lends credence to the fact that all the capital market variables (except for *NONFIN*) enhance inflow of FDI to the sampled African countries. The Granger causality tests conducted for the regions shows that the development of equity capital is an important determinant of inflow of FDI to two of the regions (except for West and East Africa), this presupposition does not hold for the *PRIVY* across the regions (except for Southern Africa). More importantly, the regional analysis points out that none of the capital market development variables have any causal (be it direct or reverse) relationship with inflow of FDI in the case of West Africa.

5.6.2 Part B: Institutional Framework and Capital market development

The analyses contained in equations 3 to 7 evaluate the postulation that institutional framework influences capital market development. The results of the descriptive statistics presented in Tables 5.16 to 5.14 (as well as the appendix A2-1 to A2-4) reveal a mixed result. The descriptive statistics suggests that the sampled African countries suffer strongly from institutional adequacy. Most of the countries in Africa are ranked very low on various counts of institutional efficiency (such as *POLITY, LAWRULE* and *QLEGAL*).

In specific, all the African countries performed below global average in corruption (*CORRUPTION*). Furthermore, the error correction model as well as findings of the regression analysis points to the statistical significance of annual percentage change in consumer prices (*INFLATION*), rule of law (*LAWRULE*), polity score (*POLITY*) and quality of legal framework (*QLEGAL*) on the capital market variables used in this study. The results of the dynamic panel estimation (Table 5.23 to 5.27) as well as the impulse response estimation (Table 5.28 to 5.52) indicate that these institutional variables are particularly important to the performance of all the capital market variables, except for the total value of all traded shares in a stock market exchange as a percentage of GDP (*TURNOVER*). The Granger causality test presented in Tables 5.54 to 5.58 further reinforces the specific importance of the rule of law and corruption on private credit by deposit money banks and other financial institutions as a percentage of GDP (*BANK*) as well as equity trading platforms. Although, the institutional variables are observed to strongly influence the development of capital market in the regions, capital market development variables are also seen to be capable of influencing *POLITY, INFLATION* and *CORRUPTION*.

5.6.3 Part C: Institutional framework and inflow of FDI

Based on the error correction estimates (Tables 5.59 to 5.63), the dynamic panel analysis (Tables 5.64 and 5.65) as well as the impulse response analysis (5.66 to 5.70) conducted for equation 8, evidence suggests that two of the variables used in measuring institutional efficiency in this study (*QLEGAL* and *CORRUPTION*) play significant roles in determining the attractiveness of Africa to inflow of FDI.

The analysis establishes that the quality of legal framework exert a significant pressure on the attractiveness of Africa to inflow of FDI. The results of the regional analysis also emphasises the implication of institutional inadequacy on investor lethargy towards the African regions.

Further, the Granger causal analysis suggests that the quality of legal framework (*QLEGAL*) plays statistically significant role in determining the attractiveness of African countries to inflow of FDI.

Conversely, there is a reverse causal relationship between inflow of FDI (*FDINFL*) and corruption (*CORRUPTION*). The regional causal analysis indicates that polity does influence inflow of FDI to North Africa, while annual percentage change in consumer prices affects inflow of FDI to Southern and West Africa. Regulatory quality also surfaces as an important determinant of inflow of FDI to Southern Africa. However, there is reverse causality from inflow of FDI to corruption in North and Southern Africa while West and Southern Africa experiences reverse causality from annual percentage change in consumer prices to inflow of FDI.

In summary, the impulse response analysis contained in Tables 5.9 to 5.12 clearly indicate that inflow of FDI respond significantly to all the capital market variables not only in the short run, but in the long run as well. In the North African estimation for instance, inflow of FDI responds negatively in the short run to innovations shock on *BANK*, but the response of the dependent variable became positive in the long run. Conversely, while the response of inflow of FDI to *NONFIN* was negative in the short run, it became positive in the long run. The error correction estimates also reveals the same response pattern, given that the response patterns of differenced variables differ to the lagged forms of the same variable. The same response pattern is evident throughout the estimation.

5.7 Chapter summary

This chapter presented the analyses of the econometric models that are constructed in chapter four under research methodology. As indicated in this chapter, descriptive analyses are conducted to understudy the behaviour of the dataset. The measures of association as well measures of dispersion are examined and the implications of these divergences are discussed, especially as relates to the normal distribution of the data. In this chapter, we applied the diagnostic techniques that were proposed in chapter four. Other necessary diagnostic techniques were identified, justified and applied in order to achieve estimation validity and reliability by controlling for various estimation biases and errors.

Some semblances were drawn between the findings presented in the descriptive tables, the error correction models and those relationships expressed in the regression analyses and the impulse response estimations. To establish the direction of the relationship, the Granger causality tests were conducted. The causality tests suggest that there is strong causal relationship between capital market development and attractiveness of Africa to inflow of FDI (Hypothesis 1: 1.1 to 1.5). The analysis hints that capital market development is capable of acting as a pull factor for inflow of FDI to Africa. The regional analysis also corroborates the findings of the pooled estimation, except in the case of West Africa where no caulity was observed.

Further, hypothesis two (2.1 to 2.5) postulates a relationship between institutional framework and capital market development. The findings of this study corroborate the stated hypothesis. The finding of this study points to the importance of some of the institutional variables (especially *LAWRULE, QLEGAL* and *CORRUPTION* as important determinants of capital market development in Africa. The last hypothesis that tests the relationship between institutional efficiency and the attractiveness of Africa to inflow of FDI (hypotheses 3.1 to 3.5) indicates that institutional efficiency does affect the attractiveness of Africa to inflow of FDI.

Having tested the research hypotheses and having answered the research questions, the policy implication of the findings of this study and possible policy intervention (recommendation) are presented in the next chapter (chapter six). Chapter six also draws conclusion based on the findings of the study and suggest possible areas of future research.

Chapter six
Summary of findings, policy implications, recommendation and conclusion

6.1 Introduction

This study aimed at establishing a relationship between capital market development and inflow of FDI to Africa. The research further proposed to uncover the impact of institutional adequacy on the capital market development as well as the impact of institutional framework on the attractiveness of Africa to inflow of FDI. Having done the analysis and presented the result, this chapter presents the synopsis of the findings, highlights the policy implications of the results, makes some recommendations based on the findings, and concludes the study.

Chapter five presented the analysis of the econometric models that were specified in chapter four. Descriptive statistics were presented for each of the models, followed by diagnostic measures and various estimations. Efforts were also made in chapter five to draw inferences from the analysis as regards the stated research hypotheses. The findings of the analyses indicate that we cannot reject the Null of the stated research hypotheses. In this chapter (chapter five), the major findings of the research will be encapsulated, their policy implications will be discussed and possible intervention initiatives/mechanism will be proposed. Based on the findings of the study, conclusions will be drawn and areas of possible future research will be suggested.

6.2 Summary of findings and policy implication

The summary of the findings of this study will be presented in the same order as they featured in the analyses. This order also conforms to that of research objectives and the test of research hypotheses. Each research objective will be presented again, and the answer provided by the analysis will be aligned with the question. The same pattern will be followed for the research hypotheses. It must be highlighted that a brief analyses of the findings regarding the research hypotheses have been presented in section 5.5. However, the approach used in this chapter is different in that each hypothesis will be presented and the finding of the study will be weighed against the specific research hypothesis.

6.2.1 Research objectives

As stated in section 1.5, the main objective of this study was to establish the possible relationship between capital market development in Africa and the attractiveness of the continent to inflow of FDI. The sub-objectives were presented as follows:

- To analyse the causal relationship between Africa's capital market development and inflow of foreign direct investment to the continent,
- To analyse the causal relationship between institutional framework and capital market development in Africa,
- To analyse the impact of institutional framework on the attractiveness of Africa to inflow of FDI.

In order to achieve the stated objectives, some research questions were raised. According to section 1.4 (in chapter 1), the main questions raised in this study revolves around the extent of the explanatory powers of capital market variables as they influence inflow of FDI to Africa. The sub-research questions were stated as follows:

1 To what extent does capital market development influence the inflow of foreign direct investment to Africa?
2 What are the institutional factors that militate against capital market development in Africa?
3 What are the impacts of institutional framework on the attractiveness of Africa to inflow of FDI?

The regression analyses conducted and presented in chapter five (specifically in Tables 5.5 and 5.6) were able to answer the first research question (and sub-question), and ultimately achieve the main research objective as well as the first sub-objective. In specific terms, the regression analyses found that capital market development does influence the attractiveness of African countries to inflow of FDI. Except for claims on domestic real nonfinancial sector by the Central Bank as a share of GDP (*NONFIN*), all the capital market variables used are statistically significant at one per cent level (both in the pooled and regional estimations).

The Granger causality tests contained in Tables 5.8 and 5.9 lends credence to the causal relationship between stock market development and inflow of FDI both at pooled and regional levels. Stock market development indicators (*EQCAP* and *TURNOVER*) were found to be capable of influencing inflow of FDI in the pooled estimation and in all the regions in exception of West Africa. In addition, one of the most important components of the capital market (*BANK*)) is also found to directly Granger cause the inflow of FDI to Africa. These results are able to achieve the first research objective/sub-objective.

The second research sub-question is also answered and the second sub-objective is achieved as informed by the analyses. The regression analyses contained in Table 5.12 found that institutional framework plays an important role in determining the extent of capital market development in Africa. Some variables of institutional framework were found to be important determinants of capital market development in Africa. Measurable indicators such as the rule of law (*LAWRULE*), crafty management of public affairs (*POLITY*), annual percentage change in consumer price index (*INFLATION*) and quality of the regulatory framework (*QLEGAL*) were found to be important determinants to capital market development in Africa. These sets of findings were able to answer the second sub-research question. The result of the Granger causality tests presented in Table 5.14 suggests that rule of law (*LAWRULE*) plays a significant deterministic role on capital market development in Africa. This finding is able to achieve the second research objective.

The last sub-research question that focuses of the impact of institutional framework on the attractiveness of Africa to inflow of FDI is also answered. The output of the dynamic panel regression presented in Table 5.15 indicates that the quality of legal framework (*QLEGAL*) and corruption (*CORRUPTION*) are major deterrents to inflow of FDI to Africa. We achieved the last research sub-objective with the finding contained in the Granger causality test presented in Table 5.17. According to that Table, the quality of legal framework (*QLEGAL*) is found to have a causal relationship with inflow of FDI.

6.2.2 Research hypotheses

Table 6.1: Proposed Research Hypotheses and Actual Effects

Model Specification	Determinants	Hypothesised effects	Actual effects (causal)
	PART A		
Dependent variable **Foreign Direct Investment (*FDINFL*)**	Stock market capitalisation to GDP (%) (*EQCAP*)	Positive	positive
	Stocks traded, total value (% of GDP) (*TURNOVER*)	Positive	positive
	Domestic credit provided by banking sector (% of GDP) (*BANK*)	Positive	positive
	Domestic credit to private sector (% of GDP) (*PRIVY*)	Positive	nil
	The ratio of total claims on the nonfinancial private sector (% of GDP) (*NONFIN*)	Positive	nil
	PART B		
Dependent variables **Capital Market Development (*EQCAP; TURNOVER; BANK; PRIVY; NONFIN*)**	Rule of Law (estimate) (*LAWRULE*)	Positive	positive
	Combined polity score (*POLITY*)	Positive	Reverse positive
	Inflation, consumer prices (annual %) (*INFLATION*)	Negative	Reverse negative
	Regulatory Quality (estimate) (*QLEGAL*)	Positive	nil
	Corruption Perceptions Index (score) (*CORRUPTION*)	Negative	Reverse negative
	PART C		
Dependent variable ***FDINFL***	Rule of Law (estimate) (*LAWRULE*)	Positive	Positive
	Combined polity score (*POLITY*)	Positive	nil
	Inflation, consumer prices (annual %) (*INFLATION*)	Negative	nil
	Regulatory Quality (estimate) (*QLEGAL*)	Positive	nil
	Corruption Perceptions Index (score) (*CORRUPTION*)	Negative	Reverse negative

Source: Author's proposition and findings

From the analyses contained in chapter five, it is found that most of the hypotheses do not fall in the region of rejection. More specifically, we were able to establish statistical significant relationship between capital market development and inflow of FDI to Africa. The Granger causality test further reinforces the strength of this hypothesis as direct causality is established between three of the five capital market variables and inflow of FDI. As such, it could be said that hypothesis 1 holds, especially sub-hypotheses 1.1, 1.4 and 1.5. These set of hypotheses hold for not only the selected African countries, but the regions as well.

The second hypothesis also holds true. The analyses indicate that institutional framework influences capital market development in Africa. The stock market appears to be the more brittle of the two sectors. As suggested by the analyses, institutional framework plays a crucial role in the development of the stock market (especially equity capitalisation and stock turnover rate. However, the reverse causality expressed by all the capital market variables (except for stock turnover rates) can be interpreted that well-developed capital markets are capable of influencing the institutional framework in the long-run.

The third hypothesis also holds as institutional framework is found to play a significant role on inflow of FDI to Africa. More specifically, the quality of legal system (*QLEGAL*) stands out as a variable that plays a significant role in determining the attractiveness of Africa to inflow of FDI. Conversely, corruption (*CORRUPTION*) is found to have a reverse causal relationship with inflow of FDI. This may suggest that corrupt countries are more likely to attract FDI. Alternatively, inflow of FDI may precipitate or enhance corrupt practices. This is in line with the previous studies (La Porta, Lopez-de-Silanes, Shleifer & Vishny, 2000; Azman-Saini, Law & Ahmad, 2010; Ayaydin & Baltaci, 2013).

From the on-going, one could modify the hypotheses presented in Table 4.1in order to suggest an optimal tabular presentation of the relationship that exists among the main variables of this study. This modification gives rise to Table 6.1. The Table depicts the specific capital market development variables that are capable of driving inflow of FDI to Africa. Further, the Table indicates the variables of institutional framework that have direct influence on capital market development. The concluding part of the Table contains information on the variables of institutional framework that influences the attractiveness of Africa to inflow of FDI.

6.3 Policy implications

The findings contained in this study points to the need to develop Africa's capital market in order to attract FDI. As informed by the analyses contained in this study, there is strong evidence to suggest that Africa is currently not attracting a significant portion of global flow of FDI. Currently, the developed economies (topped by the United States) attract the bulk of global flow of FDI, which may contribute in explaining why those economies are sustainably developed. An argument could be advanced that if the most developed economies continuously strive to attract as much FDI as possible; the developing countries (especially countries in Africa) are expected to initiate possible policy interventions to further make Africa attractive to inflow of FDI.

The findings of this study suggest that Africa will be able to attract more foreign investment as a continent and at regional levels as well, by improving the efficiency of the capital market

– all of which hinge on institutional efficiency. As suggested by previous studies conducted in the advanced economies and Latin America, the development of domestic capital market is found to be a significant determinant of the attractiveness of a host country to inflow of FDI. As suggested by previous studies in Ghana and southern Africa, apart from attracting FDI, the level of development of the domestic capital market also influences the extent to which a country could benefit from the spillover effects of FDI.

From the on-going, it thus becomes apparent that the development of domestic capital market is an important determinant for any country to benefit from FDI. Of all the factors of institutional efficiency studied, the quality of legal framework, respect for the rule of law, political peacefulness, as well as corruption are seen as the most crucial deterrents to both capital market development and the attractiveness of the continent at large, and the major regional groupings in specific, to inflow of FDI. Practical evidence from the largest African countries corroborates the findings of this study. For instances, cases of corruption has been lunched against top political official in countries such as Nigeria, South Africa and Kenya, especially between 2010 and 2013 and no conviction is secured in most of the cases. This may explain why Africa continues to rank poorly on the global corruption index.

More specifically, the quality of legal framework (*QLEGAL*), the quality of rule of law (*LAWRULE*), and the combined polity score (*POLITY*), as well as fiscal policy (*INFLATION*) play prominent deterministic role in adjudging Africa's institutional inefficiency in relation to developing its capital market in a way that would attract inflow of FDI. While a few countries like South Africa is known for efficient legal framework, there has been reported cases of contempt of court among top political officials between 2009 and 2014. Being the largest economy on the continent, continued disrespect for the rule of law may ultimately weaken the judicial system of the country. If that happens, poor legal framework may further unnerve flappable capital market participants, hinder capital market development and discourage the flow of FDI to Africa. The same fate of lack of respect of the rule of law has been demonstrated in Egypt during the 2012 and 2013 anti-military protests and Tunisia was not spared in this imbroglio as well.

Although, inflation has been managed properly for the past few years on the continent, it still remains a fiscal problem that requires attention. Many countries in Africa are still vulnerable to macroeconomic instabilities and inflation may be triggered by some of those instabilities. For instance, most of the large economies on Africa continue to experience high volumes of trade deficit (year-on-year). This does not augur well for economic stability and macroeconomic peacefulness. The increasing volume of budget deficits is also of concern in order to maintain a reasonable level of fiscal balance in a way that may put inflation in check. Although, the inflation targeting policy adopted in some of the largest economies on the continent (in countries such as Nigeria and South Africa) may be effective in keeping inflation in check, those initiatives have to be supported by good governance, respect for the rule of law and strong administrative discipline in order to ensure their effectiveness.

6.4 Contributions to knowledge

As indicated in the preceding sections in this chapter, this study successfully achieve its targeted objectives by answering the research questions. The research hypotheses are also tested successfully. In a nutshell, this study contributes to the body of existing literature and enriches our understanding of salient issues on Africa's capital market dynamics and FDI behaviour in that regard. In more specific terms, some of the contributions of this study to existing knowledge are highlighted below:

6.4.1 The use of pooled data

This study uses pooled data in various estimations to answer the research questions, test the research hypotheses, and ultimately, achieve the stated research objectives. The pooled data are generated for the selected African countries over a period that runs between 1980 and 2012. The application of pooled data allows us to test the impact of large number of explanatory variables that are used in this study in relation to the observed changes expressed by the dependent variables. It must be pointed out that this form of data mining technique enables us to conduct various estimations and apply numerous statistical instruments that are considered important to achieve the research objectives, especially within the multivariate analysis framework. By so doing, we are able to capture not only the variation that characterise temporal or cross-section but the simultaneous occurrences along the two dichotomies as well.

6.4.2 Data generation technique

It is a known fact that studies on Africa's capital market are always problematic to conduct. The main source of concern in conducting such studies is the availability of useful data. This study is not an exception. Most of the series are pervaded with incomplete data as explained in chapter four. To overcome associated problems with incomplete data, especially omission data in dependent variables, it becomes important to generate data for the missing units. We relied extensively on the use of various statistical techniques to achieve this daunting task. Our ability to make available some datasets that were hitherto non-existent is considered a significant contribution to knowledge.

6.4.3 Regional analysis

For the first time in studies of this nature, we bring to light a single study that incorporates the major economies on the continent, as well as the largest (and most developed) capital markets on the continent. This study does not only unveil the dynamics of Africa's capital market, but the role of institutional framework as well. The study also juxtaposes the intricacies of capital market development and FDI behaviour across the major economies on the continent, while exposing the role of institutional adequacy on FDI behaviour concomitantly.

Although, the representation of the regions is limited, it is imperative to note that a wider coverage would not have been necessary because of data shortage. The most important rationale is that the sample size used in this study represents countries that account for more than 80 per cent of the GDP of the entire continent, apart from being the largest and most viable capital markets on the continent. In addition, the capitalisation of the Johannesburg Stock Exchange (JSE) and the Nigerian Stock Exchange (NSE) account for more than 70 per cent of the entire continent's capitalisation.

6.4.4 Estimation techniques

This study adopts various estimation techniques and statistical tools to answer the stated research questions, test the proposed research hypotheses, and ultimately, achieve the stated research objectives. The descriptive statistics is employed to establish the distribution pattern of the dataset, and the error correction estimates (VECM) are used to ascertain the importance of the identified error terms. The unit root test is used to unveil the behaviour of the data, while the GMM approach is adopted not only to ascertain relationship among the variables but to allay our fears about endogeneity as well.

The impulse response approach is employed extensively in order to ascertain the short and long run reactions of the explanatory variables to any possible innovations shock on the dependent variables. These are very crucial for policy purposes on the continent. The causality test helps to ascertain the direction of causality among the variables. This is extremely germane for policy purposes as the understanding that is created through this study points to, clearly, where policy intervention should be directed and the possible multiplier effects of such interventions on the larger FDI behaviour and capital market development nexus.

6.5 Recommendations

Following from the analysis, evidence emerged that Africa has the potential to increase her share of global stock of FDI in a sustainable way. To achieve this, a new growth-path needs to be channelled, essentially through the development of domestic capital market – both at continental and regional levels. One of the possible initiatives to drive capital market development is by improving the institutional framework on the continent. Although, studies reported noticeable improvement in the institutional framework of Africa in recent years, more still needs to be done to improve the attractiveness of the continent to inflow of FDI.

This study corroborates Caves' (2007) hypothesis on investors' behaviour on the role of capital market in the host country to meet financial needs of foreign investors, especially in the African context. As suggested in a series of studies conducted by Caves (1974, 1982, 1996, 2007) on the behaviour of multinational corporations, emphasises was placed on the relevance of the intermediation role of the host country's capital market (especially the equity market and bank sector) in funding future expansion of the investments. In addition, meeting risk diversification motives of foreign investors by providing financial platforms that are capable of generating low-cost credit facility to support the financial need of the investment is important (Jeffus, 2004). To that extent, this study emphasises the need to develop Africa's capital market, especially capital market components such as equity markets and the banking sector.

Although, the political climate in Africa has improved considerably through increasing democratisation processes, more efforts is still required to strengthen the legal framework on the continent. As suggested by this study, respect for the rule of law and quality of legal framework play very important roles on the development of Africa's capital market as well as on the attractiveness of the continent to inflow of FDI. To that extent, concerted efforts are required to improve the legal framework on Africa. More importantly, poor investor protection (as informed by weak regulatory framework) may further unnerve skittish investors. Even in the region that is regarded as having the best regulatory system (southern Africa), concerns are emerging that political elites are compromising the established judicial systems.

The findings of this study point strongly to the negative influence of corruption on capital market development, and its effect on the kind of FDI that is attracted to Africa is emphasised. The regional analysis in this study indicates that most of the countries in Africa are corrupt, and this social vice influences efficient allocation of financial support to the private sector (*PRIVY*). By implication, lack of objectivity in channelling funds to the private sector may discourage innovativeness and economic development may thus be compromised. As suggested by Schumpeter (1934), financial institutions (especially banks) should be able to perform intermediation roles in a way that enhances innovativeness that can lead to technological advancement and application of innovative ideas.

The literature as cited in this study and elsewhere, establishes the importance of capital market development on the attractiveness of countries to inflow of FDI. In the same vein, the importance of institutional framework in developing the capital market as well as attracting/sustaining inflow of FDI are also emphasised in literature. For Africa to be attractive to inflow of FDI, it is critical, from the analysis contained in this study, that perceptions of corruption must change, the political environment must improve and the rule of law needs to improve. These are critical recommendations emanating from this study.

Governance issues also stand out as being important. It is therefore essential that African countries should ensure efficiency in the management of the macro-economy. This is important as the inflation variable clearly shows through its negative association with capital market development as well as inflow of FDI both in the pooled estimations as well as the regional analyses.

Further, given the time dynamic of the responses generated in this study (specifically through the error correction estimates and the impulse response analyses), it is suggested that policy intervention should be carefully monitored and necessary implementation and control mechanism should be deployed to ensure that deviations from the expected outcomes are corrected timeously. Further, strategic flexibility should be built into the formulation process and adequate reward system should be enshrined in the innovations policy in order to motivate efficient and effective participation and ultimately, targeted positive outcomes.

6.6 Conclusion

The literature review conducted in this study established relationship between inflow of FDI and economic growth, capital market development and inflow of FDI, and institutional efficiency and capital market development. From the literature review, a viable capital market is found to be pivotal to financial deepening, which is capable of precipitating sustainable economic growth and entrepreneurial development. Capital market efficiency is also found to be necessary to attract inflow of FDI. Evidence from the literature identified institutional efficiency as the bedrock of capital market development (which is confirmed by this study). A fledgling capital market is largely inefficient, and highly susceptible to market failure, and capable of further enervating skittish foreign investors especially in the face of preponderant market failures in the developing world.

The empirical evidence, as suggested by the analyses contained in this study, corroborates most of the previous findings. For example, the Townsend's (1979) Costly-State-Verification hypothesis, as modified later by Froot and Stein (1991), holds for Africa. As suggested by the statistical analyses, there is a relationship between capital market development and FDI inflow, suggesting that "the more efficient a market becomes, the lesser the cost of capital, and the more attractive the market becomes for investment". This also corroborates the study of Caves (2007), which emphasises that investors are only willing to commit to an offshore market only if the domestic capital market is developed.

It could thus be concluded from the findings of this study that there is the need for a change in the perception of African leaders about the socio-political and economic importance of capital market. Efforts should be made to embrace the development of capital markets on the continent, essentially by improving the institutional framework. The challenges posed by globalisation, especially in relation to national competitive advantage, suggests that African leaders need to adopt a more hearty approach that is capable of furthering sustainable competitiveness of the continent to foreign investment through capital market development and improvement to institutional framework.

In addition, the issue of corruption should be addressed. Corruption has been identified as glowing amber that illuminates a people to moral bankruptcy. It eats into the moral fibres of the society and destroys the integrity of its perpetrators in the same way as the victims. To ascertain a functioning system on a sustainable basis, efforts need to be made to strengthen existing anti-corruption regulations, modify the existing regulations, and uphold the principles of rule of law. The law enforcement process should also be strengthened to uphold the honour and dignity of that noble professional. It is found that only a well-functioning institution is capable of ensuring capital market efficiency, attracting FDI inflow and growing the economy in a way that is capable of reducing poverty in Africa. It could thus be concluded from the findings of this study that consorted efforts need to be made to develop African capital markets as a way of lifting the continent out of its current economic squalor.

6.7 Suggestion for further study

This study investigated the roles of capital market development as a pull factor for inflow of FDI. The study also looked at the effects of institutional framework on capital market development, as well as the roles played by institutional framework on the attractiveness of Africa to inflow of FDI. The findings of the study suggest that capital market development hinges on institutional adequacy, and the hindrances crated by corruption, legal framework as well as lack of respect for the rule of law were highlighted.

However, given the limitations inherent in the dataset used in this study, especially those used to analyse capital market efficiency, it is essential to conduct a further empirical research in this regard. It is hoped that a longitudinal field survey may yield different result, especially on the impact of institutional framework. Further studies on the effects of institutional framework on both capital market development and inflow of FDI at the regional level may also contribute to our understanding of the regional dynamics.

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Appendix A
List of African Stock Markets and Exchanges

Name of Exchange	Country	Year established	Study Sample
West African regional stock exchange - Bourse Régionale des Valeurs Mobilières - BRVM	Côte d'Ivoire, Benin, Burkina Faso, Mali, Niger, Senegal, Togo, Guinea Bissau	1998	
Bourse des Valeurs Mobilieres d'Alger	Algeria	1997	
Botswana Stock Exchange	Botswana	1989	
Cameroon - Douala Stock	Cameroon	2011	
Bolsa de Valores de Cabo Verde	Cape Verde	2005	
The Egyptian Exchange	Alexandria Stock Exchange	1883	X
	The Cairo Stock Exchange	1903	
Ghana Stock Exchange	Ghana	1989	
Nairobi Stock Exchange	Kenya	1954	X
Libyan Stock Exchange	Libya	2007	
Malawi Stock Exchange	Malawi	1995	
Mauritius Stock Exchange	Mauritius	1988	
Casablanca Stock Exchange	Morocco	1929	X
Mozambique Stock Exchange	Mozambique	1999	
Namibia Stock Exchange	Namibia	1992	
Nigerian Stock Exchange	Nigeria	1960	X
Sierra Leone Stock Exchange	Sierra Leone	2009	
Rwanda Stock Exchange	Rwanda	2005	
Johannesburg Stock Exchange	South Africa	1887	X
Khartoum Stock Exchange	Sudan	1995	
Swaziland Stock Exchange	Swaziland	1990	
Dar es Salaam Stock Exchange	Tanzania	1996	
Bourse de Tunis	Tunisia	1969	X
Uganda Securities Exchange	Uganda	1997	
Lusaka Stock Exchange	Zambia	1994	
Zimbabwe Stock Exchange	Zimbabwe	1993	

Appendix A2-1

Descriptive Statistics for Equations 3 to 7 (1980-2012) – Regional Dynamics (North Africa)

	BANK	PRIVY	NONFIN	EQCAP	TURNOVER	LAWRULE	POLITY	INFLATION	QLEGAL	CORRUP
Mean	41.48241	44.91465	13.90870	20.21174	5.246296	-0.018675	-5.67677	6.88695	-0.18496	3.87824
Median	47.63822	47.69861	7.251865	10.56272	1.221997	0.0032598	-6.000	5.600000	-0.17365	3.66034
Maximum	74.52475	75.46774	50.52455	88.73975	39.98322	0.240165	-2.000	31.1381	0.15103	5.3
Minimum	14.03905	13.18058	0.128763	2.288972	0.106007	-0.418912	-9.000	-0.60443	-0.6192	2.8
Std. Dev.	15.78512	16.69079	15.72227	21.81706	9.398273	0.1414181	1.7369	5.293021	0.1361	0.7778
Skewness	-0.135291	-0.153291	0.932259	1.665245	2.332043	-0.19677	0.28176	1.41873	-0.4112	0.56287
Kurtosis	1.891789	1.703534	2.459205	4.937608	7.454047	2.090669	2.1671	6.29078	4.12265	1.75622
Jarque-Bera	5.368054	7.321124	15.54666	61.24174	171.5679	4.04981	4.17156	77.88161	7.988	11.609
Probability	0.068288	0.025718	0.000421	0.000000	0.000000	0.00132	0.001242	0.0000	0.0184	0.00301
Observations	99	99	99	99	99	99	99	99	99	99

Appendix A2-2

Descriptive Statistics for Equations 3 to 7 (1980-2012) – Regional Dynamics (Southern Africa)

	BANK	EQCAP	NONFIN	PRIVY	TURNOVER	LAWRUL	POLITY	INFLATION	QLEGAL	CORRUP
Mean	58.39585	153.3293	1.822736	111.5909	40.21759	0.08408	6.21212	11.0428	0.49776	4.87501
Median	57.00336	136.6658	1.822456	116.2357	14.32826	0.0798906	9	9.5940	0.47786	5.02304
Maximum	78.32955	265.6193	4.244845	167.5360	142.6287	0.227998	9	24.91463	0.7783813	5.2
Minimum	37.96843	99.00165	0.408235	55.60003	4.621268	-0.01142	-8	5.44468	0.267171	4.08028
Std. Dev.	10.77237	52.36949	1.079900	33.85756	42.53460	0.0377697	4.342793	4.569769	0.11057	0.26489
Skewness	0.152182	0.755784	0.648451	-0.143402	1.005191	1.2773	-2.10831	0.94914	0.73563	-1.440512
Kurtosis	2.066522	2.221569	2.508091	1.736706	2.829811	8.92270	7.518778	3.54674	3.34471	4.15392
Jarque-Bera	1.325527	3.974841	2.645405	2.307482	5.597080	57.2061	52.52378	5.3657	3.13974	13.244
Probability	0.515425	0.137048	0.266414	0.315455	0.060899	0.04564	0.0032	0.06836	0.0080	0.00133
Observations	33	33	33	33	33	33	33	33	33	33

Appendix A2-3

Descriptive Statistics for Equations 3 to 7 (1980-2012) – Regional Dynamics (West Africa)

	BANK	EQCAP	NONFIN	PRIVY	TURNOVER	LAWRUL	POLITY	INFLATION	QLEGAL	CORRUP
Mean	15.08456	10.54057	12.54557	17.06116	1.298276	-1.281298	-0.090909	20.56975	-0.908927	1.724531
Median	12.57826	7.853700	13.81913	13.23590	0.120569	-1.287688	4.000000	16.21316	-0.902224	1.542018
Maximum	35.39296	35.99110	29.05323	63.11585	9.259680	-1.096805	7.000000	83.62289	-0.685240	2.700000
Minimum	8.377203	3.745239	1.971889	8.934061	0.017788	-1.521641	-7.000000	-5.550901	-1.322868	1.000000
Std. Dev.	6.687729	8.557656	7.586334	10.67929	2.372455	0.097005	5.507742	19.80373	0.141698	0.420059
Skewness	1.570344	1.674051	0.187904	2.857302	2.185845	-0.115905	-0.193021	1.226054	-1.214003	1.082854
Kurtosis	4.782273	5.276576	2.163717	11.96714	6.628339	3.605130	1.259515	4.474859	4.762527	3.265452
Jarque-Bera	17.93058	22.53981	1.155827	155.4660	44.38020	0.577388	4.370183	11.25856	12.37736	6.546043
Probability	0.000128	0.000013	0.561068	0.000000	0.000000	0.749241	0.112467	0.003591	0.002053	0.037892
Observations	33	33	33	33	33	33	33	33	33	33

Appendix A2-4

Descriptive Statistics for Equations 3 to 7 (1980-2012) – Regional Dynamics (East Africa)

	BANK	EQCAP	NONFIN	PRIVY	TURNOVER	LAWRUL	POLITY	INFLATION	QLEGAL	CORRUP
Mean	0.560148	23.11599	17.46739	6.923350	29.73786	-0.991572	-0.909091	10.09860	-0.270250	2.162729
Median	0.402865	23.43907	11.89643	7.005947	29.40222	-0.996954	-5.000000	9.253576	-0.304946	2.179430
Maximum	2.676694	33.58402	46.97015	16.47278	38.14996	-0.858237	8.000000	41.98877	-0.089636	2.700000
Minimum	0.004721	17.30457	5.143699	2.296972	24.60027	-1.194529	-7.000000	0.933206	-0.374362	1.900000
Std. Dev.	0.603192	4.137148	13.56683	3.772697	3.063780	0.075246	6.409776	7.630808	0.066426	0.141177
Skewness	2.394649	0.401307	0.780813	0.543985	0.592204	-0.271838	0.533403	2.447316	0.966572	1.665746
Kurtosis	8.714689	2.657654	2.110777	2.477474	3.233902	3.194912	1.480673	10.68839	3.135562	8.709889
Jarque-Bera	76.44319	1.046910	4.440414	2.002981	2.004107	0.458664	4.738841	114.2195	5.163709	60.08979
Probability	0.000000	0.592470	0.108587	0.367331	0.367125	0.795064	0.093535	0.000000	0.075634	0.000000
Observations	33	33	33	33	33	33	33	33	33	33

Appendix B1: Vector Error Correction Estimates for Equation 2 (1980-2012): Pooled data (Alternative combinations)

Variables	D(BANK)	D(NONFIN)	D(PRIVY)	D(EQCAP)	D(TURNOVER)
D(BANK(-1))	0.127752	-0.141251	-0.309765	-0.071172	-0.094089
	(0.11176)	(0.08571)	(0.25707)	(0.35928)	(0.18458)
	[1.14311]	[-1.64807]	[-1.20499]	[-0.19810]	[-0.50975]
D(BANK(-2))	0.134004	0.081293	0.543076	0.634973	-0.234618
	(0.10366)	(0.07949)	(0.23843)	(0.33323)	(0.17120)
	[1.29278]	[1.02265]	[2.27772]	[1.90550]	[-1.37047]
D(NONFIN(-1))	-0.040029	0.461517	0.067965	-0.041450	0.074342
	(0.10225)	(0.07841)	(0.23519)	(0.32871)	(0.16887)
	[-0.39149]	[5.88573]	[0.28898]	[-0.12610]	[0.44024]
D(NONFIN(-2))	-0.126799	-0.176226	-0.224043	-0.000621	0.120228
	(0.10153)	(0.07786)	(0.23353)	(0.32638)	(0.16768)
	[-1.24894]	[-2.26340]	[-0.95937]	[-0.00190]	[0.71702]
D(PRIVY(-1))	0.066872	0.046986	-0.074748	0.149197	0.203980
	(0.05253)	(0.04029)	(0.12084)	(0.16888)	(0.08676)
	[1.27296]	[1.16630]	[-0.61859]	[0.88344]	[2.35104]
D(PRIVY(-2))	-0.050640	0.031851	-0.268733	-0.524687	0.247045
	(0.05071)	(0.03889)	(0.11665)	(0.16303)	(0.08375)
	[-0.99858]	[0.81900]	[-2.30381]	[-3.21840]	[2.94964]
D(EQCAP(-1))	0.041268	-0.032592	0.089279	0.205418	0.100909
	(0.02559)	(0.01963)	(0.05887)	(0.08228)	(0.04227)
	[1.61237]	[-1.66043]	[1.51646]	[2.49653]	[2.38716]
D(EQCAP(-2))	0.080673	-0.013727	0.054610	-0.241187	-0.134474
	(0.02721)	(0.02087)	(0.06260)	(0.08748)	(0.04494)
	[2.96450]	[-0.65773]	[0.87241]	[-2.75690]	[-2.99199]
D(TURNOVER(-1))	0.157356	0.025540	0.368262	0.595816	0.932621
	(0.06752)	(0.05178)	(0.15531)	(0.21706)	(0.11151)
	[2.33051]	[0.49323]	[2.37113]	[2.74489]	[8.36320]
D(TURNOVER(-2))	-0.194688	-0.076159	-0.370570	-0.742678	-0.179381
	(0.06900)	(0.05291)	(0.15871)	(0.22181)	(0.11395)
	[-2.82173]	[-1.43933]	[-2.33494]	[-3.34826]	[-1.57417]

Estimated coefficients on the first line, standard errors in parenthesis (); and t-statistics in brackets [].
The results are computed separately for each equation using the appropriate residuals

Appendix B2: Regional Vector Error Correction Estimates for Equation 2 (1980-2012): North Africa (Alternative combinations)

Variables	D(BANK)	D(PRIVY)	D(NONFIN)	D(EQCAP)	D(TURNOVER)
D(BANK(-1))	0.082713	0.031904	-0.088758	-0.197358	0.101876
	(0.16405)	(0.24229)	(0.11701)	(0.27748)	(0.17439)
	[0.50421]	[0.13168]	[-0.75858]	[-0.71126]	[0.58418]
D(BANK(-2))	0.302614	0.703474	0.228245	0.106758	-0.292308
	(0.16908)	(0.24972)	(0.12059)	(0.28599)	(0.17974)
	[1.78980]	[2.81701]	[1.89267]	[0.37329]	[-1.62627]
D(PRIVY(-1))	0.133537	-0.038913	0.078705	0.023165	-0.096046
	(0.09847)	(0.14544)	(0.07023)	(0.16656)	(0.10468)
	[1.35613]	[-0.26756]	[1.12063]	[0.13908]	[-0.91752]
D(PRIVY(-2))	-0.079896	-0.241497	-0.019422	0.118671	0.011020
	(0.10002)	(0.14773)	(0.07134)	(0.16918)	(0.10633)
	[-0.79878]	[-1.63472]	[-0.27224]	[0.70143]	[0.10364]
D(NONFIN(-1))	0.088591	0.059115	0.604654	0.498838	0.153634
	(0.16433)	(0.24272)	(0.11721)	(0.27796)	(0.17470)
	[0.53909]	[0.24355]	[5.15870]	[1.79461]	[0.87943]
D(NONFIN(-2))	-0.230025	-0.139356	-0.192396	-0.122687	-0.109443
	(0.16982)	(0.25082)	(0.12112)	(0.28725)	(0.18053)
	[-1.35452]	[-0.55560]	[-1.58842]	[-0.42712]	[-0.60623]
D(EQCAP(-1))	0.154968	0.181024	-0.098911	0.333423	0.141379
	(0.08359)	(0.12347)	(0.05962)	(0.14140)	(0.08887)
	[1.85383]	[1.46619]	[-1.65894]	[2.35808]	[1.59093]
D(EQCAP(-2))	0.179264	0.026509	0.087926	-0.162914	0.499008
	(0.09170)	(0.13544)	(0.06541)	(0.15511)	(0.09749)
	[1.95481]	[0.19572]	[1.34427]	[-1.05028]	[5.11869]
D(TURNOVER(-1))	-0.211521	-0.042795	0.019679	0.999038	0.311618
	(0.19204)	(0.28364)	(0.13697)	(0.32483)	(0.20415)
	[-1.10145]	[-0.15088]	[0.14367]	[3.07557]	[1.52641]
D(TURNOVER(-2))	-0.317057	-0.359169	-0.314001	-0.816140	-1.186697
	(0.18107)	(0.26744)	(0.12915)	(0.30628)	(0.19249)
	[-1.75099]	[-1.34298]	[-2.43128]	[-2.66468]	[-6.16488]

Estimated coefficients on the first line, standard errors in parenthesis (); and t-statistics in brackets [].
The results are computed separately for each equation using the appropriate residuals

Appendix B3: Regional Vector Error Correction Estimates for Equation 2 (1980-2012): Southern Africa (Alternative combinations)

Variables	D(BANK)	D(PRIVY)	D(NONFIN)	D(EQCAP)	D(TURNOVER)
D(BANK(-1))	-0.049738	0.503749	0.150617	1.305177	0.367902
	(0.53934)	(2.54941)	(0.08493)	(3.51803)	(1.98003)
	[-0.09222]	[0.19759]	[1.77350]	[0.37100]	[0.18581]
D(BANK(-2))	-0.399991	0.514474	0.114813	3.751952	0.447321
	(0.42356)	(2.00212)	(0.06669)	(2.76281)	(1.55497)
	[-0.94435]	[0.25696]	[1.72146]	[1.35802]	[0.28767]
D(PRIVY(-1))	0.055654	-0.579479	-0.049502	-1.109777	-0.038691
	(0.15200)	(0.71847)	(0.02393)	(0.99145)	(0.55801)
	[0.36615]	[-0.80655]	[-2.06828]	[-1.11935]	[-0.06934]
D(PRIVY(-2))	0.038384	-0.553653	-0.036643	-2.502856	-0.070316
	(0.13723)	(0.64867)	(0.02161)	(0.89512)	(0.50380)
	[0.27971]	[-0.85353]	[-1.69578]	[-2.79611]	[-0.13957]
D(NONFIN(-1))	0.027179	-6.907413	0.317059	-21.87528	-8.072102
	(1.15224)	(5.44645)	(0.18143)	(7.51579)	(4.23007)
	[0.02359]	[-1.26824]	[1.74753]	[-2.91058]	[-1.90827]
D(NONFIN(-2))	-0.938089	8.325868	0.328975	26.22611	7.761492
	(1.57122)	(7.42692)	(0.24741)	(10.2487)	(5.76822)
	[-0.59705]	[1.12104]	[1.32969]	[2.55896]	[1.34556]
D(EQCAP(-1))	-0.041860	0.278899	0.036576	1.274226	0.419668
	(0.09339)	(0.44146)	(0.01471)	(0.60920)	(0.34287)
	[-0.44821]	[0.63176]	[2.48714]	[2.09165]	[1.22399]
D(EQCAP(-2))	0.024432	-0.005563	0.008534	0.054676	-0.158844
	(0.04698)	(0.22205)	(0.00740)	(0.30641)	(0.17246)
	[0.52010]	[-0.02505]	[1.15371]	[0.17844]	[-0.92107]
D(TURNOVER(-1))	0.193577	0.665927	0.002721	1.550173	1.236413
	(0.09029)	(0.42678)	(0.01422)	(0.58893)	(0.33146)
	[2.14400]	[1.56036]	[0.19137]	[2.63220]	[3.73017]
D(TURNOVER(-2))	-0.071151	-0.855288	-0.063431	-2.692539	-0.566074
	(0.16116)	(0.76176)	(0.02538)	(1.05118)	(0.59163)
	[-0.44150]	[-1.12278]	[-2.49965]	[-2.56144]	[-0.95680]

Estimated coefficients on the first line, standard errors in parenthesis (); and t-statistics in brackets [].
The results are computed separately for each equation using the appropriate residuals

Appendix B4: Regional Vector Error Correction Estimates for Equation 2 (1980-2012): West Africa (Alternative combinations)

Variable	D(BANK)	D(PRIVY)	D(NONFIN)	D(EQCAP)	D(TURNOVER)
D(BANK(-1))	0.398296	-0.292563	0.487295	-0.999626	-0.190427
	(0.76933)	(1.35751)	(1.05629)	(1.37121)	(0.31150)
	[0.51772]	[-0.21551]	[0.46133]	[-0.72901]	[-0.61132]
D(BANK(-2))	0.785527	1.724076	0.470149	-0.226460	0.155990
	(0.53641)	(0.94652)	(0.73649)	(0.95607)	(0.21719)
	[1.46442]	[1.82149]	[0.63836]	[-0.23686]	[0.71821]
D(PRIVY(-1))	-0.311833	0.338519	-0.769341	0.385218	0.116116
	(0.53897)	(0.95104)	(0.74001)	(0.96064)	(0.21823)
	[-0.57857]	[0.35594]	[-1.03963]	[0.40100]	[0.53208]
D(PRIVY(-2))	-0.468773	-1.173362	-0.196878	-0.016064	-0.111961
	(0.49478)	(0.87307)	(0.67934)	(0.88188)	(0.20034)
	[-0.94743]	[-1.34395]	[-0.28981]	[-0.01822]	[-0.55886]
D(NONFIN(-1))	-0.263886	-0.004583	0.053388	0.253368	0.043201
	(0.29412)	(0.51898)	(0.40382)	(0.52422)	(0.11909)
	[-0.89722]	[-0.00883]	[0.13221]	[0.48332]	[0.36276]
D(NONFIN(-2))	-0.208352	-0.323724	-0.392839	-0.256927	-0.084874
	(0.29041)	(0.51245)	(0.39874)	(0.51762)	(0.11759)
	[-0.71743]	[-0.63172]	[-0.98520]	[-0.49636]	[-0.72179]
D(EQCAP(-1))	-0.188662	-1.183244	-0.404776	0.720943	0.093779
	(0.36276)	(0.64010)	(0.49807)	(0.64656)	(0.14688)
	[-0.52008]	[-1.84852]	[-0.81269]	[1.11504]	[0.63846]
D(EQCAP(-2))	0.345603	0.897441	-0.019117	0.268635	0.132415
	(0.46575)	(0.82185)	(0.63948)	(0.83014)	(0.18859)
	[0.74203]	[1.09198]	[-0.02989]	[0.32360]	[0.70215]
D(TURNOVER(-1))	1.449634	7.734882	-0.489809	-3.319680	0.067066
	(2.31659)	(4.08773)	(3.18069)	(4.12899)	(0.93799)
	[0.62576]	[1.89222]	[-0.15399]	[-0.80399]	[0.07150]
D(TURNOVER(-2))	-2.226146	-5.523283	-2.879697	1.116710	-0.867649
	(1.70929)	(3.01613)	(2.34687)	(3.04657)	(0.69210)
	[-1.30238]	[-1.83125]	[-1.22704]	[0.36655]	[-1.25365]

Estimated coefficients on the first line, standard errors in parenthesis (); and t-statistics in brackets [].
The results are computed separately for each equation using the appropriate residuals

Appendix B5: Regional Vector Error Correction Estimates for Equation 2 (1980-2012): East Africa (Alternative combinations)

Variables	D(BANK)	D(PRIVY)	D(NONFIN)	D(EQCAP)	D(TURNOVER)
D(BANK(-1))	0.095074	-0.034444	-0.092782	-0.090381	-0.107357
	(0.33291)	(0.37418)	(0.23302)	(0.91457)	(0.11399)
	[0.28559]	[-0.09205]	[-0.39818]	[-0.09882]	[-0.94185]
D(BANK(-2))	0.186627	0.520880	-0.178243	-0.336151	-0.010416
	(0.33573)	(0.37735)	(0.23499)	(0.92233)	(0.11495)
	[0.55588]	[1.38037]	[-0.75850]	[-0.36446]	[-0.09061]
D(PRIVY(-1))	-0.052797	0.358985	-0.186086	-1.756019	-0.148291
	(0.24493)	(0.27530)	(0.17144)	(0.67288)	(0.08386)
	[-0.21556]	[1.30400]	[-1.08543]	[-2.60969]	[-1.76825]
D(PRIVY(-2))	-0.027350	0.316767	0.115244	0.395921	-0.008234
	(0.23955)	(0.26925)	(0.16767)	(0.65810)	(0.08202)
	[-0.11417]	[1.17649]	[0.68731]	[0.60161]	[-0.10038]
D(NONFIN(-1))	-0.178605	-0.231364	0.423990	0.470119	0.146748
	(0.28769)	(0.32335)	(0.20137)	(0.79034)	(0.09850)
	[-0.62083]	[-0.71552]	[2.10556]	[0.59483]	[1.48979]
D(NONFIN(-2))	0.067773	-0.167406	-0.294226	0.283249	0.114062
	(0.26705)	(0.30015)	(0.18692)	(0.73364)	(0.09144)
	[0.25378]	[-0.55773]	[-1.57407]	[0.38608]	[1.24746]
D(EQCAP(-1))	0.200442	0.458050	0.129154	0.482631	-0.066911
	(0.12225)	(0.13741)	(0.08557)	(0.33586)	(0.04186)
	[1.63955]	[3.33347]	[1.50931]	[1.43700]	[-1.59848]
D(EQCAP(-2))	-0.080733	-0.021090	-0.116195	-0.908800	-0.105592
	(0.16872)	(0.18963)	(0.11809)	(0.46351)	(0.05777)
	[-0.47851]	[-0.11121]	[-0.98392]	[-1.96070]	[-1.82786]
D(TURNOVER(-1))	-2.366350	-4.086407	-0.945818	1.425548	1.735861
	(1.16348)	(1.30771)	(0.81437)	(3.19633)	(0.39837)
	[-2.03386]	[-3.12487]	[-1.16141]	[0.44600]	[4.35745]
D(TURNOVER(-2))	1.513425	-1.779645	1.687777	9.777680	1.123505
	(2.19986)	(2.47256)	(1.53979)	(6.04351)	(0.75322)
	[0.68797]	[-0.71976]	[1.09611]	[1.61788]	[1.49161]

Estimated coefficients on the first line, standard errors in parenthesis (); and t-statistics in brackets [].
The results are computed separately for each equation using the appropriate residuals

Appendix B6: Vector Error Correction Estimates for Equation 3 (1980-2012): Pooled data (Alternative combinations)

Variables	D(LAWRULE)	D(POLITY)	D(INFLATION)	D(QLEGAL)	D(CORRUPTION)
D(LAWRULE(-1))	-0.444158	0.065343	-13.06777	-0.150719	0.016023
	(0.08133)	(2.24769)	(9.62246)	(0.10292)	(0.22491)
	[-5.46139]	[0.02907]	[-1.35805]	[-1.46439]	[0.07124]
D(LAWRULE(-2))	0.077645	-0.339572	4.917390	-0.020906	0.610603
	(0.08527)	(2.35678)	(10.0895)	(0.10792)	(0.23582)
	[0.91053]	[-0.14408]	[0.48738]	[-0.19372]	[2.58923]
D(POLITY(-1))	-0.001896	0.024186	-0.035494	-0.000798	-0.001101
	(0.00276)	(0.07625)	(0.32644)	(0.00349)	(0.00763)
	[-0.68731]	[0.31718]	[-0.10873]	[-0.22856]	[-0.14424]
D(POLITY(-2))	-0.000979	-0.244324	0.105858	-0.003119	-0.004403
	(0.00273)	(0.07556)	(0.32349)	(0.00346)	(0.00756)
	[-0.35807]	[-3.23334]	[0.32723]	[-0.90139]	[-0.58226]
D(INFLATION(-1))	0.000518	-0.041423	-0.288712	0.001405	-0.001921
	(0.00077)	(0.02118)	(0.09066)	(0.00097)	(0.00212)
	[0.67653]	[-1.95594]	[-3.18440]	[1.44860]	[-0.90627]
D(INFLATION(-2))	-0.000519	-0.014773	-0.257217	-0.000846	0.001333
	(0.00065)	(0.01801)	(0.07711)	(0.00082)	(0.00180)
	[-0.79651]	[-0.82013]	[-3.33552]	[-1.02599]	[0.73976]
D(QLEGAL(-1))	0.125166	-0.197392	9.049219	-0.463068	0.140260
	(0.06351)	(1.75541)	(7.51498)	(0.08038)	(0.17565)
	[1.97066]	[-0.11245]	[1.20416]	[-5.76089]	[0.79852]
D(QLEGAL(-2))	0.037676	-0.417435	4.561205	0.019816	-0.044154
	(0.06288)	(1.73779)	(7.43955)	(0.07957)	(0.17389)
	[0.59920]	[-0.24021]	[0.61310]	[0.24903]	[-0.25392]
D(CORRUPTION(-1))	0.028816	0.471335	-5.370420	-0.021640	-0.420909
	(0.02936)	(0.81143)	(3.47377)	(0.03716)	(0.08119)
	[0.98147]	[0.58087]	[-1.54599]	[-0.58240]	[-5.18403]
D(CORRUPTION(-2))	0.037118	0.129793	1.176977	0.019453	-0.061829
	(0.03012)	(0.83245)	(3.56374)	(0.03812)	(0.08330)
	[1.23235]	[0.15592]	[0.33026]	[0.51032]	[-0.74228]

Estimated coefficients on the first line, standard errors in parenthesis (); and t-statistics in brackets [].
The results are computed separately for each equation using the appropriate residuals

Appendix B7: Vector Error Correction Estimates for Equation 3 (1980-2012): North Africa (Alternative combinations)

Variables	D(LAWRULE)	D(POLITY)	D(INFLATION)	D(QLEGAL)	D(CORRUPTION)
D(LAWRULE(-1))	-0.442850	-0.291930	-8.691739	-0.193657	-0.464721
	(0.12262)	(1.07887)	(5.78077)	(0.14799)	(0.35195)
	[-3.61161]	[-0.27059]	[-1.50356]	[-1.30854]	[-1.32042]
D(LAWRULE(-2))	0.183689	0.176477	1.809676	-0.118790	0.523755
	(0.13706)	(1.20597)	(6.46178)	(0.16543)	(0.39341)
	[1.34018]	[0.14634]	[0.28006]	[-0.71807]	[1.33131]
D(POLITY(-1))	-0.006913	-0.296697	-0.447875	0.010326	0.047778
	(0.01370)	(0.12050)	(0.64568)	(0.01653)	(0.03931)
	[-0.50472]	[-2.46213]	[-0.69365]	[0.62465]	[1.21537]
D(POLITY(-2))	-0.014712	-0.169250	-0.074744	0.024882	-0.020808
	(0.01806)	(0.15893)	(0.85155)	(0.02180)	(0.05185)
	[-0.81449]	[-1.06497]	[-0.08777]	[1.14134]	[-0.40135]
D(INFLATION(-1))	0.003750	0.024289	-0.432003	0.003717	-0.002955
	(0.00235)	(0.02070)	(0.11093)	(0.00284)	(0.00675)
	[1.59360]	[1.17318]	[-3.89432]	[1.30893]	[-0.43747]
D(INFLATION(-2))	0.000902	0.013581	-0.230317	0.001019	0.008197
	(0.00207)	(0.01826)	(0.09782)	(0.00250)	(0.00596)
	[0.43477]	[0.74394]	[-2.35457]	[0.40692]	[1.37640]
D(QLEGAL(-1))	0.033009	1.837825	13.03282	-0.472516	0.137390
	(0.10788)	(0.94923)	(5.08615)	(0.13021)	(0.30966)
	[0.30596]	[1.93611]	[2.56242]	[-3.62883]	[0.44368]
D(QLEGAL(-2))	-0.062220	1.017313	6.586430	-0.059314	0.071044
	(0.09369)	(0.82435)	(4.41698)	(0.11308)	(0.26892)
	[-0.66410]	[1.23409]	[1.49116]	[-0.52453]	[0.26418]
D(CORRUPTION(-1))	0.016417	0.370459	0.868629	-0.094634	-0.531172
	(0.04194)	(0.36899)	(1.97710)	(0.05062)	(0.12037)
	[0.39146]	[1.00398]	[0.43934]	[-1.86964]	[-4.41274]
D(CORRUPTION(-2))	-0.040679	0.260800	-1.353066	-0.035684	-0.140277
	(0.04284)	(0.37693)	(2.01965)	(0.05171)	(0.12296)
	[-0.94957]	[0.69191]	[-0.66995]	[-0.69013]	[-1.14081]

Estimated coefficients on the first line, standard errors in parenthesis (); and t-statistics in brackets [].
The results are computed separately for each equation using the appropriate residuals

Appendix B8: Vector Error Correction Estimates for Equation 3 (1980-2012): Southern Africa (Alternative combinations)

Variables	D(LAWRULE)	D(POLITY)	D(INFLATION)	D(QLEGAL)	D(CORRUPTION)
D(LAWRULE(-1))	0.192145	41.79696	-24.02135	0.290990	-0.570696
	(0.45082)	(33.6207)	(16.6575)	(0.59621)	(1.22044)
	[0.42621]	[1.24319]	[-1.44207]	[0.48807]	[-0.46762]
D(LAWRULE(-2))	0.139503	15.10766	-8.464973	1.233827	-1.230486
	(0.35721)	(26.6394)	(13.1986)	(0.47241)	(0.96702)
	[0.39053]	[0.56712]	[-0.64135]	[2.61178]	[-1.27245]
D(POLITY(-1))	0.001872	0.047893	-0.083826	0.003774	-0.016872
	(0.00304)	(0.22695)	(0.11245)	(0.00402)	(0.00824)
	[0.61520]	[0.21103]	[-0.74548]	[0.93775]	[-2.04798]
D(POLITY(-2))	-0.001999	-0.292805	-0.081112	-0.005906	-0.009981
	(0.00280)	(0.20898)	(0.10354)	(0.00371)	(0.00759)
	[-0.71349]	[-1.40114]	[-0.78340]	[-1.59376]	[-1.31579]
D(INFLATION(-1))	0.001787	0.213270	-0.812424	0.002179	-0.023048
	(0.00676)	(0.50407)	(0.24974)	(0.00894)	(0.01830)
	[0.26441]	[0.42310]	[-3.25304]	[0.24381]	[-1.25960]
D(INFLATION(-2))	0.000131	-0.075388	-0.346887	0.002694	-0.003364
	(0.00352)	(0.26239)	(0.13000)	(0.00465)	(0.00952)
	[0.03737]	[-0.28731]	[-2.66828]	[0.57902]	[-0.35321]
D(QLEGAL(-1))	-0.152148	-1.006882	1.643948	-0.518530	0.643717
	(0.13226)	(9.86313)	(4.88673)	(0.17491)	(0.35803)
	[-1.15041]	[-0.10209]	[0.33641]	[-2.96460]	[1.79792]
D(QLEGAL(-2))	-0.032068	-5.683250	-3.493405	0.837814	0.062025
	(0.17948)	(13.3851)	(6.63172)	(0.23736)	(0.48588)
	[-0.17867]	[-0.42459]	[-0.52677]	[3.52966]	[0.12765]
D(CORRUPTION(-1))	-0.182188	8.524841	0.235403	-0.595396	0.327720
	(0.11737)	(8.75278)	(4.33660)	(0.15522)	(0.31773)
	[-1.55229]	[0.97396]	[0.05428]	[-3.83591]	[1.03145]
D(CORRUPTION(-2))	0.045289	7.924080	-1.364955	0.124102	0.263150
	(0.11405)	(8.50572)	(4.21419)	(0.15084)	(0.30876)
	[0.39708]	[0.93162]	[-0.32389]	[0.82276]	[0.85228]

Estimated coefficients on the first line, standard errors in parenthesis (); and t-statistics in brackets [].
The results are computed separately for each equation using the appropriate residuals

Appendix B9: Vector Error Correction Estimates for Equation 3 (1980-2012): West Africa (Alternative combinations)

Variables	D(LAWRULE)	D(POLITY)	D(INFLATION)	D(QLEGAL)	D(CORRUPTION)
D(LAWRULE(-1))	-0.172859	11.83064	-56.65644	1.421056	0.710702
	(0.25381)	(13.2981)	(94.2748)	(0.37727)	(0.73614)
	[-0.68105]	[0.88965]	[-0.60097]	[3.76670]	[0.96545]
D(LAWRULE(-2))	0.412234	2.562313	-33.55859	1.116243	2.017069
	(0.25224)	(13.2156)	(93.6900)	(0.37493)	(0.73157)
	[1.63431]	[0.19389]	[-0.35819]	[2.97722]	[2.75718]
D(POLITY(-1))	-4.82E-05	0.138511	0.492351	0.003948	-0.006101
	(0.00457)	(0.23958)	(1.69845)	(0.00680)	(0.01326)
	[-0.01054]	[0.57815]	[0.28988]	[0.58089]	[-0.46002]
D(POLITY(-2))	0.005233	0.106631	0.689971	0.007233	-0.001705
	(0.00451)	(0.23655)	(1.67702)	(0.00671)	(0.01309)
	[1.15908]	[0.45077]	[0.41143]	[1.07771]	[-0.13022]
D(INFLATION(-1))	0.000352	-0.032830	-0.435673	0.001194	-0.000706
	(0.00064)	(0.03343)	(0.23696)	(0.00095)	(0.00185)
	[0.55189]	[-0.98220]	[-1.83856]	[1.25874]	[-0.38147]
D(INFLATION(-2))	-0.000207	-0.006197	-0.504860	-0.000244	0.000813
	(0.00067)	(0.03503)	(0.24834)	(0.00099)	(0.00194)
	[-0.30992]	[-0.17691]	[-2.03293]	[-0.24516]	[0.41948]
D(QLEGAL(-1))	0.247509	0.263366	36.48934	-0.466029	-0.173567
	(0.13321)	(6.97915)	(49.4776)	(0.19800)	(0.38634)
	[1.85809]	[0.03774]	[0.73749]	[-2.35369]	[-0.44926]
D(QLEGAL(-2))	0.113216	0.167902	27.34614	-0.255701	-0.342123
	(0.14327)	(7.50640)	(53.2155)	(0.21296)	(0.41553)
	[0.79023]	[0.02237]	[0.51388]	[-1.20071]	[-0.82334]
D(CORRUPTION(-1))	-0.021866	-3.405540	-37.00262	-0.294407	-0.223393
	(0.08892)	(4.65900)	(33.0293)	(0.13218)	(0.25791)
	[-0.24589]	[-0.73096]	[-1.12030]	[-2.22738]	[-0.86618]
D(CORRUPTION(-2))	0.143605	-4.618989	5.099230	-0.243746	-0.403224
	(0.08557)	(4.48307)	(31.7821)	(0.12719)	(0.24817)
	[1.67830]	[-1.03032]	[0.16044]	[-1.91647]	[-1.62480]

Estimated coefficients on the first line, standard errors in parenthesis (); and t-statistics in brackets [].
The results are computed separately for each equation using the appropriate residuals

Appendix B10: Vector Error Correction Estimates for Equation 3 (1980-2012): East Africa (Alternative combinations)

Variables	D(LAWRULE)	D(POLITY)	D(INFLATION)	D(QLEGAL)	D(CORRUPTION)
D(LAWRULE(-1))	0.113282	-23.10464	-48.49936	-0.042694	-0.340651
	(0.27998)	(7.47500)	(40.1941)	(0.19503)	(0.61668)
	[0.40461]	[-3.09092]	[-1.20663]	[-0.21891]	[-0.55240]
D(LAWRULE(-2))	-0.017546	-5.963527	16.42319	0.042169	-0.351275
	(0.22799)	(6.08707)	(32.7310)	(0.15882)	(0.50218)
	[-0.07696]	[-0.97970]	[0.50176]	[0.26552]	[-0.69951]
D(POLITY(-1))	0.003152	0.084425	-0.778562	-0.007857	0.012444
	(0.00744)	(0.19870)	(1.06846)	(0.00518)	(0.01639)
	[0.42350]	[0.42488]	[-0.72868]	[-1.51550]	[0.75911]
D(POLITY(-2))	0.001651	0.217889	0.850908	-0.001808	0.007246
	(0.00730)	(0.19503)	(1.04872)	(0.00509)	(0.01609)
	[0.22598]	[1.11719]	[0.81138]	[-0.35526]	[0.45031]
D(INFLATION(-1))	-0.001003	-0.069543	-0.339108	0.000996	0.001939
	(0.00216)	(0.05765)	(0.31002)	(0.00150)	(0.00476)
	[-0.46470]	[-1.20619]	[-1.09384]	[0.66234]	[0.40768]
D(INFLATION(-2))	-0.004188	-0.096055	-0.400781	-0.000670	0.012763
	(0.00185)	(0.04948)	(0.26607)	(0.00129)	(0.00408)
	[-2.25959]	[-1.94119]	[-1.50628]	[-0.51883]	[3.12647]
D(QLEGAL(-1))	0.370663	-24.50687	14.31867	0.112872	-2.134342
	(0.63090)	(16.8442)	(90.5736)	(0.43948)	(1.38962)
	[0.58752]	[-1.45492]	[0.15809]	[0.25683]	[-1.53592]
D(QLEGAL(-2))	0.155124	-33.32437	14.16232	-0.265805	-0.164263
	(0.40519)	(10.8181)	(58.1704)	(0.28226)	(0.89248)
	[0.38284]	[-3.08043]	[0.24346]	[-0.94171]	[-0.18405]
D(CORRUPTION(-1))	-0.036490	2.848192	-21.50456	0.009832	-0.169143
	(0.12906)	(3.44565)	(18.5278)	(0.08990)	(0.28426)
	[-0.28274]	[0.82660]	[-1.16067]	[0.10937]	[-0.59502]
D(CORRUPTION(-2))	-0.035613	0.207435	6.116548	-0.103430	0.212694
	(0.13532)	(3.61295)	(19.4273)	(0.09427)	(0.29806)
	[-0.26317]	[0.05741]	[0.31484]	[-1.09721]	[0.71359]

Estimated coefficients on the first line, standard errors in parenthesis (); and t-statistics in brackets [].
The results are computed separately for each equation using the appropriate residuals

Appendix B11: Vector Error Correction Estimates for Equation 4 (1980-2012): Pooled data (Alternative combinations)

Variables	D(LAWRULE)	D(POLITY)	D(INFLATION)	D(QLEGAL)	D(CORRUPTION)
D(LAWRULE(-1))	-0.432547	0.743096	-13.20058	-0.146687	-0.027415
	(0.08128)	(2.16838)	(10.1748)	(0.10198)	(0.22175)
	[-5.32200]	[0.34270]	[-1.29737]	[-1.43840]	[-0.12363]
D(LAWRULE(-2))	0.091346	0.573604	4.572980	0.007007	0.555447
	(0.08627)	(2.30173)	(10.8006)	(0.10825)	(0.23538)
	[1.05879]	[0.24921]	[0.42340]	[0.06473]	[2.35974]
D(POLITY(-1))	-0.001582	0.059524	0.189207	-0.000209	-0.004022
	(0.00278)	(0.07412)	(0.34781)	(0.00349)	(0.00758)
	[-0.56928]	[0.80305]	[0.54400]	[-0.05987]	[-0.53056]
D(POLITY(-2))	-0.000361	-0.197180	0.382758	-0.003811	-0.008169
	(0.00278)	(0.07411)	(0.34776)	(0.00349)	(0.00758)
	[-0.13004]	[-2.66058]	[1.10064]	[-1.09349]	[-1.07779]
D(INFLATION(-1))	0.000400	-0.020347	-0.540345	0.000256	-0.002522
	(0.00059)	(0.01576)	(0.07395)	(0.00074)	(0.00161)
	[0.67731]	[-1.29107]	[-7.30675]	[0.34484]	[-1.56500]
D(INFLATION(-2))	-0.000690	-0.010608	-0.374325	-0.001288	0.001439
	(0.00059)	(0.01577)	(0.07399)	(0.00074)	(0.00161)
	[-1.16707]	[-0.67274]	[-5.05919]	[-1.73743]	[0.89268]
D(QLEGAL(-1))	0.116839	-0.701031	8.139161	-0.447063	0.174453
	(0.06385)	(1.70341)	(7.99302)	(0.08011)	(0.17420)
	[1.82998]	[-0.41155]	[1.01828]	[-5.58050]	[1.00147]
D(QLEGAL(-2))	0.036759	-0.696772	5.516448	0.005380	-0.032569
	(0.06320)	(1.68608)	(7.91171)	(0.07930)	(0.17243)
	[0.58164]	[-0.41325]	[0.69725]	[0.06785]	[-0.18889]
D(CORRUPTION(-1))	0.028798	0.948166	-4.333348	-0.028963	-0.450489
	(0.02940)	(0.78450)	(3.68118)	(0.03690)	(0.08023)
	[0.97937]	[1.20862]	[-1.17716]	[-0.78501]	[-5.61521]
D(CORRUPTION(-2))	0.037780	0.555412	1.869297	0.000404	-0.089875
	(0.02975)	(0.79372)	(3.72444)	(0.03733)	(0.08117)
	[1.26990]	[0.69975]	[0.50190]	[0.01082]	[-1.10724]

Estimated coefficients on the first line, standard errors in parenthesis (); and t-statistics in brackets [].
The results are computed separately for each equation using the appropriate residuals

Appendix B12: Vector Error Correction Estimates for Equation 4 (1980-2012): North Africa (Alternative combinations)

Variables	D(LAWRULE)	D(POLITY)	D(INFLATION)	D(QLEGAL)	D(CORRUPTION)
D(LAWRULE(-1))	-0.292096	1.091506	-11.52663	-0.178064	-0.204772
	(0.12265)	(1.19943)	(6.33932)	(0.15431)	(0.36934)
	[-2.38152]	[0.91002]	[-1.81828]	[-1.15392]	[-0.55443]
D(LAWRULE(-2))	0.259759	0.837733	-0.168960	-0.076332	0.807446
	(0.12914)	(1.26292)	(6.67488)	(0.16248)	(0.38889)
	[2.01140]	[0.66333]	[-0.02531]	[-0.46979]	[2.07631]
D(POLITY(-1))	-0.009151	-0.130879	-0.245724	-0.000667	0.010742
	(0.01359)	(0.13289)	(0.70236)	(0.01710)	(0.04092)
	[-0.67338]	[-0.98487]	[-0.34986]	[-0.03902]	[0.26251]
D(POLITY(-2))	-0.022774	-0.076185	0.371644	0.044079	0.006986
	(0.01786)	(0.17463)	(0.92295)	(0.02247)	(0.05377)
	[-1.27536]	[-0.43627]	[0.40267]	[1.96201]	[0.12992]
D(INFLATION(-1))	0.004783	0.013025	-0.548066	0.002572	-0.000311
	(0.00211)	(0.02066)	(0.10919)	(0.00266)	(0.00636)
	[2.26393]	[0.63047]	[-5.01932]	[0.96757]	[-0.04886]
D(INFLATION(-2))	0.001479	0.007534	-0.291872	0.001862	0.011978
	(0.00196)	(0.01915)	(0.10120)	(0.00246)	(0.00590)
	[0.75531]	[0.39348]	[-2.88419]	[0.75597]	[2.03161]
D(QLEGAL(-1))	0.072112	0.696478	6.303695	-0.564876	0.327709
	(0.08855)	(0.86598)	(4.57694)	(0.11141)	(0.26666)
	[0.81434]	[0.80427]	[1.37727]	[-5.07016]	[1.22895]
D(QLEGAL(-2))	-0.048985	0.424687	3.090593	-0.089737	0.186986
	(0.08425)	(0.82387)	(4.35438)	(0.10599)	(0.25369)
	[-0.58145]	[0.51548]	[0.70977]	[-0.84662]	[0.73706]
D(CORRUPTION(-1))	-0.002440	-0.158081	1.113246	-0.072250	-0.520678
	(0.04032)	(0.39429)	(2.08391)	(0.05073)	(0.12141)
	[-0.06051]	[-0.40093]	[0.53421]	[-1.42429]	[-4.28856]
D(CORRUPTION(-2))	-0.046371	-0.132743	-1.883343	-0.097465	-0.156947
	(0.04006)	(0.39172)	(2.07037)	(0.05040)	(0.12062)
	[-1.15763]	[-0.33887]	[-0.90967]	[-1.93395]	[-1.30115]

Estimated coefficients on the first line, standard errors in parenthesis (); and t-statistics in brackets [].
The results are computed separately for each equation using the appropriate residuals

Appendix B13: Vector Error Correction Estimates for Equation 4 (1980-2012): Southern Africa (Alternative combinations)

Variables	D(LAWRULE)	D(POLITY)	D(INFLATION)	D(QLEGAL)	D(CORRUPTION)
D(LAWRULE(-1))	1.419831	-48.05147	0.997160	1.069099	-0.152981
	(0.22812)	(37.6498)	(22.3976)	(0.70898)	(1.71801)
	[6.22395]	[-1.27627]	[0.04452]	[1.50794]	[-0.08905]
D(LAWRULE(-2))	0.705030	-19.80700	3.044369	1.424674	-0.996460
	(0.15377)	(25.3779)	(15.0972)	(0.47789)	(1.15802)
	[4.58505]	[-0.78048]	[0.20165]	[2.98117]	[-0.86048]
D(POLITY(-1))	-0.002380	0.031334	-0.001230	-6.25E-05	-0.001287
	(0.00117)	(0.19243)	(0.11447)	(0.00362)	(0.00878)
	[-2.04161]	[0.16284]	[-0.01074]	[-0.01724]	[-0.14662]
D(POLITY(-2))	-0.008260	-0.299855	0.027891	-0.008666	0.001896
	(0.00119)	(0.19720)	(0.11731)	(0.00371)	(0.00900)
	[-6.91278]	[-1.52059]	[0.23776]	[-2.33365]	[0.21074]
D(INFLATION(-1))	-9.94E-05	-0.361785	-0.518059	0.000888	-0.013568
	(0.00230)	(0.37913)	(0.22554)	(0.00714)	(0.01730)
	[-0.04329]	[-0.95425]	[-2.29696]	[0.12441]	[-0.78427]
D(INFLATION(-2))	2.69E-06	-0.197269	-0.286169	0.000968	-0.001132
	(0.00141)	(0.23230)	(0.13820)	(0.00437)	(0.01060)
	[0.00191]	[-0.84918]	[-2.07073]	[0.22131]	[-0.10682]
D(QLEGAL(-1))	0.065402	-3.647207	0.122196	-0.401286	0.342327
	(0.06263)	(10.3367)	(6.14922)	(0.19465)	(0.47167)
	[1.04425]	[-0.35284]	[0.01987]	[-2.06159]	[0.72577]
D(QLEGAL(-2))	0.133683	-9.710537	-4.365078	0.761879	-0.128250
	(0.07591)	(12.5281)	(7.45292)	(0.23592)	(0.57167)
	[1.76108]	[-0.77510]	[-0.58569]	[3.22943]	[-0.22434]
D(CORRUPTION(-1))	-0.126116	6.746589	0.301013	-0.370212	0.037428
	(0.03942)	(6.50548)	(3.87007)	(0.12250)	(0.29685)
	[-3.19951]	[1.03706]	[0.07778]	[-3.02203]	[0.12608]
D(CORRUPTION(-2))	0.198498	-4.449817	1.576914	0.294447	0.043218
	(0.04762)	(7.85858)	(4.67502)	(0.14798)	(0.35860)
	[4.16873]	[-0.56624]	[0.33731]	[1.98971]	[0.12052]

Estimated coefficients on the first line, standard errors in parenthesis (); and t-statistics in brackets [].
The results are computed separately for each equation using the appropriate residuals

Appendix B14: Vector Error Correction Estimates for Equation 5 (1980-2012): West Africa (Alternative combinations)

Variables	D(LAWRULE)	D(POLITY)	D(INFLATION)	D(QLEGAL)	D(CORRUPTION)
D(LAWRULE(-1))	-0.265516	7.998652	-81.75431	1.194706	0.765744
	(0.27440)	(12.9887)	(86.2628)	(0.40680)	(0.67735)
	[-0.96762]	[0.61581]	[-0.94774]	[2.93683]	[1.13050]
D(LAWRULE(-2))	0.293299	-0.523618	-61.23408	0.864879	1.986629
	(0.27397)	(12.9683)	(86.1267)	(0.40616)	(0.67628)
	[1.07056]	[-0.04038]	[-0.71098]	[2.12941]	[2.93757]
D(POLITY(-1))	-0.001143	0.093072	0.516541	-0.001758	-0.008670
	(0.00511)	(0.24175)	(1.60557)	(0.00757)	(0.01261)
	[-0.22370]	[0.38499]	[0.32172]	[-0.23212]	[-0.68766]
D(POLITY(-2))	0.003081	0.064484	0.675261	0.002471	-0.004726
	(0.00506)	(0.23940)	(1.58992)	(0.00750)	(0.01248)
	[0.60926]	[0.26936]	[0.42471]	[0.32961]	[-0.37853]
D(INFLATION(-1))	0.000548	-0.037478	-0.358178	0.000528	-0.000547
	(0.00077)	(0.03641)	(0.24183)	(0.00114)	(0.00190)
	[0.71232]	[-1.02926]	[-1.48111]	[0.46334]	[-0.28822]
D(INFLATION(-2))	-0.000582	-0.006956	-0.421036	-0.000812	0.000466
	(0.00074)	(0.03518)	(0.23362)	(0.00110)	(0.00183)
	[-0.78279]	[-0.19776]	[-1.80224]	[-0.73721]	[0.25425]
D(QLEGAL(-1))	0.160221	-1.517570	43.19833	-0.686922	-0.376479
	(0.15688)	(7.42582)	(49.3175)	(0.23257)	(0.38725)
	[1.02131]	[-0.20436]	[0.87592]	[-2.95357]	[-0.97218]
D(QLEGAL(-2))	0.042388	-0.514206	45.33621	-0.383162	-0.502743
	(0.17471)	(8.27007)	(54.9244)	(0.25901)	(0.43128)
	[0.24262]	[-0.06218]	[0.82543]	[-1.47931]	[-1.16571]
D(CORRUPTION(-1))	0.019665	-2.948055	-36.64667	-0.339974	-0.293831
	(0.11406)	(5.39922)	(35.8581)	(0.16910)	(0.28156)
	[0.17240]	[-0.54602]	[-1.02199]	[-2.01048]	[-1.04357]
D(CORRUPTION(-2))	0.211175	-3.951333	-2.876219	-0.204760	-0.410016
	(0.10678)	(5.05433)	(33.5676)	(0.15830)	(0.26358)
	[1.97770]	[-0.78177]	[-0.08568]	[-1.29350]	[-1.55557]

Estimated coefficients on the first line, standard errors in parenthesis (); and t-statistics in brackets [].
The results are computed separately for each equation using the appropriate residuals

Appendix B15: Vector Error Correction Estimates for Equation 5 (1980-2012): East Africa (Alternative combinations)

Variables	D(LAWRULE)	D(POLITY)	D(INFLATION)	D(QLEGAL)	D(CORRUPTION)
D(LAWRULE(-1))	-0.305688	-23.43895	-13.11830	-0.189534	0.248627
	(0.27370)	(3.91692)	(31.9552)	(0.13561)	(0.48766)
	[-1.11686]	[-5.98402]	[-0.41052]	[-1.39764]	[0.50984]
D(LAWRULE(-2))	-0.088422	-10.25567	17.90417	-0.031097	0.007096
	(0.26562)	(3.80121)	(31.0112)	(0.13160)	(0.47325)
	[-0.33289]	[-2.69800]	[0.57735]	[-0.23629]	[0.01499]
D(POLITY(-1))	0.004303	0.035107	0.348351	-0.005967	0.020460
	(0.00926)	(0.13258)	(1.08165)	(0.00459)	(0.01651)
	[0.46450]	[0.26479]	[0.32205]	[-1.29984]	[1.23948]
D(POLITY(-2))	0.004175	-0.076799	0.470683	-0.001202	0.012024
	(0.00838)	(0.11989)	(0.97808)	(0.00415)	(0.01493)
	[0.49842]	[-0.64058]	[0.48123]	[-0.28948]	[0.80559]
D(INFLATION(-1))	-0.002523	-0.216843	-0.556551	-0.001351	0.002196
	(0.00342)	(0.04891)	(0.39903)	(0.00169)	(0.00609)
	[-0.73823]	[-4.43336]	[-1.39475]	[-0.79757]	[0.36066]
D(INFLATION(-2))	-0.004323	-0.160166	-0.257406	-0.001671	0.014323
	(0.00229)	(0.03278)	(0.26740)	(0.00113)	(0.00408)
	[-1.88754]	[-4.88656]	[-0.96262]	[-1.47271]	[3.50983]
D(QLEGAL(-1))	0.152237	-44.19445	-45.80756	-0.049158	-1.698581
	(0.76667)	(10.9717)	(89.5096)	(0.37986)	(1.36597)
	[0.19857]	[-4.02805]	[-0.51176]	[-0.12941]	[-1.24350]
D(QLEGAL(-2))	-0.019461	-43.06412	-19.36456	-0.453579	-0.192909
	(0.50720)	(7.25850)	(59.2166)	(0.25130)	(0.90368)
	[-0.03837]	[-5.93292]	[-0.32701]	[-1.80493]	[-0.21347]
D(CORRUPTION(-1))	-0.091229	6.913960	-12.69567	-0.005874	-0.004318
	(0.16858)	(2.41259)	(19.6825)	(0.08353)	(0.30037)
	[-0.54114]	[2.86578]	[-0.64502]	[-0.07033]	[-0.01438]
D(CORRUPTION(-2))	-0.008010	0.027869	8.301707	-0.127956	0.263243
	(0.15843)	(2.26722)	(18.4966)	(0.07849)	(0.28227)
	[-0.05056]	[0.01229]	[0.44882]	[-1.63012]	[0.93260]

Estimated coefficients on the first line, standard errors in parenthesis (); and t-statistics in brackets [].
The results are computed separately for each equation using the appropriate residuals

Appendix B16: Vector Error Correction Estimates for Equation 5 (1980-2012): Pooled data (Alternative combinations)

	D(LAWRULE)	D(POLITY)	D(INFLATION)	D(QLEGAL)	D(CORRUPTION)
D(LAWRULE(-1))	-0.426971	0.583018	-10.31239	-0.125049	-0.055355
	(0.08304)	(2.31929)	(9.30832)	(0.10535)	(0.22985)
	[-5.14205]	[0.25138]	[-1.10787]	[-1.18701]	[-0.24084]
D(LAWRULE(-2))	0.081261	0.132439	2.954688	-0.004083	0.595174
	(0.08639)	(2.41294)	(9.68418)	(0.10960)	(0.23913)
	[0.94065]	[0.05489]	[0.30510]	[-0.03726]	[2.48895]
D(POLITY(-1))	-0.001314	0.008794	0.230423	-0.000128	-0.001388
	(0.00268)	(0.07481)	(0.30026)	(0.00340)	(0.00741)
	[-0.49039]	[0.11755]	[0.76741]	[-0.03777]	[-0.18724]
D(POLITY(-2))	-0.001395	-0.273260	0.275769	-0.002798	-0.003525
	(0.00270)	(0.07532)	(0.30231)	(0.00342)	(0.00746)
	[-0.51727]	[-3.62775]	[0.91220]	[-0.81772]	[-0.47219]
D(INFLATION(-1))	0.001327	-0.016252	-0.217519	0.001646	-0.004247
	(0.00082)	(0.02304)	(0.09247)	(0.00105)	(0.00228)
	[1.60893]	[-0.70535]	[-2.35219]	[1.57258]	[-1.86002]
D(INFLATION(-2))	-0.000199	-0.007402	-0.218219	-0.000733	4.33E-05
	(0.00066)	(0.01851)	(0.07431)	(0.00084)	(0.00183)
	[-0.29957]	[-0.39978]	[-2.93668]	[-0.87119]	[0.02362]
D(QLEGAL(-1))	0.120738	-0.287612	6.354329	-0.478265	0.177849
	(0.06458)	(1.80370)	(7.23902)	(0.08193)	(0.17875)
	[1.86971]	[-0.15946]	[0.87779]	[-5.83756]	[0.99496]
D(QLEGAL(-2))	0.039178	-0.530649	4.564228	0.008644	-0.028920
	(0.06368)	(1.77876)	(7.13892)	(0.08080)	(0.17628)
	[0.61520]	[-0.29833]	[0.63934]	[0.10698]	[-0.16406]
D(CORRUPTION(-1))	0.013988	0.074333	-5.972709	-0.026372	-0.380859
	(0.02832)	(0.79112)	(3.17509)	(0.03593)	(0.07840)
	[0.49387]	[0.09396]	[-1.88111]	[-0.73388]	[-4.85783]
D(CORRUPTION(-2))	0.023559	-0.014942	-0.365810	0.012918	-0.033406
	(0.02881)	(0.80464)	(3.22936)	(0.03655)	(0.07974)
	[0.81779]	[-0.01857]	[-0.11328]	[0.35345]	[-0.41893]

Estimated coefficients on the first line, standard errors in parenthesis (); and t-statistics in brackets [].
The results are computed separately for each equation using the appropriate residuals

Appendix B17: Vector Error Correction Estimates for Equation 5 (1980-2012): North Africa (Alternative combinations)

Variables	D(LAWRULE)	D(POLITY)	D(INFLATION)	D(QLEGAL)	D(CORRUPTION)
D(LAWRULE(-1))	-0.442727	-0.150778	-8.261535	-0.223325	-0.492638
	(0.11772)	(1.12654)	(5.12994)	(0.14789)	(0.35179)
	[-3.76097]	[-0.13384]	[-1.61046]	[-1.51010]	[-1.40037]
D(LAWRULE(-2))	0.186987	0.085858	-0.348397	-0.160109	0.507852
	(0.13260)	(1.26897)	(5.77855)	(0.16659)	(0.39627)
	[1.41016]	[0.06766]	[-0.06029]	[-0.96112]	[1.28158]
D(POLITY(-1))	-0.002831	-0.144770	0.451699	0.015386	0.018390
	(0.01278)	(0.12228)	(0.55683)	(0.01605)	(0.03819)
	[-0.22159]	[-1.18392]	[0.81120]	[0.95851]	[0.48161]
D(POLITY(-2))	-0.012184	-0.005971	0.828308	0.027523	-0.032052
	(0.01740)	(0.16648)	(0.75811)	(0.02186)	(0.05199)
	[-0.70037]	[-0.03586]	[1.09259]	[1.25936]	[-0.61653]
D(INFLATION(-1))	0.007188	0.005508	-0.210530	0.002860	-0.008424
	(0.00274)	(0.02624)	(0.11949)	(0.00344)	(0.00819)
	[2.62161]	[0.20992]	[-1.76188]	[0.83030]	[-1.02805]
D(INFLATION(-2))	0.002367	0.000434	-0.147088	0.000502	0.004934
	(0.00220)	(0.02104)	(0.09581)	(0.00276)	(0.00657)
	[1.07656]	[0.02062]	[-1.53524]	[0.18169]	[0.75097]
D(QLEGAL(-1))	-0.023422	0.611147	-1.226893	-0.569189	0.471485
	(0.10333)	(0.98888)	(4.50307)	(0.12982)	(0.30880)
	[-0.22667]	[0.61802]	[-0.27246]	[-4.38460]	[1.52682]
D(QLEGAL(-2))	-0.066470	0.682002	2.638204	-0.096178	0.232816
	(0.09273)	(0.88746)	(4.04124)	(0.11650)	(0.27713)
	[-0.71678]	[0.76849]	[0.65282]	[-0.82555]	[0.84009]
D(CORRUPTION(-1))	0.006558	-0.005550	-1.443094	-0.090516	-0.485762
	(0.03908)	(0.37400)	(1.70310)	(0.04910)	(0.11679)
	[0.16780]	[-0.01484]	[-0.84733]	[-1.84360]	[-4.15922]
D(CORRUPTION(-2))	-0.039583	-0.083662	-2.483055	-0.050896	-0.045140
	(0.03880)	(0.37129)	(1.69077)	(0.04874)	(0.11595)
	[-1.02025]	[-0.22532]	[-1.46859]	[-1.04420]	[-0.38932]

Appendix B18: Vector Error Correction Estimates for Equation 5 (1980-2012): Southern Africa (Alternative combinations)

Variables	D(LAWRULE)	D(POLITY)	D(INFLATION)	D(QLEGAL)	D(CORRUPTION)
D(LAWRULE(-1))	0.964220	19.32026	-33.03562	0.585970	0.011379
	(0.32478)	(41.5933)	(16.6785)	(0.67222)	(1.67035)
	[2.96888]	[0.46450]	[-1.98073]	[0.87170]	[0.00681]
D(LAWRULE(-2))	0.441356	10.91977	-12.95770	1.158460	-0.678152
	(0.21632)	(27.7041)	(11.1091)	(0.44774)	(1.11257)
	[2.04027]	[0.39416]	[-1.16641]	[2.58733]	[-0.60954]
D(POLITY(-1))	0.000317	-0.043511	-0.048357	0.002098	-0.003846
	(0.00195)	(0.24989)	(0.10020)	(0.00404)	(0.01004)
	[0.16260]	[-0.17412]	[-0.48260]	[0.51951]	[-0.38327]
D(POLITY(-2))	-0.003260	-0.478335	0.057144	-0.005725	0.000221
	(0.00170)	(0.21741)	(0.08718)	(0.00351)	(0.00873)
	[-1.92018]	[-2.20013]	[0.65547]	[-1.62934]	[0.02534]
D(INFLATION(-1))	0.004094	-0.194568	-0.871900	0.004328	-0.022277
	(0.00448)	(0.57327)	(0.22987)	(0.00926)	(0.02302)
	[0.91461]	[-0.33940]	[-3.79294]	[0.46710]	[-0.96764]
D(INFLATION(-2))	0.001623	-0.125168	-0.469197	0.002756	-0.005655
	(0.00280)	(0.35810)	(0.14359)	(0.00579)	(0.01438)
	[0.58055]	[-0.34954]	[-3.26753]	[0.47617]	[-0.39322]
D(QLEGAL(-1))	0.267879	7.998107	-6.648000	-0.264685	0.236799
	(0.12179)	(15.5971)	(6.25430)	(0.25208)	(0.62637)
	[2.19956]	[0.51279]	[-1.06295]	[-1.05002]	[0.37805]
D(QLEGAL(-2))	0.230450	10.24373	-8.573388	0.894756	-0.268738
	(0.12990)	(16.6362)	(6.67096)	(0.26887)	(0.66810)
	[1.77404]	[0.61575]	[-1.28518]	[3.32785]	[-0.40224]
D(CORRUPTION(-1))	0.029800	0.537236	-3.117658	-0.311234	-0.000879
	(0.06283)	(8.04687)	(3.22671)	(0.13005)	(0.32316)
	[0.47428]	[0.06676]	[-0.96620]	[-2.39317]	[-0.00272]
D(CORRUPTION(-2))	0.210821	3.828726	-3.265744	0.308717	-0.024420
	(0.07824)	(10.0203)	(4.01804)	(0.16194)	(0.40241)
	[2.69447]	[0.38210]	[-0.81277]	[1.90631]	[-0.06068]

Estimated coefficients on the first line, standard errors in parenthesis (); and t-statistics in brackets [].
The results are computed separately for each equation using the appropriate residuals

Appendix B19: Vector Error Correction Estimates for Equation 5 (1980-2012): West Africa (Alternative combinations)

Variables	D(LAWRULE)	D(POLITY)	D(INFLATION)	D(QLEGAL)	D(CORRUPTION)
D(LAWRULE(-1))	-0.467986	1.447782	-55.29273	0.098078	0.040472
	(0.26269)	(9.37509)	(57.8323)	(0.27164)	(0.50900)
	[-1.78148]	[0.15443]	[-0.95609]	[0.36106]	[0.07951]
D(LAWRULE(-2))	0.034004	0.014270	-21.74358	0.357454	1.490115
	(0.25862)	(9.22986)	(56.9364)	(0.26743)	(0.50112)
	[0.13148]	[0.00155]	[-0.38189]	[1.33662]	[2.97360]
D(POLITY(-1))	-0.000122	-0.012744	0.977482	0.000684	-0.016893
	(0.00678)	(0.24184)	(1.49184)	(0.00701)	(0.01313)
	[-0.01806]	[-0.05270]	[0.65522]	[0.09758]	[-1.28656]
D(POLITY(-2))	0.001811	0.049890	-0.010625	0.002949	-0.012687
	(0.00679)	(0.24234)	(1.49493)	(0.00702)	(0.01316)
	[0.26676]	[0.20587]	[-0.00711]	[0.41994]	[-0.96429]
D(INFLATION(-1))	0.000233	-0.032123	-0.391431	0.001046	0.000802
	(0.00103)	(0.03680)	(0.22699)	(0.00107)	(0.00200)
	[0.22576]	[-0.87297]	[-1.72442]	[0.98117]	[0.40148]
D(INFLATION(-2))	-3.26E-05	-0.013475	-0.427387	-0.000295	0.000419
	(0.00094)	(0.03337)	(0.20586)	(0.00097)	(0.00181)
	[-0.03489]	[-0.40380]	[-2.07609]	[-0.30549]	[0.23140]
D(QLEGAL(-1))	0.395680	-1.129659	58.22396	0.442110	-0.137836
	(0.25425)	(9.07371)	(55.9732)	(0.26291)	(0.49264)
	[1.55627]	[-0.12450]	[1.04021]	[1.68162]	[-0.27979]
D(QLEGAL(-2))	0.206474	-1.142442	17.24074	0.244922	-0.379719
	(0.20024)	(7.14638)	(44.0840)	(0.20706)	(0.38800)
	[1.03111]	[-0.15986]	[0.39109]	[1.18284]	[-0.97866]
D(CORRUPTION(-1))	-0.039666	1.057337	-48.85012	-0.373313	-0.060911
	(0.13582)	(4.84702)	(29.8999)	(0.14044)	(0.26316)
	[-0.29206]	[0.21814]	[-1.63379]	[-2.65816]	[-0.23146]
D(CORRUPTION(-2))	0.123598	-0.318560	5.063683	-0.294170	-0.178057
	(0.12798)	(4.56722)	(28.1739)	(0.13233)	(0.24797)
	[0.96579]	[-0.06975]	[0.17973]	[-2.22295]	[-0.71807]

Estimated coefficients on the first line, standard errors in parenthesis (); and t-statistics in brackets [].
The results are computed separately for each equation using the appropriate residuals

Appendix B20: Vector Error Correction Estimates for Equation 5 (1980-2012): East Africa (Alternative combinations)

Variables	D(LAWRULE)	D(POLITY)	D(INFLATION)	D(QLEGAL)	D(CORRUPTION)
D(LAWRULE(-1))	-0.455056	-20.73394	-6.811633	-0.274745	0.614181
	(0.26910)	(4.14848)	(30.9102)	(0.15294)	(0.58959)
	[-1.69103]	[-4.99796]	[-0.22037]	[-1.79645]	[1.04172]
D(LAWRULE(-2))	-0.008839	-7.024618	-3.018760	0.023930	-0.124888
	(0.27669)	(4.26544)	(31.7816)	(0.15725)	(0.60621)
	[-0.03195]	[-1.64687]	[-0.09498]	[0.15218]	[-0.20602]
D(POLITY(-1))	-0.000104	-0.071025	0.148802	-0.009542	0.011035
	(0.00843)	(0.12995)	(0.96825)	(0.00479)	(0.01847)
	[-0.01231]	[-0.54656]	[0.15368]	[-1.99174]	[0.59751]
D(POLITY(-2))	0.004959	-0.190622	0.629281	-0.001827	0.007944
	(0.00925)	(0.14255)	(1.06210)	(0.00526)	(0.02026)
	[0.53630]	[-1.33727]	[0.59249]	[-0.34772]	[0.39211]
D(INFLATION(-1))	0.002314	-0.214442	-0.749706	0.001318	0.000590
	(0.00328)	(0.05051)	(0.37635)	(0.00186)	(0.00718)
	[0.70633]	[-4.24556]	[-1.99207]	[0.70799]	[0.08214]
D(INFLATION(-2))	-0.003053	-0.174784	-0.431228	-0.001116	0.010840
	(0.00249)	(0.03837)	(0.28589)	(0.00141)	(0.00545)
	[-1.22682]	[-4.55520]	[-1.50834]	[-0.78880]	[1.98780]
D(QLEGAL(-1))	0.063479	-34.87483	10.60055	-0.167955	-0.843872
	(0.73284)	(11.2976)	(84.1783)	(0.41650)	(1.60563)
	[0.08662]	[-3.08691]	[0.12593]	[-0.40326]	[-0.52557]
D(QLEGAL(-2))	0.083068	-19.42305	-12.28740	-0.297621	0.221439
	(0.44024)	(6.78689)	(50.5688)	(0.25021)	(0.96456)
	[0.18869]	[-2.86185]	[-0.24298]	[-1.18951]	[0.22958]
D(CORRUPTION(-1))	-0.041967	17.49414	-24.18794	0.084289	-0.234173
	(0.23097)	(3.56073)	(26.5308)	(0.13127)	(0.50605)
	[-0.18169]	[4.91308]	[-0.91169]	[0.64211]	[-0.46274]
D(CORRUPTION(-2))	0.078221	9.160112	-11.22433	-0.025172	0.007833
	(0.18361)	(2.83064)	(21.0910)	(0.10435)	(0.40229)
	[0.42600]	[3.23605]	[-0.53219]	[-0.24122]	[0.01947]

Estimated coefficients on the first line, standard errors in parenthesis (); and t-statistics in brackets [].
The results are computed separately for each equation using the appropriate residuals

Appendix B21: Vector Error Correction Estimates for Equation 6 (1980-2012): Pooled data (Alternative combinations)

Variables	D(LAWRULE)	D(POLITY)	D(INFLATION)	D(QLEGAL)	D(CORRUPTION)
D(LAWRULE(-1))	-0.437503	0.409541	-8.782731	-0.140682	0.012443
	(0.08189)	(2.25659)	(9.91807)	(0.10404)	(0.22418)
	[-5.34274]	[0.18149]	[-0.88553]	[-1.35217]	[0.05550]
D(LAWRULE(-2))	0.085775	-0.440710	8.768758	-0.006766	0.637326
	(0.08568)	(2.36123)	(10.3780)	(0.10887)	(0.23458)
	[1.00106]	[-0.18664]	[0.84494]	[-0.06215]	[2.71694]
D(POLITY(-1))	-1.37E-05	0.047878	0.446933	0.000758	-0.002161
	(0.00282)	(0.07779)	(0.34189)	(0.00359)	(0.00773)
	[-0.00487]	[0.61549]	[1.30725]	[0.21139]	[-0.27968]
D(POLITY(-2))	0.000138	-0.212870	0.557410	-0.002556	-0.009148
	(0.00284)	(0.07834)	(0.34432)	(0.00361)	(0.00778)
	[0.04868]	[-2.71723]	[1.61888]	[-0.70764]	[-1.17539]
D(INFLATION(-1))	0.000535	0.001837	-0.354780	0.000802	-0.003981
	(0.00074)	(0.02043)	(0.08981)	(0.00094)	(0.00203)
	[0.72114]	[0.08990]	[-3.95044]	[0.85094]	[-1.96134]
D(INFLATION(-2))	-0.000439	0.005609	-0.265246	-0.001094	0.000419
	(0.00064)	(0.01764)	(0.07755)	(0.00081)	(0.00175)
	[-0.68592]	[0.31792]	[-3.42042]	[-1.34531]	[0.23886]
D(QLEGAL(-1))	0.132776	-0.069076	8.120531	-0.460848	0.135248
	(0.06352)	(1.75042)	(7.69336)	(0.08070)	(0.17389)
	[2.09033]	[-0.03946]	[1.05552]	[-5.71032]	[0.77776]
D(QLEGAL(-2))	0.048744	-0.080503	3.709382	0.021910	-0.067940
	(0.06274)	(1.72906)	(7.59948)	(0.07972)	(0.17177)
	[0.77687]	[-0.04656]	[0.48811]	[0.27484]	[-0.39552]
D(CORRUPTION(-1))	0.022988	0.224254	-3.139422	-0.022243	-0.411555
	(0.02843)	(0.78357)	(3.44389)	(0.03613)	(0.07784)
	[0.80847]	[0.28620]	[-0.91159]	[-0.61568]	[-5.28698]
D(CORRUPTION(-2))	0.025607	0.002993	1.146091	0.013924	-0.062612
	(0.02886)	(0.79536)	(3.49571)	(0.03667)	(0.07901)
	[0.88721]	[0.00376]	[0.32786]	[0.37971]	[-0.79241]

Estimated coefficients on the first line, standard errors in parenthesis (); and t-statistics in brackets [].
The results are computed separately for each equation using the appropriate residuals

Appendix B22: Vector Error Correction Estimates for Equation 6 (1980-2012): North Africa (Alternative combinations)

Variables	D(LAWRULE)	D(POLITY)	D(INFLATION)	D(QLEGAL)	D(CORRUPTION)
D(LAWRULE(-1))	-0.450914	-0.185566	-5.309490	-0.155614	-0.463148
	(0.11160)	(1.14421)	(5.83475)	(0.14932)	(0.36565)
	[-4.04060]	[-0.16218]	[-0.90998]	[-1.04219]	[-1.26663]
D(LAWRULE(-2))	0.171696	-0.037851	1.984021	-0.068820	0.474153
	(0.12573)	(1.28911)	(6.57367)	(0.16822)	(0.41196)
	[1.36561]	[-0.02936]	[0.30181]	[-0.40910]	[1.15097]
D(POLITY(-1))	-0.003856	-0.174742	-0.206838	0.012286	0.023903
	(0.01152)	(0.11814)	(0.60243)	(0.01542)	(0.03775)
	[-0.33468]	[-1.47915]	[-0.34334]	[0.79694]	[0.63315]
D(POLITY(-2))	-0.017859	-0.007331	0.307837	0.017451	-0.028756
	(0.01592)	(0.16324)	(0.83241)	(0.02130)	(0.05217)
	[-1.12177]	[-0.04491]	[0.36981]	[0.81923]	[-0.55125]
D(INFLATION(-1))	0.005894	0.005338	-0.396995	0.001732	0.000895
	(0.00220)	(0.02260)	(0.11526)	(0.00295)	(0.00722)
	[2.67371]	[0.23616]	[-3.44420]	[0.58730]	[0.12388]
D(INFLATION(-2))	0.001987	0.004991	-0.207433	-0.000189	0.010282
	(0.00191)	(0.01963)	(0.10011)	(0.00256)	(0.00627)
	[1.03789]	[0.25420]	[-2.07201]	[-0.07373]	[1.63893]
D(QLEGAL(-1))	0.168330	0.325782	10.44680	-0.594382	0.393305
	(0.09158)	(0.93902)	(4.78845)	(0.12254)	(0.30008)
	[1.83798]	[0.34694]	[2.18167]	[-4.85053]	[1.31065]
D(QLEGAL(-2))	0.022675	0.374701	6.558396	-0.155306	0.229914
	(0.08675)	(0.88945)	(4.53564)	(0.11607)	(0.28424)
	[0.26139]	[0.42127]	[1.44597]	[-1.33804]	[0.80887]
D(CORRUPTION(-1))	0.051112	-0.027338	1.117681	-0.089071	-0.471639
	(0.03640)	(0.37321)	(1.90316)	(0.04870)	(0.11927)
	[1.40419]	[-0.07325]	[0.58728]	[-1.82886]	[-3.95447]
D(CORRUPTION(-2))	-0.040240	0.006832	-1.572307	-0.064196	-0.029697
	(0.03606)	(0.36973)	(1.88538)	(0.04825)	(0.11815)
	[-1.11592]	[0.01848]	[-0.83395]	[-1.33055]	[-0.25134]

Estimated coefficients on the first line, standard errors in parenthesis (); and t-statistics in brackets [].
The results are computed separately for each equation using the appropriate residuals

Appendix B23: Vector Error Correction Estimates for Equation 6 (1980-2012): Southern Africa (Alternative combinations)

Variables	D(LAWRULE)	D(POLITY)	D(INFLATION)	D(QLEGAL)	D(CORRUPTION)
D(LAWRULE(-1))	0.652978	-15.14766	-24.01583	0.745624	3.638416
	(0.64488)	(61.1568)	(29.1181)	(0.80536)	(1.52524)
	[1.01256]	[-0.24769]	[-0.82477]	[0.92582]	[2.38547]
D(LAWRULE(-2))	0.365266	-9.556597	-12.52379	1.645810	1.843728
	(0.49204)	(46.6626)	(22.2171)	(0.61449)	(1.16376)
	[0.74234]	[-0.20480]	[-0.56370]	[2.67832]	[1.58429]
D(POLITY(-1))	-0.002245	0.004917	0.018345	0.003904	-0.001186
	(0.00254)	(0.24051)	(0.11451)	(0.00317)	(0.00600)
	[-0.88515]	[0.02044]	[0.16020]	[1.23269]	[-0.19767]
D(POLITY(-2))	-0.007274	-0.432634	0.137645	-0.006965	-0.019777
	(0.00343)	(0.32557)	(0.15501)	(0.00429)	(0.00812)
	[-2.11886]	[-1.32883]	[0.88796]	[-1.62453]	[-2.43568]
D(INFLATION(-1))	-0.004191	-0.165361	-0.526563	-0.003765	-0.006813
	(0.00476)	(0.45167)	(0.21505)	(0.00595)	(0.01126)
	[-0.87999]	[-0.36611]	[-2.44859]	[-0.63301]	[-0.60486]
D(INFLATION(-2))	-0.001690	-0.088398	-0.299857	-0.001240	0.000102
	(0.00297)	(0.28139)	(0.13398)	(0.00371)	(0.00702)
	[-0.56965]	[-0.31415]	[-2.23813]	[-0.33453]	[0.01460]
D(QLEGAL(-1))	0.102071	-3.864970	-6.185154	-0.245421	1.416944
	(0.20895)	(19.8156)	(9.43461)	(0.26095)	(0.49420)
	[0.48850]	[-0.19505]	[-0.65558]	[-0.94050]	[2.86717]
D(QLEGAL(-2))	0.151073	-2.291325	-12.23322	0.961308	0.885726
	(0.23370)	(22.1627)	(10.5521)	(0.29186)	(0.55273)
	[0.64644]	[-0.10339]	[-1.15931]	[3.29377]	[1.60245]
D(CORRUPTION(-1))	-0.218604	2.949713	4.742450	-0.447597	-0.177479
	(0.10541)	(9.99664)	(4.75962)	(0.13164)	(0.24931)
	[-2.07381]	[0.29507]	[0.99639]	[-3.40005]	[-0.71187]
D(CORRUPTION(-2))	0.078936	1.028489	0.120756	0.234061	0.368539
	(0.09897)	(9.38554)	(4.46866)	(0.12360)	(0.23407)
	[0.79760]	[0.10958]	[0.02702]	[1.89375]	[1.57446]

Estimated coefficients on the first line, standard errors in parenthesis (); and t-statistics in brackets [].
The results are computed separately for each equation using the appropriate residuals

Appendix B24: Vector Error Correction Estimates for Equation 6 (1980-2012): West Africa (Alternative combinations)

Error Correction:	D(LAWRULE)	D(POLITY)	D(INFLATION)	D(QLEGAL)	D(CORRUPTION)
D(LAWRULE(-1))	-0.724778	-7.087542	54.73242	-1.016610	-1.378400
	(0.49477)	(21.2037)	(144.908)	(0.76433)	(1.07793)
	[-1.46487]	[-0.33426]	[0.37770]	[-1.33007]	[-1.27874]
D(LAWRULE(-2))	-0.457610	-6.908473	135.2758	-0.096988	0.242514
	(0.47218)	(20.2355)	(138.292)	(0.72943)	(1.02871)
	[-0.96914]	[-0.34140]	[0.97819]	[-0.13296]	[0.23574]
D(POLITY(-1))	-4.36E-05	0.102970	0.167008	-0.000447	-0.005548
	(0.00583)	(0.24991)	(1.70793)	(0.00901)	(0.01270)
	[-0.00748]	[0.41202]	[0.09778]	[-0.04958]	[-0.43672]
D(POLITY(-2))	0.001626	0.068510	0.949159	0.002832	-0.005518
	(0.00569)	(0.24372)	(1.66562)	(0.00879)	(0.01239)
	[0.28583]	[0.28110]	[0.56985]	[0.32232]	[-0.44536]
D(INFLATION(-1))	0.000397	-0.049038	-0.530471	-0.000274	-0.001324
	(0.00079)	(0.03370)	(0.23031)	(0.00121)	(0.00171)
	[0.50541]	[-1.45510]	[-2.30325]	[-0.22519]	[-0.77288]
D(INFLATION(-2))	-2.32E-05	-0.011252	-0.495408	-0.001431	0.000968
	(0.00082)	(0.03496)	(0.23890)	(0.00126)	(0.00178)
	[-0.02838]	[-0.32188]	[-2.07374]	[-1.13546]	[0.54480]
D(QLEGAL(-1))	0.302662	6.732155	-49.27744	0.662331	0.792469
	(0.36713)	(15.7333)	(107.523)	(0.56713)	(0.79983)
	[0.82441]	[0.42789]	[-0.45830]	[1.16786]	[0.99079]
D(QLEGAL(-2))	0.405926	3.380265	-66.42242	0.234622	0.504488
	(0.29476)	(12.6319)	(86.3275)	(0.45534)	(0.64217)
	[1.37716]	[0.26760]	[-0.76942]	[0.51527]	[0.78560]
D(CORRUPTION(-1))	0.116466	-0.877353	-2.907608	-0.117052	-0.063006
	(0.13201)	(5.65746)	(38.6637)	(0.20393)	(0.28761)
	[0.88223]	[-0.15508]	[-0.07520]	[-0.57397]	[-0.21907]
D(CORRUPTION(-2))	0.254082	-1.958712	25.39329	-0.043612	-0.275257
	(0.09912)	(4.24761)	(29.0286)	(0.15311)	(0.21594)
	[2.56351]	[-0.46113]	[0.87477]	[-0.28484]	[-1.27471]

Estimated coefficients on the first line, standard errors in parenthesis (); and t-statistics in brackets [].
The results are computed separately for each equation using the appropriate residuals

Appendix B25: Vector Error Correction Estimates for Equation 6 (1980-2012): East Africa (Alternative combinations)

Error Correction:	D(LAWRULE)	D(POLITY)	D(INFLATION)	D(QLEGAL)	D(CORRUPTION)
D(LAWRULE(-1))	-0.300099	-20.06207	4.474713	-0.218112	0.233373
	(0.25772)	(5.95634)	(29.0458)	(0.15852)	(0.58732)
	[-1.16445]	[-3.36819]	[0.15406]	[-1.37593]	[0.39736]
D(LAWRULE(-2))	0.020738	-2.139275	8.978276	0.034728	-0.336141
	(0.23914)	(5.52691)	(26.9517)	(0.14709)	(0.54497)
	[0.08672]	[-0.38707]	[0.33312]	[0.23610]	[-0.61680]
D(POLITY(-1))	-0.002258	0.053623	-0.014960	-0.009488	0.016618
	(0.00791)	(0.18291)	(0.89195)	(0.00487)	(0.01804)
	[-0.28532]	[0.29317]	[-0.01677]	[-1.94909]	[0.92139]
D(POLITY(-2))	0.002040	0.029500	1.172483	7.55E-05	0.008417
	(0.00871)	(0.20126)	(0.98142)	(0.00536)	(0.01984)
	[0.23432]	[0.14658]	[1.19468]	[0.01410]	[0.42414]
D(INFLATION(-1))	0.001310	-0.053681	-0.598396	0.001185	-0.001736
	(0.00212)	(0.04897)	(0.23882)	(0.00130)	(0.00483)
	[0.61808]	[-1.09610]	[-2.50562]	[0.90920]	[-0.35955]
D(INFLATION(-2))	-0.003764	-0.107230	-0.252204	-0.000663	0.010423
	(0.00226)	(0.05224)	(0.25473)	(0.00139)	(0.00515)
	[-1.66527]	[-2.05277]	[-0.99008]	[-0.47712]	[2.02363]
D(QLEGAL(-1))	0.249568	-38.27184	73.65285	-0.088436	-2.251567
	(0.76213)	(17.6143)	(85.8955)	(0.46878)	(1.73683)
	[0.32746]	[-2.17277]	[0.85747]	[-0.18865]	[-1.29636]
D(QLEGAL(-2))	0.096868	-34.24270	45.22459	-0.281423	-0.130446
	(0.48677)	(11.2502)	(54.8612)	(0.29941)	(1.10931)
	[0.19900]	[-3.04374]	[0.82435]	[-0.93993]	[-0.11759]
D(CORRUPTION(-1))	-0.176377	9.330675	-16.86113	0.030219	0.156897
	(0.17813)	(4.11686)	(20.0757)	(0.10956)	(0.40594)
	[-0.99017]	[2.26646]	[-0.83988]	[0.27581]	[0.38651]
D(CORRUPTION(-2))	0.014374	5.977765	-7.301474	-0.038433	0.259495
	(0.16336)	(3.77561)	(18.4116)	(0.10048)	(0.37229)
	[0.08799]	[1.58326]	[-0.39657]	[-0.38249]	[0.69703]

Estimated coefficients on the first line, standard errors in parenthesis (); and t-statistics in brackets [].
The results are computed separately for each equation using the appropriate residuals

Appendix B26: Vector Error Correction Estimates for Equation 7 (1980-2012): Pooled data (Alternative combinations)

Error Correction:	D(LAWRULE)	D(POLITY)	D(INFLATION)	D(QLEGAL)	D(CORRUPTION)
D(LAWRULE(-1))	-0.451092	0.234097	-12.69856	-0.147329	0.037135
	(0.08191)	(2.27814)	(10.2061)	(0.10365)	(0.22068)
	[-5.50731]	[0.10276]	[-1.24421]	[-1.42143]	[0.16828]
D(LAWRULE(-2))	0.081458	-0.625399	8.040180	-0.008483	0.555121
	(0.08611)	(2.39488)	(10.7291)	(0.10896)	(0.23199)
	[0.94603]	[-0.26114]	[0.74938]	[-0.07785]	[2.39292]
D(POLITY(-1))	-0.000818	0.038911	0.107815	-0.000709	-0.003894
	(0.00273)	(0.07581)	(0.33963)	(0.00345)	(0.00734)
	[-0.30015]	[0.51327]	[0.31745]	[-0.20542]	[-0.53025]
D(POLITY(-2))	-0.000799	-0.238284	0.212460	-0.003521	-0.004993
	(0.00276)	(0.07679)	(0.34400)	(0.00349)	(0.00744)
	[-0.28948]	[-3.10321]	[0.61761]	[-1.00790]	[-0.67130]
D(INFLATION(-1))	0.000236	-0.034692	-0.518151	0.000954	-0.001566
	(0.00061)	(0.01684)	(0.07543)	(0.00077)	(0.00163)
	[0.38977]	[-2.06052]	[-6.86951]	[1.24603]	[-0.96040]
D(INFLATION(-2))	-0.000589	-0.014244	-0.356727	-0.001037	0.001579
	(0.00060)	(0.01658)	(0.07429)	(0.00075)	(0.00161)
	[-0.98871]	[-0.85897]	[-4.80188]	[-1.37430]	[0.98307]
D(QLEGAL(-1))	0.139134	-0.000155	8.277632	-0.465460	0.091030
	(0.06377)	(1.77372)	(7.94629)	(0.08070)	(0.17182)
	[2.18174]	[-8.8e-05]	[1.04170]	[-5.76787]	[0.52981]
D(QLEGAL(-2))	0.053031	-0.031622	3.079717	0.014915	-0.092312
	(0.06306)	(1.75392)	(7.85757)	(0.07980)	(0.16990)
	[0.84096]	[-0.01803]	[0.39194]	[0.18690]	[-0.54334]
D(CORRUPTION(-1))	0.027517	0.058283	-4.259909	-0.025842	-0.426603
	(0.02897)	(0.80564)	(3.60926)	(0.03665)	(0.07804)
	[0.94999]	[0.07234]	[-1.18027]	[-0.70501]	[-5.46649]
D(CORRUPTION(-2))	0.032899	0.057107	0.499656	0.010664	-0.063982
	(0.02933)	(0.81587)	(3.65508)	(0.03712)	(0.07903)
	[1.12157]	[0.07000]	[0.13670]	[0.28729]	[-0.80959]

Estimated coefficients on the first line, standard errors in parenthesis (); and t-statistics in brackets [].
The results are computed separately for each equation using the appropriate residuals

Appendix B27: Vector Error Correction Estimates for Equation 7 (1980-2012): North Africa (Alternative combinations)

Variables	D(LAWRULE)	D(POLITY)	D(INFLATION)	D(QLEGAL)	D(CORRUPTION)
D(LAWRULE(-1))	-0.429612	0.512163	-14.28429	-0.209512	-0.275924
	(0.12912)	(1.22255)	(6.05967)	(0.15547)	(0.37388)
	[-3.32726]	[0.41893]	[-2.35727]	[-1.34760]	[-0.73801]
D(LAWRULE(-2))	0.220738	0.431710	-1.704040	-0.072526	0.505738
	(0.14008)	(1.32635)	(6.57415)	(0.16867)	(0.40562)
	[1.57578]	[0.32549]	[-0.25920]	[-0.42998]	[1.24683]
D(POLITY(-1))	-0.003304	-0.141826	-0.387114	0.014509	0.031284
	(0.01293)	(0.12243)	(0.60684)	(0.01557)	(0.03744)
	[-0.25553]	[-1.15842]	[-0.63792]	[0.93187]	[0.83554]
D(POLITY(-2))	-0.015761	-0.021272	0.142642	0.014530	-0.014007
	(0.01775)	(0.16805)	(0.83295)	(0.02137)	(0.05139)
	[-0.88803]	[-0.12658]	[0.17125]	[0.67989]	[-0.27256]
D(INFLATION(-1))	0.003790	0.001004	-0.452947	0.003009	-0.004609
	(0.00224)	(0.02119)	(0.10502)	(0.00269)	(0.00648)
	[1.69358]	[0.04740]	[-4.31309]	[1.11675]	[-0.71132]
D(INFLATION(-2))	0.000860	0.001417	-0.241713	0.000538	0.007575
	(0.00202)	(0.01913)	(0.09482)	(0.00243)	(0.00585)
	[0.42552]	[0.07408]	[-2.54931]	[0.22118]	[1.29495]
D(QLEGAL(-1))	0.015292	0.201863	12.48243	-0.598889	0.178593
	(0.10291)	(0.97444)	(4.82988)	(0.12392)	(0.29800)
	[0.14859]	[0.20716]	[2.58442]	[-4.83293]	[0.59931]
D(QLEGAL(-2))	-0.081168	0.180755	7.203783	-0.158080	0.091441
	(0.09620)	(0.91087)	(4.51479)	(0.11583)	(0.27856)
	[-0.84373]	[0.19844]	[1.59560]	[-1.36471]	[0.32827]
D(CORRUPTION(-1))	0.019143	-0.005769	0.932277	-0.077922	-0.531527
	(0.03914)	(0.37063)	(1.83708)	(0.04713)	(0.11335)
	[0.48903]	[-0.01557]	[0.50748]	[-1.65322]	[-4.68941]
D(CORRUPTION(-2))	-0.041551	-0.120074	-1.400557	-0.048830	-0.070643
	(0.03942)	(0.37320)	(1.84982)	(0.04746)	(0.11413)
	[-1.05417]	[-0.32174]	[-0.75713]	[-1.02887]	[-0.61896]

Estimated coefficients on the first line, standard errors in parenthesis (); and t-statistics in brackets [].
The results are computed separately for each equation using the appropriate residuals

Appendix B28: Vector Error Correction Estimates for Equation 7 (1980-2012): Southern Africa (Alternative combinations)

Variables	D(LAWRULE)	D(POLITY)	D(INFLATION)	D(QLEGAL)	D(CORRUPTION)
D(LAWRULE(-1))	0.038154	18.15576	1.722847	-0.149657	-0.281076
	(0.32497)	(29.7650)	(14.1523)	(0.50042)	(0.38268)
	[0.11741]	[0.60997]	[0.12174]	[-0.29906]	[-0.73450]
D(LAWRULE(-2))	-0.333448	2.758709	10.21612	0.718710	-0.699767
	(0.24011)	(21.9924)	(10.4567)	(0.36974)	(0.28275)
	[-1.38875]	[0.12544]	[0.97700]	[1.94381]	[-2.47489]
D(POLITY(-1))	-0.001293	-0.048761	-0.005359	0.000590	0.000515
	(0.00243)	(0.22270)	(0.10588)	(0.00374)	(0.00286)
	[-0.53164]	[-0.21896]	[-0.05062]	[0.15759]	[0.18002]
D(POLITY(-2))	-0.004073	-0.522813	0.037266	-0.006037	0.004905
	(0.00237)	(0.21685)	(0.10311)	(0.00365)	(0.00279)
	[-1.72039]	[-2.41095]	[0.36144]	[-1.65596]	[1.75950]
D(INFLATION(-1))	-0.003413	-0.128592	-0.516696	-0.001621	-0.014183
	(0.00491)	(0.44987)	(0.21390)	(0.00756)	(0.00578)
	[-0.69494]	[-0.28584]	[-2.41559]	[-0.21428]	[-2.45209]
D(INFLATION(-2))	-0.000711	-0.044373	-0.318510	0.000266	-0.005148
	(0.00312)	(0.28536)	(0.13568)	(0.00480)	(0.00367)
	[-0.22820]	[-0.15550]	[-2.34752]	[0.05534]	[-1.40323]
D(QLEGAL(-1))	-0.037767	4.832539	-0.433181	-0.460453	-0.515887
	(0.15369)	(14.0768)	(6.69306)	(0.23666)	(0.18098)
	[-0.24574]	[0.34330]	[-0.06472]	[-1.94561]	[-2.85052]
D(QLEGAL(-2))	0.087211	8.456511	-6.783955	0.718012	-1.396650
	(0.19080)	(17.4765)	(8.30953)	(0.29382)	(0.22469)
	[0.45707]	[0.48388]	[-0.81641]	[2.44371]	[-6.21593]
D(CORRUPTION(-1))	0.059034	4.873821	-1.654198	-0.278945	-0.533222
	(0.11785)	(10.7948)	(5.13257)	(0.18148)	(0.13878)
	[0.50091]	[0.45150]	[-0.32229]	[-1.53701]	[-3.84209]
D(CORRUPTION(-2))	0.252434	8.508920	-1.719428	0.268905	-0.877858
	(0.15165)	(13.8901)	(6.60431)	(0.23352)	(0.17858)
	[1.66460]	[0.61259]	[-0.26035]	[1.15151]	[-4.91577]

Estimated coefficients on the first line, standard errors in parenthesis (); and t-statistics in brackets [].
The results are computed separately for each equation using the appropriate residuals

Appendix B29: Vector Error Correction Estimates for Equation 7 (1980-2012): West Africa (Alternative combinations)

Variables	D(LAWRULE)	D(POLITY)	D(INFLATION)	D(QLEGAL)	D(CORRUPTION)
D(LAWRULE(-1))	-2.629366	17.78299	-395.2111	-5.668654	7.487937
	(1.09136)	(54.9329)	(370.398)	(1.76555)	(2.33759)
	[-2.40925]	[0.32372]	[-1.06699]	[-3.21069]	[3.20327]
D(LAWRULE(-2))	-0.947161	6.101420	-84.45399	-1.754891	4.483222
	(0.51895)	(26.1209)	(176.126)	(0.83953)	(1.11154)
	[-1.82516]	[0.23358]	[-0.47951]	[-2.09033]	[4.03335]
D(POLITY(-1))	-0.002021	0.083634	0.372288	-0.003694	-0.010095
	(0.00493)	(0.24832)	(1.67436)	(0.00798)	(0.01057)
	[-0.40956]	[0.33680]	[0.22235]	[-0.46279]	[-0.95531]
D(POLITY(-2))	0.001360	0.072942	0.900983	0.001735	-0.004299
	(0.00488)	(0.24582)	(1.65747)	(0.00790)	(0.01046)
	[0.27845]	[0.29673]	[0.54359]	[0.21960]	[-0.41099]
D(INFLATION(-1))	6.40E-05	-0.043959	-0.554421	0.000193	-0.000782
	(0.00066)	(0.03298)	(0.22237)	(0.00106)	(0.00140)
	[0.09770]	[-1.33296]	[-2.49328]	[0.18179]	[-0.55739]
D(INFLATION(-2))	-0.000263	-0.013007	-0.386898	-0.000352	-0.000935
	(0.00072)	(0.03633)	(0.24497)	(0.00117)	(0.00155)
	[-0.36476]	[-0.35801]	[-1.57940]	[-0.30110]	[-0.60480]
D(QLEGAL(-1))	1.667356	-11.37454	253.6924	3.531862	-5.256160
	(0.73863)	(37.1786)	(250.685)	(1.19493)	(1.58208)
	[2.25735]	[-0.30594]	[1.01200]	[2.95571]	[-3.32230]
D(QLEGAL(-2))	0.830155	-5.768036	77.96507	1.311729	-2.355722
	(0.35336)	(17.7859)	(119.926)	(0.57164)	(0.75685)
	[2.34935]	[-0.32430]	[0.65011]	[2.29467]	[-3.11252]
D(CORRUPTION(-1))	-0.216790	3.338720	-71.37081	-0.725429	1.221841
	(0.18011)	(9.06574)	(61.1278)	(0.29137)	(0.38578)
	[-1.20365]	[0.36828]	[-1.16757]	[-2.48968]	[3.16720]
D(CORRUPTION(-2))	0.124167	0.484779	-10.58063	-0.294621	0.499913
	(0.11099)	(5.58646)	(37.6680)	(0.17955)	(0.23772)
	[1.11875]	[0.08678]	[-0.28089]	[-1.64088]	[2.10291]

Estimated coefficients on the first line, standard errors in parenthesis (); and t-statistics in brackets [].
The results are computed separately for each equation using the appropriate residuals

Appendix B30: Vector Error Correction Estimates for Equation 7 (1980-2012): East Africa (Alternative combinations)

Variables	D(LAWRULE)	D(POLITY)	D(INFLATION)	D(QLEGAL)	D(CORRUPTION)
D(LAWRULE(-1))	-0.467959	-18.83193	-9.533353	-0.065155	0.116622
	(0.29548)	(7.83120)	(41.0693)	(0.14446)	(0.62164)
	[-1.58370]	[-2.40473]	[-0.23213]	[-0.45102]	[0.18760]
D(LAWRULE(-2))	-0.063892	-5.192304	-4.165467	0.128574	-0.326693
	(0.27932)	(7.40272)	(38.8222)	(0.13656)	(0.58763)
	[-0.22874]	[-0.70140]	[-0.10730]	[0.94155]	[-0.55595]
D(POLITY(-1))	0.002443	-0.467582	-0.595818	-0.007160	0.011478
	(0.00923)	(0.24469)	(1.28323)	(0.00451)	(0.01942)
	[0.26464]	[-1.91091]	[-0.46431]	[-1.58616]	[0.59094]
D(POLITY(-2))	0.003153	0.124447	0.247214	0.003067	-0.001343
	(0.00857)	(0.22706)	(1.19079)	(0.00419)	(0.01802)
	[0.36801]	[0.54807]	[0.20760]	[0.73235]	[-0.07450]
D(INFLATION(-1))	8.75E-06	-0.004998	-0.687755	0.001790	0.000225
	(0.00209)	(0.05544)	(0.29075)	(0.00102)	(0.00440)
	[0.00418]	[-0.09014]	[-2.36543]	[1.74998]	[0.05103]
D(INFLATION(-2))	-0.003174	-0.044321	-0.502787	-0.000426	0.010577
	(0.00208)	(0.05511)	(0.28899)	(0.00102)	(0.00437)
	[-1.52664]	[-0.80429]	[-1.73980]	[-0.41897]	[2.41789]
D(QLEGAL(-1))	-0.411566	-13.90837	-16.91550	0.043003	-1.351668
	(0.68361)	(18.1176)	(95.0146)	(0.33421)	(1.43818)
	[-0.60205]	[-0.76767]	[-0.17803]	[0.12867]	[-0.93985]
D(QLEGAL(-2))	-0.113696	-22.80549	-0.258510	-0.170975	-0.360445
	(0.45822)	(12.1443)	(63.6883)	(0.22402)	(0.96401)
	[-0.24812]	[-1.87788]	[-0.00406]	[-0.76321]	[-0.37390]
D(CORRUPTION(-1))	0.013123	-3.315182	-24.99150	0.104826	-0.345483
	(0.14904)	(3.94988)	(20.7144)	(0.07286)	(0.31354)
	[0.08805]	[-0.83931]	[-1.20648]	[1.43868]	[-1.10187]
D(CORRUPTION(-2))	0.143563	-4.461085	-13.48416	0.002132	-0.039161
	(0.16634)	(4.40837)	(23.1189)	(0.08132)	(0.34994)
	[0.86309]	[-1.01196]	[-0.58325]	[0.02622]	[-0.11191]

Estimated coefficients on the first line, standard errors in parenthesis (); and t-statistics in brackets [].
The results are computed separately for each equation using the appropriate residuals

Appendix B31: Vector Error Correction Estimates for Equation 8 (1980-2012): Pooled data (Alternative combinations)

Error Correction:	D(LAWRULE)	D(POLITY)	D(INFLATION)	D(QLEGAL)	D(CORRUPTION)
D(LAWRULE(-1))	-0.446921	0.611520	-14.94123	-0.141884	-0.102708
	(0.08282)	(2.30259)	(10.3227)	(0.10329)	(0.22455)
	[-5.39613]	[0.26558]	[-1.44741]	[-1.37368]	[-0.45739]
D(LAWRULE(-2))	0.089320	-0.002172	4.802712	0.028374	0.524702
	(0.08734)	(2.42811)	(10.8854)	(0.10892)	(0.23679)
	[1.02270]	[-0.00089]	[0.44121]	[0.26051]	[2.21590]
D(POLITY(-1))	-0.001204	0.025640	0.210373	0.000135	-0.002645
	(0.00270)	(0.07502)	(0.33631)	(0.00337)	(0.00732)
	[-0.44617]	[0.34179]	[0.62553]	[0.04012]	[-0.36153]
D(POLITY(-2))	-0.001200	-0.261543	0.347823	-0.002780	-0.004680
	(0.00271)	(0.07533)	(0.33772)	(0.00338)	(0.00735)
	[-0.44296]	[-3.47190]	[1.02992]	[-0.82262]	[-0.63700]
D(INFLATION(-1))	0.000257	-0.018975	-0.581414	0.000790	-0.003218
	(0.00060)	(0.01673)	(0.07501)	(0.00075)	(0.00163)
	[0.42724]	[-1.13415]	[-7.75158]	[1.05296]	[-1.97242]
D(INFLATION(-2))	-0.000633	-0.004387	-0.388614	-0.001171	0.000641
	(0.00060)	(0.01674)	(0.07503)	(0.00075)	(0.00163)
	[-1.05138]	[-0.26213]	[-5.17913]	[-1.55970]	[0.39251]
D(QLEGAL(-1))	0.151411	-0.994092	11.67321	-0.451671	0.324032
	(0.06970)	(1.93767)	(8.68678)	(0.08692)	(0.18896)
	[2.17243]	[-0.51303]	[1.34379]	[-5.19648]	[1.71480]
D(QLEGAL(-2))	0.043890	-0.940147	5.769701	-0.002176	0.062155
	(0.06627)	(1.84234)	(8.25939)	(0.08264)	(0.17967)
	[0.66232]	[-0.51030]	[0.69856]	[-0.02633]	[0.34595]
D(CORRUPTION(-1))	0.016335	0.331735	-4.389417	-0.017458	-0.437435
	(0.02949)	(0.81985)	(3.67545)	(0.03678)	(0.07995)
	[0.55393]	[0.40463]	[-1.19425]	[-0.47470]	[-5.47124]
D(CORRUPTION(-2))	0.026101	0.159834	1.418670	0.018804	-0.067468
	(0.02956)	(0.82187)	(3.68452)	(0.03687)	(0.08015)
	[0.88293]	[0.19448]	[0.38504]	[0.51005]	[-0.84179]

Estimated coefficients on the first line, standard errors in parenthesis (); and t-statistics in brackets [].
The results are computed separately for each equation using the appropriate residuals

Appendix B32: Vector Error Correction Estimates for Equation 8 (1980-2012): North Africa (Alternative combinations)

Variables	D(LAWRULE)	D(POLITY)	D(INFLATION)	D(QLEGAL)	D(CORRUPTION)
D(LAWRULE(-1))	-0.430446	0.219079	-7.225844	-0.215839	-0.454105
	(0.11830)	(1.10571)	(5.83345)	(0.14508)	(0.33340)
	[-3.63858]	[0.19813]	[-1.23869]	[-1.48773]	[-1.36203]
D(LAWRULE(-2))	0.209042	0.440509	3.316974	-0.125706	0.393191
	(0.13355)	(1.24824)	(6.58543)	(0.16378)	(0.37638)
	[1.56526]	[0.35290]	[0.50368]	[-0.76752]	[1.04466]
D(POLITY(-1))	-0.011094	-0.234599	-0.225620	0.012350	0.036679
	(0.01330)	(0.12433)	(0.65592)	(0.01631)	(0.03749)
	[-0.83399]	[-1.88696]	[-0.34398]	[0.75708]	[0.97842]
D(POLITY(-2))	-0.018872	-0.075049	-0.021515	0.018094	-0.001097
	(0.01785)	(0.16685)	(0.88026)	(0.02189)	(0.05031)
	[-1.05716]	[-0.44980]	[-0.02444]	[0.82649]	[-0.02181]
D(INFLATION(-1))	0.004147	0.009843	-0.511144	0.002655	-0.003347
	(0.00220)	(0.02059)	(0.10861)	(0.00270)	(0.00621)
	[1.88278]	[0.47815]	[-4.70634]	[0.98284]	[-0.53920]
D(INFLATION(-2))	0.001470	0.005707	-0.261789	0.000879	0.007819
	(0.00203)	(0.01893)	(0.09987)	(0.00248)	(0.00571)
	[0.72574]	[0.30146]	[-2.62132]	[0.35388]	[1.36994]
D(QLEGAL(-1))	0.068323	0.760936	6.175353	-0.601063	0.438259
	(0.09476)	(0.88565)	(4.67251)	(0.11621)	(0.26705)
	[0.72103]	[0.85918]	[1.32164]	[-5.17236]	[1.64110]
D(QLEGAL(-2))	-0.049737	0.663752	2.364642	-0.149652	0.255991
	(0.09111)	(0.85159)	(4.49279)	(0.11174)	(0.25678)
	[-0.54589]	[0.77943]	[0.52632]	[-1.33932]	[0.99693]
D(CORRUPTION(-1))	0.028523	0.019461	0.917229	-0.065191	-0.563226
	(0.04080)	(0.38134)	(2.01189)	(0.05004)	(0.11499)
	[0.69909]	[0.05103]	[0.45590]	[-1.30287]	[-4.89817]
D(CORRUPTION(-2))	-0.032183	-0.179577	-1.690127	-0.034059	-0.082095
	(0.04059)	(0.37939)	(2.00158)	(0.04978)	(0.11440)
	[-0.79287]	[-0.47333]	[-0.84440]	[-0.68419]	[-0.71763]

Estimated coefficients on the first line, standard errors in parenthesis (); and t-statistics in brackets [].
The results are computed separately for each equation using the appropriate residuals

Appendix B33: Vector Error Correction Estimates for Equation 8 (1980-2012): Southern Africa (Alternative combinations)

Variables	D(LAWRULE)	D(POLITY)	D(INFLATION)	D(QLEGAL)	D(CORRUPTION)
D(LAWRULE(-1))	1.321067	10.67244	-21.25128	0.592165	0.721187
	(0.31569)	(47.4717)	(21.6172)	(0.57174)	(1.77082)
	[4.18468]	[0.22482]	[-0.98307]	[1.03573]	[0.40726]
D(LAWRULE(-2))	0.703120	5.826210	-8.111743	1.475601	-0.679635
	(0.21579)	(32.4495)	(14.7766)	(0.39081)	(1.21046)
	[3.25832]	[0.17955]	[-0.54896]	[3.77571]	[-0.56147]
D(POLITY(-1))	0.000180	-0.027570	-0.022516	0.000266	-0.003265
	(0.00149)	(0.22337)	(0.10172)	(0.00269)	(0.00833)
	[0.12124]	[-0.12342]	[-0.22136]	[0.09873]	[-0.39181]
D(POLITY(-2))	-0.003680	-0.515835	0.026767	-0.006596	-0.000236
	(0.00146)	(0.21896)	(0.09971)	(0.00264)	(0.00817)
	[-2.52731]	[-2.35586]	[0.26845]	[-2.50107]	[-0.02895]
D(INFLATION(-1))	0.005286	-0.121210	-0.654688	-0.000785	-0.010903
	(0.00350)	(0.52650)	(0.23975)	(0.00634)	(0.01964)
	[1.50973]	[-0.23022]	[-2.73068]	[-0.12381]	[-0.55513]
D(INFLATION(-2))	0.001584	-0.071221	-0.349783	0.000772	-0.002410
	(0.00197)	(0.29587)	(0.13473)	(0.00356)	(0.01104)
	[0.80523]	[-0.24072]	[-2.59614]	[0.21664]	[-0.21839]
D(QLEGAL(-1))	0.096628	1.655421	-3.237782	-0.428993	0.393184
	(0.08773)	(13.1927)	(6.00756)	(0.15889)	(0.49212)
	[1.10139]	[0.12548]	[-0.53895]	[-2.69995]	[0.79895]
D(QLEGAL(-2))	0.204435	4.510085	-6.860759	0.849064	0.020958
	(0.11603)	(17.4484)	(7.94547)	(0.21014)	(0.65087)
	[1.76187]	[0.25848]	[-0.86348]	[4.04040]	[0.03220]
D(CORRUPTION(-1))	-0.042406	0.319668	-0.259243	-0.419443	0.124264
	(0.05151)	(7.74587)	(3.52724)	(0.09329)	(0.28894)
	[-0.82324]	[0.04127]	[-0.07350]	[-4.49615]	[0.43006]
D(CORRUPTION(-2))	0.224744	2.857480	-0.958207	0.229422	0.162435
	(0.06893)	(10.3646)	(4.71972)	(0.12483)	(0.38663)
	[3.26070]	[0.27570]	[-0.20302]	[1.83791]	[0.42013]

Estimated coefficients on the first line, standard errors in parenthesis (); and t-statistics in brackets [].
The results are computed separately for each equation using the appropriate residuals

Appendix B34: Vector Error Correction Estimates for Equation 8 (1980-2012): West Africa (Alternative combinations)

Variables	D(LAWRULE)	D(POLITY)	D(INFLATION)	D(QLEGAL)	D(CORRUPTION)
D(LAWRULE(-1))	-0.429988	1.794254	-59.46325	0.183529	0.163785
	(0.23764)	(10.2133)	(66.5768)	(0.26696)	(0.50509)
	[-1.80943]	[0.17568]	[-0.89315]	[0.68747]	[0.32427]
D(LAWRULE(-2))	0.086107	-2.742442	20.51740	0.455714	1.577519
	(0.22731)	(9.76950)	(63.6835)	(0.25536)	(0.48314)
	[0.37881]	[-0.28071]	[0.32218]	[1.78460]	[3.26512]
D(POLITY(-1))	0.004061	0.075087	0.931094	0.009293	0.002298
	(0.00613)	(0.26366)	(1.71871)	(0.00689)	(0.01304)
	[0.66203]	[0.28478]	[0.54174]	[1.34848]	[0.17628]
D(POLITY(-2))	0.006008	0.055359	0.953781	0.012049	0.004272
	(0.00614)	(0.26371)	(1.71900)	(0.00689)	(0.01304)
	[0.97916]	[0.20993]	[0.55485]	[1.74810]	[0.32756]
D(INFLATION(-1))	-0.002718	-0.041094	-0.838467	-0.006454	-0.008144
	(0.00147)	(0.06306)	(0.41108)	(0.00165)	(0.00312)
	[-1.85261]	[-0.65164]	[-2.03968]	[-3.91533]	[-2.61121]
D(INFLATION(-2))	-0.002051	-0.008955	-0.616390	-0.005816	-0.003684
	(0.00112)	(0.04821)	(0.31429)	(0.00126)	(0.00238)
	[-1.82806]	[-0.18573]	[-1.96120]	[-4.61458]	[-1.54519]
D(QLEGAL(-1))	0.504727	-1.339856	51.97797	0.275004	0.410907
	(0.20535)	(8.82548)	(57.5299)	(0.23068)	(0.43646)
	[2.45794]	[-0.15182]	[0.90350]	[1.19212]	[0.94146]
D(QLEGAL(-2))	0.230680	-0.196632	16.01781	0.112740	-0.075736
	(0.17205)	(7.39436)	(48.2009)	(0.19328)	(0.36568)
	[1.34080]	[-0.02659]	[0.33231]	[0.58331]	[-0.20711]
D(CORRUPTION(-1))	-0.185298	1.232821	-44.02917	-0.467555	-0.565080
	(0.13376)	(5.74885)	(37.4745)	(0.15027)	(0.28430)
	[-1.38530]	[0.21445]	[-1.17491]	[-3.11152]	[-1.98758]
D(CORRUPTION(-2))	0.076085	-0.372746	6.135858	-0.174414	-0.511879
	(0.10013)	(4.30326)	(28.0513)	(0.11248)	(0.21281)
	[0.75990]	[-0.08662]	[0.21874]	[-1.55061]	[-2.40529]

Estimated coefficients on the first line, standard errors in parenthesis (); and t-statistics in brackets [].
The results are computed separately for each equation using the appropriate residuals

Appendix B35: Vector Error Correction Estimates for Equation 8 (1980-2012): East Africa (Alternative combinations)

Variables	D(LAWRULE)	D(POLITY)	D(INFLATION)	D(QLEGAL)	D(CORRUPTION)
D(LAWRULE(-1))	-0.330190	-20.77885	-27.04745	-0.182599	0.544121
	(0.29456)	(6.09281)	(32.7410)	(0.16322)	(0.61613)
	[-1.12094]	[-3.41039]	[-0.82610]	[-1.11871]	[0.88313]
D(LAWRULE(-2))	0.029190	-4.621222	-22.61295	0.096928	-0.107043
	(0.29277)	(6.05578)	(32.5420)	(0.16223)	(0.61238)
	[0.09970]	[-0.76311]	[-0.69489]	[0.59747]	[-0.17480]
D(POLITY(-1))	0.000521	-0.174979	-0.071881	-0.009210	0.011348
	(0.00888)	(0.18363)	(0.98676)	(0.00492)	(0.01857)
	[0.05873]	[-0.95290]	[-0.07285]	[-1.87231]	[0.61111]
D(POLITY(-2))	0.006322	0.055798	-0.548727	0.001036	0.006660
	(0.00967)	(0.20005)	(1.07499)	(0.00536)	(0.02023)
	[0.65363]	[0.27892]	[-0.51045]	[0.19332]	[0.32925]
D(INFLATION(-1))	0.001422	-0.034186	-0.874976	0.002134	0.001619
	(0.00241)	(0.04984)	(0.26784)	(0.00134)	(0.00504)
	[0.59019]	[-0.68588]	[-3.26679]	[1.59840]	[0.32120]
D(INFLATION(-2))	-0.002605	-0.115625	-0.503124	-0.000154	0.011718
	(0.00283)	(0.05859)	(0.31482)	(0.00157)	(0.00592)
	[-0.91983]	[-1.97361]	[-1.59813]	[-0.09807]	[1.97799]
D(QLEGAL(-1))	0.298454	-13.00875	-131.3897	0.189554	-1.060971
	(0.80061)	(16.5599)	(88.9880)	(0.44363)	(1.67459)
	[0.37278]	[-0.78556]	[-1.47649]	[0.42728]	[-0.63357]
D(QLEGAL(-2))	0.241697	-19.64932	-47.01706	-0.119256	0.383289
	(0.53019)	(10.9665)	(58.9309)	(0.29379)	(1.10897)
	[0.45587]	[-1.79175]	[-0.79783]	[-0.40593]	[0.34562]
D(CORRUPTION(-1))	-0.121856	12.59904	-5.657413	-0.012947	-0.191938
	(0.22780)	(4.71178)	(25.3197)	(0.12623)	(0.47647)
	[-0.53493]	[2.67395]	[-0.22344]	[-0.10257]	[-0.40283]
D(CORRUPTION(-2))	0.048896	5.247821	-0.276225	-0.054622	0.096514
	(0.19393)	(4.01136)	(21.5559)	(0.10746)	(0.40564)
	[0.25213]	[1.30824]	[-0.01281]	[-0.50829]	[0.23793]

Appendix C1: Raw E-Views output Table for p-value determinant

System: UNTITLED				
Estimation Method: Least Squares				
Date: 05/07/14 Time: 10:54				
Sample: 1983 2012				
Included observations: 180				
Total system (balanced) observations 1080				
	Coefficient	Std. Error	t-Statistic	Prob.
C(1)	-0.118678	0.047912	-2.477026	0.0134
C(2)	-0.383916	0.083362	-4.605435	0.0000
C(3)	-0.036352	0.079369	-0.458015	0.6470
C(4)	-0.023846	0.057989	-0.411215	0.6810
C(5)	-0.032173	0.053785	-0.598183	0.5499
C(6)	0.027279	0.053054	0.514172	0.6072
C(7)	0.058018	0.052679	1.101341	0.2710
C(8)	-8.95E-05	0.027258	-0.003284	0.9974
C(9)	0.001122	0.026313	0.042650	0.9660
C(10)	0.018113	0.013281	1.363881	0.1729
C(11)	0.017858	0.014120	1.264713	0.2063
C(12)	0.069659	0.035035	1.988272	0.0471
C(13)	-0.087406	0.035801	-2.441456	0.0148
C(14)	-0.014512	0.092337	-0.157160	0.8752
C(15)	-0.141696	0.160656	-0.881983	0.3780
C(16)	-0.149361	0.152962	-0.976456	0.3291
C(17)	0.127752	0.111758	1.143111	0.2533
C(18)	0.134004	0.103655	1.292784	0.1964
C(19)	-0.040029	0.102247	-0.391491	0.6955
C(20)	-0.126799	0.101525	-1.248942	0.2120
C(21)	0.066872	0.052532	1.272963	0.2033
C(22)	-0.050640	0.050711	-0.998585	0.3182
C(23)	0.041268	0.025595	1.612365	0.1072
C(24)	0.080673	0.027213	2.964503	0.0031
C(25)	0.157356	0.067520	2.330509	0.0200
C(26)	-0.194688	0.068996	-2.821725	0.0049
C(27)	-0.090312	0.070812	-1.275369	0.2025
C(28)	0.025488	0.123207	0.206869	0.8362
C(29)	0.078412	0.117306	0.668436	0.5040
C(30)	-0.141251	0.085707	-1.648074	0.0997
C(31)	0.081293	0.079493	1.022647	0.3067
C(32)	0.461517	0.078413	5.885725	0.0000
C(33)	-0.176226	0.077859	-2.263399	0.0238
C(34)	0.046986	0.040287	1.166301	0.2438
C(35)	0.031851	0.038890	0.818999	0.4130
C(36)	-0.032592	0.019628	-1.660432	0.0971
C(37)	-0.013727	0.020870	-0.657727	0.5109
C(38)	0.025540	0.051781	0.493225	0.6220
C(39)	-0.076159	0.052913	-1.439334	0.1504
C(40)	0.012229	0.212394	0.057575	0.9541
C(41)	-0.440779	0.369545	-1.192762	0.2332
C(42)	-0.261483	0.351847	-0.743173	0.4576
C(43)	-0.309765	0.257069	-1.204990	0.2285
C(44)	0.543076	0.238430	2.277721	0.0230
C(45)	0.067965	0.235191	0.288980	0.7727
C(46)	-0.224043	0.233530	-0.959374	0.3376
C(47)	-0.074748	0.120836	-0.618589	0.5363
C(48)	-0.268733	0.116647	-2.303809	0.0214
C(49)	0.089279	0.058873	1.516458	0.1297
C(50)	0.054610	0.062596	0.872411	0.3832
C(51)	0.368262	0.155311	2.371133	0.0179
C(52)	-0.370570	0.158707	-2.334937	0.0197
C(53)	-0.895302	0.296844	-3.016067	0.0026
C(54)	1.244464	0.516479	2.409515	0.0162

C(55)	1.353861	0.491744	2.753183	0.0060
C(56)	-0.071172	0.359281	-0.198095	0.8430
C(57)	0.634973	0.333231	1.905503	0.0570
C(58)	-0.041450	0.328705	-0.126102	0.8997
C(59)	-0.000621	0.326384	-0.001903	0.9985
C(60)	0.149197	0.168881	0.883444	0.3772
C(61)	-0.524687	0.163027	-3.218401	0.0013
C(62)	0.205418	0.082282	2.496528	0.0127
C(63)	-0.241187	0.087485	-2.756899	0.0059
C(64)	0.595816	0.217064	2.744893	0.0062
C(65)	-0.742678	0.221810	-3.348264	0.0008
C(66)	0.391491	0.152502	2.567129	0.0104
C(67)	-0.397965	0.265337	-1.499843	0.1340
C(68)	-0.182847	0.252630	-0.723773	0.4694
C(69)	-0.094089	0.184578	-0.509754	0.6103
C(70)	-0.234618	0.171195	-1.370473	0.1708
C(71)	0.074342	0.168870	0.440235	0.6599
C(72)	0.120228	0.167677	0.717022	0.4735
C(73)	0.203980	0.086761	2.351040	0.0189
C(74)	0.247045	0.083754	2.949645	0.0033
C(75)	0.100909	0.042272	2.387161	0.0172
C(76)	-0.134474	0.044945	-2.991992	0.0028
C(77)	0.932621	0.111515	8.363198	0.0000
C(78)	-0.179381	0.113953	-1.574165	0.1158
Determinant residual covariance		**2358320.**		
Equation: D(FDINFL) = C(1)*(FDINFL(-1) - 0.00512130747606*BANK(-1) - 0.0382520945127*NONFIN(-1) - 0.0466856343261*PRIVY(-1) + 0.049631940144*EQCAP(-1) - 0.132252226667*TURNOVER(-1)) + C(2)*D(FDINFL(-1)) + C(3)*D(FDINFL(-2)) + C(4)*D(BANK(-1)) + C(5)*D(BANK(-2)) + C(6)*D(NONFIN(-1)) + C(7)*D(NONFIN(-2)) + C(8)*D(PRIVY(-1)) + C(9)*D(PRIVY(-2)) + C(10)*D(EQCAP(-1)) + C(11)*D(EQCAP(-2)) + C(12)*D(TURNOVER(-1)) + C(13)*D(TURNOVER(-2))				
Observations: 180				
R-squared	0.267767	Mean dependent var		0.052360
Adjusted R-squared	0.215151	S.D. dependent var		1.688016
S.E. of regression	1.495442	Sum squared resid		373.4698
Durbin-Watson stat	2.059970			
Equation: D(BANK) = C(14)*(FDINFL(-1) - 0.00512130747606*BANK(-1) - 0.0382520945127*NONFIN(-1) - 0.0466856343261*PRIVY(-1) + 0.049631940144*EQCAP(-1) - 0.132252226667*TURNOVER(-1)) + C(15)*D(FDINFL(-1)) + C(16)*D(FDINFL(-2)) + C(17)*D(BANK(-1)) + C(18)*D(BANK(-2)) + C(19)*D(NONFIN(-1)) + C(20) *D(NONFIN(-2)) + C(21)*D(PRIVY(-1)) + C(22)*D(PRIVY(-2)) + C(23)*D(EQCAP(-1)) + C(24)*D(EQCAP(-2)) + C(25) *D(TURNOVER(-1)) + C(26)*D(TURNOVER(-2))				
Observations: 180				
R-squared	0.220546	Mean dependent var		0.656821
Adjusted R-squared	0.164538	S.D. dependent var		3.153104
S.E. of regression	2.882052	Sum squared resid		1387.139
Durbin-Watson stat	1.928784			
Equation: D(NONFIN) = C(27)*(FDINFL(-1) - 0.00512130747606*BANK(-1) - 0.0382520945127*NONFIN(-1) - 0.0466856343261*PRIVY(-1) + 0.049631940144*EQCAP(-1) - 0.132252226667*TURNOVER(-1)) + C(28)*D(FDINFL(-1)) + C(29)*D(FDINFL(-2)) + C(30)*D(BANK(-1)) + C(31)*D(BANK(-2)) + C(32)*D(NONFIN(-1)) + C(33) *D(NONFIN(-2)) + C(34)*D(PRIVY(-1)) + C(35)*D(PRIVY(-2)) + C(36)*D(EQCAP(-1)) + C(37)*D(EQCAP(-2)) + C(38) *D(TURNOVER(-1)) + C(39)*D(TURNOVER(-2))				
Observations: 180				
R-squared	0.213243	Mean dependent var		-0.350235
Adjusted R-squared	0.156709	S.D. dependent var		2.406850
S.E. of regression	2.210232	Sum squared resid		815.8157
Durbin-Watson stat	2.037272			

Equation: D(PRIVY) = C(40)*(FDINFL(-1) - 0.00512130747606*BANK(-1) - 0.0382520945127*NONFIN(-1) - 0.0466856343261*PRIVY(-1) + 0.049631940144*EQCAP(-1) - 0.132252226667*TURNOVER(-1)) + C(41)*D(FDINFL(-1)) + C(42)*D(FDINFL(-2)) + C(43)*D(BANK(-1)) + C(44)*D(BANK(-2)) + C(45)*D(NONFIN(-1)) + C(46) *D(NONFIN(-2)) + C(47)*D(PRIVY(-1)) + C(48)*D(PRIVY(-2)) + C(49)*D(EQCAP(-1)) + C(50)*D(EQCAP(-2)) + C(51) *D(TURNOVER(-1)) + C(52)*D(TURNOVER(-2))				
Observations: 180				
R-squared	0.084852	Mean dependent var		1.127544
Adjusted R-squared	0.019093	S.D. dependent var		6.693563
S.E. of regression	6.629357	Sum squared resid		7339.378
Durbin-Watson stat	1.894007			
Equation: D(EQCAP) = C(53)*(FDINFL(-1) - 0.00512130747606*BANK(-1) - 0.0382520945127*NONFIN(-1) - 0.0466856343261*PRIVY(-1) + 0.049631940144*EQCAP(-1) - 0.132252226667*TURNOVER(-1)) + C(54)*D(FDINFL(-1)) + C(55)*D(FDINFL(-2)) + C(56)*D(BANK(-1)) + C(57)*D(BANK(-2)) + C(58)*D(NONFIN(-1)) + C(59) *D(NONFIN(-2)) + C(60)*D(PRIVY(-1)) + C(61)*D(PRIVY(-2)) + C(62)*D(EQCAP(-1)) + C(63)*D(EQCAP(-2)) + C(64) *D(TURNOVER(-1)) + C(65)*D(TURNOVER(-2))				
Observations: 180				
R-squared	0.233926	Mean dependent var		1.447206
Adjusted R-squared	0.178879	S.D. dependent var		10.22476
S.E. of regression	9.265242	Sum squared resid		14336.06
Durbin-Watson stat	1.925884			
Equation: D(TURNOVER) = C(66)*(FDINFL(-1) - 0.00512130747606 *BANK(-1) - 0.0382520945127*NONFIN(-1) - 0.0466856343261 *PRIVY(-1) + 0.049631940144*EQCAP(-1) - 0.132252226667 *TURNOVER(-1)) + C(67)*D(FDINFL(-1)) + C(68)*D(FDINFL(-2)) + C(69)*D(BANK(-1)) + C(70)*D(BANK(-2)) + C(71)*D(NONFIN(-1)) + C(72)*D(NONFIN(-2)) + C(73)*D(PRIVY(-1)) + C(74) *D(PRIVY(-2)) + C(75)*D(EQCAP(-1)) + C(76)*D(EQCAP(-2)) + C(77)*D(TURNOVER(-1)) + C(78)*D(TURNOVER(-2))				
Observations: 180				
R-squared	0.503529	Mean dependent var		0.609631
Adjusted R-squared	0.467855	S.D. dependent var		6.525103
S.E. of regression	4.759950	Sum squared resid		3783.740
Durbin-Watson stat	1.560932			

[i] The regression assumptions as suggested by Baltagi (2008) are:

1. Model is *linear in parameters*
2. The data are a *random sample* of the population. In essence, the errors are *statistically independent* from one another
3. The expected value of the errors is always zero
4. The independent variables are not too strongly *collinear*
5. The independent variables are measured *precisely*
6. The residuals have *constant variance*
7. The errors are normally distributed.

According to this author, if assumptions 1-5 are satisfied, then the regression estimation does not suffer from biases. If assumption 6 is also satisfied, then the regression estimator has minimum variance of all unbiased estimators. If assumption 7 is also satisfied, then we can do hypothesis testing using t and F tests. In this study, all the assumptions are satisfied as suggested by the diagnostic tests conducted.