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The effect of economic policy uncertainty and herding on leverage: An examination of the BRICS countries

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The effect of economic policy uncertainty and herding on leverage: An examination of the BRICS countries.

Abstract

This study examines the role of economic policy uncertainty (EPU) in influencing firm performance and leverage as a form of financing decisions, in the presence of herding in the emerging markets of Brazil, Russia, India, China and South Africa (BRICS). The increase or decrease EPU is determined by the way policymakers or investors act and the consequences of their decisions. This study tries to answer the questions of: During times of economic policy uncertainty, how do firms rationalise making leverage financing decisions; and do they herd their leverage financing decisions towards what the market or other firms have decided? The sample firms are selected based on the Top 80 listed firms by market capitalisation in their respective country stock exchanges; however, the Top 50 in Russia was used. These firms will be split into two sub-groups of the first 40 (25) listed firms and the next 40 (25) listed firms. This will provide some insight into how the first group performs as to the second group at the beginning and end of the sample period. A total of 369 firms will be sampled over a period of 15 years from the beginning of June 2002 to the end of June 2017.

Russian, Indian and South African results reject the primary and secondary null hypotheses and conclude that there is a significant relation with EPU being a factor in determining firm leverage financing decisions and that there is a significant relation with more EPU leading to herding towards firm leverage financing decisions, respectively. Brazilian and Chinese results fail to reject the primary and secondary null hypotheses and conclude that there is no significant relation with EPU being a factor in determining firm leverage financing decisions and that there is no significant relation with less EPU leading to little or no herding towards firm leverage financing decisions, respectively. EPU has an impact on business and affects the profit for many firms and this is the reason of investment delays or less consumption, which together may lead to economic activity slowdown.

Declaration

I, Prudence Makololo declare that this research paper is my own work and that I have correctly acknowledged the work of others. It is submitted to fulfil the requirements for the degree of Master of Commerce in Finance at the University of the Witwatersrand, Johannesburg. I declare that this research paper has not been submitted for any other degree or examination in this or any other institution.

Prudence Makololo

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Table of Contents

Declaration iii
Acknowledgements iv
List of Figures vii
List of Tables viii
List of Abbreviations and symbols xii
1. INTRODUCTION 1
1.1 Background 3
1.2 Research gap and objectives 5
1.2.1 Motivation of the study 5
1.2.2 The knowledge gap 5
1.2.3 Potential benefits 6
1.2.4 Hypotheses testing 7
1.3 Structure of dissertation 7
2 LITERATURE REVIEW 9
2.1 A review of capital structure literature 9
2.1.1 Theory of Capital structure 9
2.1.2 Capital structure models 10
2.1.3 Determinants of Capital Structure 17
2.1.4 Market timing 27
2.1.5 Financing decisions and dividend payouts 33
2.1.6 Performance of peer firms 36
2.2 A review of policy uncertainty 39
2.2.1 The link between policy uncertainty and finance 39
2.2.2 Policy Uncertainty and Capital Structure 51
2.2.3 Measuring EPU 57
2.3 A review of herding literature 60
2.4 An introduction to the BRICS countries 68
2.4.1 Brazil and its financial system 71
2.4.2 Russia and its financial system 72
2.4.3 India and its financial system 73
2.4.4 China and its financial system 74
2.4.5 South Africa and its financial system 75
2.5 Policy uncertainty in the BRICS countries 77
2.5.1 Brazil 78
2.5.2 Russia 79
2.5.3 India 80

2.5.4 China ... 81
2.5.5 South Africa ... 82
2.6 Summary of literature review ... 83
3 DATA AND METHODOLOGY ... 86
3.1 Data ... 86
3.2 Generalised Method of Moments (GMM) model Methodology ... 89
3.2.1 The method of moments ... 89
3.2.2 GMM ... 90
3.3 Testing for economic policy uncertainty (EPU) and leverage ... 91
3.3.1 Measuring EPU of BRICS countries ... 91
3.3.2 Measuring Leverage ... 94
3.4 Testing for herding ... 95
3.5 Robustness Checks ... 97
4 RESULTS ... 100
4.1 Preliminary analysis ... 100
4.2 Descriptive Statistics ... 103
4.3 Ordinary Least Squares (OLS) and GMM Estimation results ... 108
4.3.1 Brazil OLS and GMM estimation results ... 108
4.3.2 Russia OLS and GMM estimation results ... 117
4.3.3 India OLS and GMM estimation results ... 126
4.3.4 China OLS and GMM estimation results ... 135
4.3.5 South Africa OLS and GMM estimation results ... 144
4.4 Discussion of results ... 153
4.4.1 Political regime groups ... 164
4.4.2 Robustness ... 164
5 CONCLUSION ... 203
5.1 Limitations ... 205
5.2 Areas of future research ... 206
REFERENCES ... 210
A. Appendix A: BRICS countries Top 80 listed firms by Market Capitalisation ... 220
B. Appendix B: BRICS countries monthly 3-Month Treasury Bill Rates ... 232
C. Appendix C: Hausman Test for fixed and random effects ... 235

List of Figures

Figure 2.1. Index of Economic Policy Uncertainty for the USA, 1985 to 2014 58
Figure 2.2. Map of Brazil and its capital city Brasilia. 71
Figure 2.3. Map of Russia and its capital city Moscow 72
Figure 2.4. Map of India and its capital city New Delhi. 74
Figure 2.5. Map of China and its capital city Beijing. 75
Figure 2.6. Map of South Africa and its capital city Pretoria. 76
Figure 3.1: Brazil listed firms 2002 - 2017. 87
Figure 3.2: Russia listed firms 2002 - 2017 87
Figure 3.3: India listed firms 2002 - 2017. 87
Figure 3.4: China listed firms 2002 - 2017. 87
Figure 3.5: South Africa listed firms 2002 - 2017. 88
Figure 4.1: Brazil Top 80 firms share price fluctuation from June 2002 to June 2017. 102
Figure 4.2: Russia Top 50 firms share price fluctuation from June 2002 to June 2017. 102
Figure 4.3: India Top 80 firms share price fluctuation from June 2002 to June 2017. 102
Figure 4.4: China Top 80 firms share price fluctuation from June 2002 to June2017. 102
Figure 4.5: South Africa Top 80 firms share price fluctuation from June 2002 to June 2017. 102
Figure 4.7: Russia Book and Market Leverage comparison 171
Figure 4.8: India Book and Market Leverage comparison. 171
Figure 4.6: Brazil Book and Market Leverage comparison. 171
Figure 4.9: China Book and Market Leverage comparison. 172
Figure 4.10: SA Book and Market Leverage comparison 172
Figure 5.1: Brazilian firm concentration of industries 207
Figure 5.2: Russian firm concentration of industries 207
Figure 5.3: Indian firm concentration of industries. 208
Figure 5.4: Chinese firm concentration of industries. 209
Figure 5.5: South African firm concentration of industries 209
Figure B.1: Brazil’s monthly 3-Month Treasury Bill Rate fluctuation 232
Figure B.2: Russia’s monthly 3-Month Treasury Bill Rate fluctuation 232
Figure B.3: India’s monthly 3-Month Treasury Bill Rate fluctuation 233
Figure B.4: China’s monthly 3-Month Treasury Bill Rate fluctuation 233
Figure B.5: South Africa’s monthly 3-Month Treasury Bill Rate fluctuation 234

List of Tables

Table 2.1: Strengths and Weaknesses of BRICS 70
Table 4.1: Brazil descriptive statistics for the key variables used. 105
Table 4.2: Russia descriptive statistics for the key variables used. 105
Table 4.3: India's descriptive statistics for the key variables used. 106
Table 4.4: China's descriptive statistics for the key variables used. 106
Table 4.5: South Africa's descriptive statistics for the key variables used 107
Table 4.6: The VIF check for multicollinearity in Brazilian firms (2002-2017) 109
Table 4.7: The effect of EPU on Leverage (2002-2017) without herding being present in Brazil firms 110
Table 4.8: The effect of EPU on Short-term Leverage (2002-2017) without herding being present in Brazil firms 111
Table 4.9: The effect of EPU on Long-term Leverage (2002-2017) without herding being present in Brazil firms 112
Table 4.10: The effect of EPU on Leverage (2002-2017) with herding being present in Brazil firms 113
Table 4.11: The GMM estimation on Leverage without herding being present in Brazil firms (2002-2017) 114
Table 4.12: The GMM estimation on Short-term Leverage without herding being present in Brazil firms (2002-2017) 115
Table 4.13: The GMM estimation on Long-term Leverage without herding being present in Brazil firms (2002-2017) 116
Table 4.14: The GMM estimation on Leverage with herding being present in Brazil firms (2002-2017) 117
Table 4.15: The VIF check for multicollinearity in Russian firms (2002-2017) 118
Table 4.16: The effect of EPU on Leverage (2002-2017) without herding being present in Russian firms . 119
Table 4.17: The effect of EPU on Short-term Leverage (2002-2017) without herding being present in Russian firms 120
Table 4.18: The effect of EPU on Long-term Leverage (2002-2017) without herding being present in Russian firms 121
Table 4.19: The effect of EPU on Leverage (2002-2017) with herding being present in Russian firms 122
Table 4.20: The GMM estimation on Leverage without herding being present in Russian firms (2002-2017) 123
Table 4.21: The GMM estimation on Short-term Leverage without herding being present in Russian firms (2002-2017) 124
Table 4.22: The GMM estimation on Long-term Leverage without herding being present in Russian firms (2002-2017) 125
Table 4.23: The GMM estimation on Leverage with herding being present in Russian firms (2002-2017). 126
Table 4.24: The VIF check for multicollinearity in Indian firms (2002-2017) 127
Table 4.25: The effect of EPU on Leverage (2002-2017) without herding being present in Indian firms 128
Table 4.26: The effect of EPU on Short-term Leverage (2002-2017) without herding being present in Indian firms 129
Table 4.27: The effect of EPU on Long-term Leverage (2002-2017) without herding being present in Indian firms 130
Table 4.28: The effect of EPU on Leverage (2002-2017) with herding being present in Indian firms 131
Table 4.29: The GMM estimation on Leverage without herding being present in Indian firms (2002-2017) 132
Table 4.30: The GMM estimation on Short-term Leverage without herding being present in Indian firms (2002-2017) 133

Table 4.31: The GMM estimation on Long-term Leverage without herding being present in Indian firms (2002-2017) 134
Table 4.32: The GMM estimation on Leverage with herding being present in Indian firms (2002-2017) ... 135
Table 4.33: The VIF check for multicollinearity in Chinese firms (2002-2017) 136
Table 4.34: The effect of EPU on Leverage (2002-2017) without herding being present in Chinese firms . 137
Table 4.35: The effect of EPU on Short-term Leverage (2002-2017) without herding being present in Chinese firms 138
Table 4.36: The effect of EPU on Long-term Leverage (2002-2017) without herding being present in Chinese firms 139
Table 4.37: The effect of EPU on Leverage (2002-2017) with herding being present in Chinese firms 140
Table 4.38: The GMM estimation on Leverage without herding being present in Chinese firms (2002-2017) 141
Table 4.39: The GMM estimation on Short-term Leverage without herding being present in Chinese firms (2002-2017) 142
Table 4.40: The GMM estimation on Long-term Leverage without herding being present in Chinese firms (2002-2017) 143
Table 4.41: The GMM estimation on Leverage with herding being present in Chinese firms (2002-2017) 144
Table 4.42: The VIF check for multicollinearity in South African firms (2002-2017) 145
Table 4.43: The effect of EPU on Leverage (2002-2017) without herding being present in South African firms 146
Table 4.44: The effect of EPU on Short-term Leverage (2002-2017) without herding being present in South African firms 147
Table 4.45: The effect of EPU on Long-term Leverage (2002-2017) without herding being present in South African firms 148
Table 4.46: The effect of EPU on Leverage (2002-2017) with herding being present in South African firms 149
Table 4.47: The GMM estimation on Leverage without herding being present in South African firms (2002-2017) 150
Table 4.48: The GMM estimation on Short-term Leverage without herding being present in South African firms (2002-2017) 151
Table 4.49: The GMM estimation on Long-term Leverage without herding being present in South African firms (2002-2017) 152
Table 4.50: The GMM estimation on Leverage with herding being present in South African firms (2002-2017) 153
Table 4.51: Summary of Brazilian Results 155
Table 4.52: Summary of Russian Results 156
Table 4.53: Summary of Indian Results 157
Table 4.54: Summary of Chinese Results 159
Table 4.55: Summary of South African Results 160
Table 4.56: Summary of overall BRICS Results – OLS and GMM Estimations 163
Table 4.57: Brazil's Book and Market Leverage Descriptive statistics (2002-2017) 167
Table 4.58: Russia's Book and Market Leverage Descriptive statistics (2002-2017) 167
Table 4.59: India's Book and Market Leverage Descriptive statistics (2002-2017) 168
Table 4.60: China's Book and Market Leverage Descriptive statistics (2002-2017) 168
Table 4.61: South Africa's Book and Market Leverage Descriptive statistics (2002-2017) 169
Table 4.62: The effect of EPU on the Change in Market Leverage (2002-2017) with herding being present in Brazilian firms 173

Table 4.63: The GMM estimation on the Change in Market Leverage with herding being present in Brazilian firms (2002-2017) 174
Table 4.64: The effect of EPU on the Market-to-Book Leverage (2002-2017) with herding being present in Brazilian firms 175
Table 4.65: The GMM estimation on the Market-to-Book Leverage with herding being present in Brazilian firms (2002-2017) 176
Table 4.66: The effect of EPU on the Change in Market Leverage (2002-2017) with herding being present in Russian firms 177
Table 4.67: The GMM estimation on the Change in Market Leverage with herding being present in Russian firms (2002-2017) 178
Table 4.68: The effect of EPU on the Market-to-Book Leverage (2002-2017) with herding being present in Russian firms 179
Table 4.69: The GMM estimation on the Market-to-Book Leverage with herding being present in Russian firms (2002-2017) 180
Table 4.70: The effect of EPU on the Change in Market Leverage (2002-2017) with herding being present in Indian firms 181
Table 4.71: The GMM estimation on the Change in Market Leverage with herding being present in Indian firms (2002-2017) 182
Table 4.72: The effect of EPU on the Market-to-Book Leverage (2002-2017) with herding being present in Indian firms 183
Table 4.73: The GMM estimation on the Market-to-Book Leverage with herding being present in Indian firms (2002-2017) 184
Table 4.74: The effect of EPU on the Change in Market Leverage (2002-2017) with herding being present in Chinese firms 185
Table 4.75: The GMM estimation on the Change in Market Leverage with herding being present in Chinese firms (2002-2017) 186
Table 4.76: The effect of EPU on the Market-to-Book Leverage (2002-2017) with herding being present in Chinese firms 187
Table 4.77: The GMM estimation on the Market-to-Book Leverage with herding being present in Chinese firms (2002-2017) 188
Table 4.78: The effect of EPU on the Change in Market Leverage (2002-2017) with herding being present in South African firms 189
Table 4.79: The GMM estimation on the Change in Market Leverage with herding being present in South African firms (2002-2017) 190
Table 4.80: The effect of EPU on the Market-to-Book Leverage (2002-2017) with herding being present in South African firms 191
Table 4.81: The GMM estimation on the Market-to-Book Leverage with herding being present in South African firms (2002-2017) 192
Table 4.82: Firm Beta's, Market Beta's and Herding Factors of the BRICS firms (2002-2017) 195
Table 4.83: Descriptive Statistics of the BRICS firms (2002-2017) 196
Table 4.84: The effect of EPU on Leverage (2002-2017) with CAPM herding being present in Brazilian firms 197
Table 4.85: The effect of EPU on Leverage (2002-2017) with CAPM herding being present in Russian firms 198
Table 4.86: The effect of EPU on Leverage (2002-2017) with CAPM herding being present in Indian firms 199
Table 4.87: The effect of EPU on Leverage (2002-2017) with CAPM herding being present in Chinese firms 200

Table 4.88: The effect of EPU on Leverage (2002-2017) with CAPM herding being present in South African firms 201
Table 4.89: Comparison of the herding effects 202
Table A.1: Brazil Top 80 firms listed on the B3 Stock Exchange 220
Table A.2: Russia Top 80 firms listed on the Moscow Exchange 222
Table A.3: India Top 80 firms listed on the National Stock Exchange 223
Table A.4: China Top 80 firms listed on the Hong Kong Stock Exchange 226
Table A.5: South Africa Top 80 firms listed on the Johannesburg Stock Exchange 229
Table C.1: Hausman Test for Brazil 235
Table C.2: Hausman Test for Russia 235
Table C.3: Hausman Test for India 236
Table C.4: Hausman Test for China 236
Table C.5: Hausman Test for South Africa 237

List of Abbreviations and symbols

BRICS	Brazil, Russia, India, China and South Africa
BRL	Brazilian Real
BVMF3	B3 Stock Exchange
CAPM	Capital Asset Pricing Model
CBO	Congressional Budget Office
CCP	Chinese Communist Party
CTR	Censored Tobit Regressions
DW	Durbin-Watson
EBIT	Earnings before interest and taxes
EPU	Economic policy uncertainty
EU	European Union
FDI	Foreign direct investment
FMCG	Fast moving consumer goods
FOMC	Federal Open Market Committee
FSAP	Financial Sector Assessment Program
FSSA	Financial System Stability Assessment
FY	Financial year
FYE	Financial year end
GDP	Gross Domestic Product
GMM	Generalised method of moments
GST	Goods and services tax
G7	Group of 7 countries
G20	Group of 20 countries
HKD	Hong Kong Dollar
HKSE	Hong Kong Stock Exchange
HT	Herding effect
IID	Independent and Identically Distributed
IMF	International Monetary Fund
INR	Indian Rupee
IPO	Initial public offering
JSE	Johannesburg Stock Exchange
MM	Modigliani and Miller
MOEX	Moscow Exchange
NGO	Non-governmental organisation
NPL	Non-performing loan
NPV	Net Present Value
NSE	National Stock Exchange
OLS	Ordinary least squares
R&D	Research and Development
ROE	Return on equity
RUB	Russian Ruble
S&L	Savings and Loan Association
T-bill	Treasury-bill
VIF	Variance Inflation Factor
ZAR	South African Rand

1. INTRODUCTION

Governments tend to initiate and implement economic policies, regulations, and laws that guide the directions of firms. The BRICS listed firms such as Ambev, Sberbank, Reliance, PetroChina, Anheuser-Busch InBev, inter alia, respond by changing the operations of their businesses when governments change or modify these economic policies, regulations, and laws. This is done in order to maintain a strong and healthy economy by adapting to the changes that have been made to work in the firm's favour. Zhang, Han, Pan and Huang (2015) state that due to the way policy decisions are made and the implementation process, economic policies typically cause a large extent of uncertainty, which could impose insightful impacts on the financial market and companies' behaviours such as understating or overstating a decision that has been made. Cao, Duan and Uysal (2013) concur with Zhang *et al.* (2015) that policy uncertainty in business environments is caused by the time taken to implement new policies.

Uncertainty is an equivocal yet broad notion, which tends to be in the minds of a diverse group of people such as clients, company executives and policymakers, about possible future outlooks. Bloom (2014) addressed questions about economic uncertainty. The author asked about the facts and patterns about uncertainty in the economy, why uncertainty varies during business cycle periods, if fluctuations in uncertainty affect behaviour and about the reaction of uncertainty during recessions and recoveries. The author found that increments in uncertainty are both an instinct emerging from terrible news shocks that begin recessions and amplify recessions by rising further as growth slows down. The author further states that during periods when policy makers have disagreements on economic policies, the degree of uncertainty may be greater than before (Bloom, 2014).

The terms *policy uncertainty*, *political uncertainty* and *economic policy uncertainty* are used interchangeably in the subsequent literature. Uncertainty in all the three terms may refer to the economic risk, investing, government policy, tax, regulatory regime or uncertainty over electoral outcomes that may affect the economy in a positive or negative way[1].

[1] Policy uncertainty (also called regime uncertainty) is a class of economic risk where the future path of government policy is uncertain, raising risk premia and leading businesses and individuals to delay spending and investment until this uncertainty has been resolved. Policy uncertainty may refer to uncertainty about monetary or fiscal policy, the tax or regulatory regime, or uncertainty over electoral outcomes that will influence political leadership. Retrieved from https://en.wikipedia.org/wiki/Policy_uncertainty

Recent financial research has shown that policy uncertainty has adverse effects on the economy and on how firms make capital structure decisions. Atanassov, Julio and Leng (2016) study the relationship between political uncertainty and Research and Development (R&D) investment during the United States of America (USA) elections. They found that political uncertainty affects the economy depending on the investment properties during election years relative to non-election years. Cao *et al*. (2013) tries to discover the source from which political uncertainty affects a firm's financing decisions by exploring how political uncertainty and firms' right of entry to public debt markets relate. They found that firms that borrow more from public debt markets than private debt markets; their financing decision amendments are less sensitive to political uncertainty. This happens because firms are more flexible in borrowing public debt.

In a more developed country, such as the USA, firms are likely to delay their debt issuance during times of high political uncertainty as they value financial flexibility, and this gives a reason to test the theory in emerging markets. Cao *et al*. (2013) confirm this with the results found in their study, that suggest political uncertainty has a first-order effect on the financing decisions of firms by rising financial conflicts. They also show that making financial decisions, firms that are less exposed to political risk and have low access to public debt markets, are less sensitive to fluctuations in political uncertainty (Cao *et al*., 2013). Furthermore, in times of high political uncertainty, Cao *et al*. (2013) indicate that there exists an important factor of holding more cash within firms.

It is common that large firms are not wrong about the rational or irrational capital structure decisions that they make and thus make it easier for smaller firms that have less experience to mimic their decisions. Some research studies assume that capital structure decisions are essentially made independent of the actions of similar firms in the industry or country. Leary and Roberts (2014) found that firms make capital structure decisions by reacting to the capital structure decisions of other firms, as opposed to variations in firm-specific determinants. The authors further conclude that there is existing evidence suggesting that herding behaviour matters for capital structure decisions.

This study examines the role of EPU in influencing firm performance and leverage as a form of financing decision, as well as the effect of herding in these emerging markets, particularly

Brazil, Russia, India, China and South Africa (BRICS). To achieve the objective of this study, the Hausman (1978) test as well as the Generalised Method of Moments (GMM) model are used in this study to examine if correlation between the error terms and the regressors in the model exist and to also estimate unknown parameters, respectively. This chapter outlines the background and problem definition for the research. It also examines the existing state of the research stream in emerging markets and identifies vital research needs defining the research objectives, motivation and significance of this study as well as outlining the structure of this dissertation. While literature on political uncertainty and capital structure exists in developed markets (which will be discussed in the literature review), this study aims to bring in emerging markets and link herding towards capital structure decisions in the presence of policy uncertainty. Herding is a control variable in the equation clarified in *Chapter 3* and shows that herding can be explained by EPU. This argument points more towards EPU impacting leverage, which in turn will minimise the effect of herding. While past capital structure research focused on both leverage and equity, this study will focus more on leverage. It is believed that emerging markets look more towards leverage financing as it may be cheaper than equity and more convenient to undertake. The term capital structure will thus be used because of past literature being explained and to explain the different financing decisions.

1.1 Background

The Modigliani and Miller (MM) theory of capital structure demonstrates the irrelevance of firm financing structure in terms of the cost of capital. They provided the seminal work of capital structure theory during the 1950's and many other authors have continued to add on to the research base. Capital structure literature indicated, over time, that the capital structure decision is expected to determine the financial leverage that maximises the value of the company and not of shareholders. This research study will look into how firm capital structure in emerging markets will be affected by political uncertainty and herding.

Some international studies on policy uncertainty tend to focus on countries especially in the USA and the United Kingdom (UK) (Gulen and Ion, 2016; Atanassov *et al.*, 2016; Stokey, 2013; Akey and Lewellen, 2015, *inter alia*) but few studies empirically include the idea of how policy uncertainty may affect firms' capital structures (Julio & Yook, 2012). Meanwhile, other studies in this field have rarely been attentive to emerging economies, except a study done by Zhang *et al.* (2015), which will be discussed more in Chapter 2, which attempted to fill the

vacuum by probing how economic policy uncertainty affects firm financing decisions in the emerging market of China. The authors did this for Chinese listed firms and showed that leverage ratios are lowered as economic policy uncertainty increases. This study is similar to the approach of Zhang *et al.* (2015) except that more emerging markets are included as well as the factor of herding behaviour towards firm financing decisions.

It is believed that emerging markets look more towards leverage financing as it may be cheaper than equity and more convenient to undertake[2]. However, recent studies in finance and economics such as Faulkender and Petersen (2006), Cao *et al.* (2013) and Zhang *et al*. (2015), have shown that economic policy uncertainty has opposing effects on the economy and can affect the way a firm makes financing decisions. Economic policy uncertainty, being one of the common weaknesses in emerging markets, seems to be affecting the way firms finance their businesses. The relationship between firm financing decisions and economic policy uncertainty is not new to the finance world and has come across as a negative relation in the corporate finance literature. Zhang *et al.* (2015) focus exclusively on how firm financing decisions are made in the presence of policy uncertainty. Since the limited research on this topic mainly focuses on developed markets (USA), Zhang *et al.* (2015) decided to provide an "out-of-sample" test, analysing whether the documented relationship holds in the emerging market China or not. This study adds to the literature as its purpose is to find out if, during times of policy uncertainty, firms herd their financing decisions, while specifically looking at leverage.

During times of policy uncertainty, firms can be pressurised to make financing decisions that may come as a result of rational or irrational forms of behaviour. For instance, while making financing decisions, firms can disregard their privately sourced information and imitate the actions of others or carelessly follow other investors or firms while neglecting what they previously believed in. Herding in the financial literature may be driven by different behavioural inspirations that influence individual beliefs and market sentiment. Firm executives who value being financially flexible, opt to make conservative financing choices during periods of high policy uncertainty. Primarily, literature on herding behaviour indicated

[2] Retrieved from www.equitymaster.com/detail.asp?date=10/13/2010&story=2&title=Eqity-or-Debt-Which-Is-cheaper

that during policy uncertainty periods, investors avoid differing from the average opinion of the market by engaging in herding behaviour (Hanafi and Abaoub, 2016).

This study attempts to fill the vacuum by responding to the question – is there herding behaviour towards firm capital structure of emerging economies in the presence of economic policy uncertainty? It does this by examining listed firms in the five largest emerging economies, being Brazil, Russia, India, China and South Africa (BRICS). These countries are considered to be the fresh building blocks of the world and what makes them distinct is that "they have the scale and the trajectory to challenge the major economies in terms of influence on the world economy", according to O'Neill, Wilson, Purushothaman and Stupnytska (2005) and International Trade Centre (2017). This study contributes to the body of knowledge on the role of policy development in influencing firm performance and corporate decisions. The next section discusses the motivations driving the research reported in this study and its potential benefits.

1.2 Research gap and objectives

1.2.1 Motivation of the study

There are three factors that motivate the research undertaken in this study. First, there is a lack of research on the role of politics on firm capital structure decisions in emerging markets. Second, there is a lack of research studies about corporate decisions in relation to herding in emerging markets due to policy uncertainty and third there is no published study that has been done that scrutinise a combination of capital structure, politics and herding in emerging markets. This study will contribute to sharing new knowledge with other researchers in different and relevant fields and will further come to comprehend other relationships that link with policy uncertainty in emerging markets.

1.2.2 The knowledge gap

Zhang *et al*. (2015) studied how EPU affected capital structure decisions for Chinese listed firms. Peswani (2011) on the other hand, looked at some high-performing companies in the fast-moving consumer goods (FMCG) sector in India and analysed whether leverage influences the company's profitability regardless of policy uncertainty. The author found that a highly leveraged firm would give an improved return on equity (ROE) to its investors while the

profitability of those firms does not get affected. (Peswani, 2011). Conversely, Jadvah (2012) explored the role of institutional, political, and economic factors in attracting foreign direct investment (FDI) in BRICS countries and found that institutional and political determinants are less vital than traditional economic determinants of FDI. Most of the investment in BRICS is driven by market-seeking purpose which will enable policy makers to understand the scale and direction of FDI flows during policy uncertainty. Prior to national elections anywhere in the world, a period of high policy uncertainty, Julio and Yook (2012) note a negative impact where investments are lower than before.

It is argued that while literature on policy uncertainty and capital structure exists in developed markets, much literature has not been studied widely to the knowledge of policy effects, capital structure and herding behaviour in emerging markets. This study aims to link herding to capital structure in the presence of policy uncertainty in emerging markets. Furthermore, it explores if herding behaviour of firm financing decisions results from policy influence and uncertainty. Thus far, only a few empirical studies (Zhang *et al*. (2015) and Hanafi and Abaoub (2016)) have been done on this research area yet no journal article has been published as of 2018 studying the data of the BRICS countries.

1.2.3 Potential benefits

An investigation of the effect of policy uncertainty in capital structure together with herding may provide twofold benefits. First, benefits will accrue to the body of knowledge about the role of economic policy in influencing firm performance and corporate decisions in emerging markets. The results of this study may assist to see how the BRICS countries will behave in the presence of herding and policy uncertainty in the future when they are forecasted to be the leading emerging group of the world.

Secondly, benefits will also accrue to firms and policy makers. Firm leaders may want to know how policy uncertainty influences the majority of corporate decisions, forecasts and the mechanisms of herding in order to understand and make positive appropriate capital structure decisions. The knowledge on policy uncertainty may benefit emerging markets as a whole in the quest to improve the quality of corporate information and timing of decision making to better meet the needs of the economy and policy makers.

1.2.4 Hypotheses testing

Primary Hypothesis

H_0: There is no significant relation with economic policy uncertainty being a factor in determining firm leverage financing decisions.

H_1: There is a significant relation with economic policy uncertainty being a factor in determining firm leverage financing decisions.

From the regressions on leverage using economic policy uncertainty (*EPU*) and *herding*, the null hypothesis would fail to be rejected if the *EPU* term is not significant. These variables and regressions will be defined in Chapter 3.

Secondary Hypothesis

H_0: There is no significant relation with less economic policy uncertainty leading to little or no herding towards firm leverage financing decisions.

H_1: There is a significant relation with more economic policy uncertainty leading to herding towards firm leverage financing decisions.

From the regressions on leverage using *EPU* and *herding*, the null hypothesis would fail to be rejected if *EPU* and *herding* is not significant. These variables and regressions will also be defined in Chapter 3.

The hypotheses will be tested in three parts. Firstly, to measure policy-related economic uncertainty for all the BRICS countries using an index developed by Baker, Bloom, and Davis (2012) based on frequency counts of newspaper articles. Similar to the EPU index developed for the USA the same methodology applies for the BRICS countries according to individual country newspaper coverage. Secondly, the impact of EPU on capital structure will be tested by using an empirical model defined in Chapter 3. Thirdly, the effect of herding will be tested to determine how it impacts the outcome of the leverage equation with and without the inclusion of EPU.

1.3 Structure of dissertation

This dissertation is structured in five chapters and the rest of this research will proceed as follows: **Chapter 2** reviews the literature on capital structure, policy uncertainty and how the

two concepts relate in terms of making firm financing decisions. This chapter further introduces the BRICS countries as the study's emerging markets and how policy uncertainty affects those countries and the financing decisions that they make. Furthermore, this dissertation shows how the EPU index established by Baker *et al.* (2012) is measured in the BRICS countries and how it impacts financing decisions. Finally, it provides the literature review regarding herding in different spheres and how it can possibly affect economic policy uncertainty in emerging markets. **Chapter 3** describes the data, variables, hypotheses and methodology of the returns, testing for EPU and herding. It further presents a robustness check. **Chapter 4** shows the empirical results of herding in the presence of policy uncertainty while making firm financing decisions. This chapter presents the empirical findings, analysis and discussion towards the results. **Chapter 5** concludes this dissertation by summarising the major findings and recommendations and also deriving implications for future research.

2 LITERATURE REVIEW

This chapter reviews the literature to understand how policy uncertainty and herding affects firms financing decisions in the BRICS countries. The literature review will look at the theoretical background of capital structure, policy uncertainty, and herding, from both a theoretical and empirical perspective. This will include a brief introduction to the BRICS economies, and some relevant literature surrounding leverage financing in developing economies (BRICS).

2.1 A review of capital structure literature

2.1.1 Theory of Capital structure

The concept of the Modigliani-Miller propositions, which is the basis for capital structure theory, has made progress since its conception. Modigliani and Miller (1958) created the capital structure irrelevancy theorem which suggests that valuating a firm is not an important factor to the way a company makes financing decisions in terms of debt and equity.

Modigliani and Miller (1958) used a static partial equilibrium analysis approach where some income streams' values are assumed to be constant and the values of all other products and inputs are taken as specified. This approach assumes that there is competition in capital markets and a few important groups of firms can easily access those markets. As opposed to an economy focused approach, the authors concentrated instead on a firm and industry level given various specialists' interests concerning the cost of capital is mostly vested there.

The authors assessed the cost of capital (equity and debt) by firstly considering the capitalisation rate for uncertain income streams. Physical assets of such an economy are all owned by firms who finance their assets by only issuing common stock (Modigliani & Miller, 1958). Secondly, Modigliani and Miller (1958) then assessed how debt is financed and the effect it has on equity prices. Different firms will have different magnitudes of debt in their capital structure, and this might increase the way the distribution of returns is altered in those firms. Thirdly, some qualifications and extensions of the basic propositions were evaluated by extending the methods and results that were developed. Three methods were considered: (1) allowing for tax of firm profits to have interest payments that are deductible; (2) being familiar

with the existence of an assortment of bonds and interest rates; and (3) the presence of defectiveness in the market being acknowledged (Modigliani & Miller, 1958).

The approach that Modigliani and Miller (1958) had to capital structure states that apart from investment risk, the value of a firm according to the market is affected by the prospects of the firm's future growth. The authors suggested that firm value is not reliant on the choice of financing decision of the firm, that is, the value of a leveraged firm is the same as the value of an unleveraged firm if the operating profits and prospects are the same. Modigliani and Miller (1958) assumed in their approach that there are neither taxes nor transaction and bankruptcy costs. However, the authors mentioned that there is symmetry of information in their approach, the firm and investors' cost of borrowing is similar, and debt financing does not affect firms' earnings before interest and taxes (EBIT) (Modigliani & Miller, 1958).

The authors developed a theory that helps us understand how taxes and financial distress affect a firm's financing decision. They wrote two propositions under the assumption of no taxes where the first proposition (capital structure irrelevance) states that a firm's market value is not affected by capital structure choice. The second proposition (higher financial leverage) states that financial leverage is directly proportional to the cost of equity. When taxes are introduced, the value of the firm is improved by the tax shield, referred to as the trade-off theory of leverage (Modigliani & Miller, 1958). This proposition states that the actual cost of debt is less than the nominal cost of debt because of tax benefits. The trade-off theory supports the notion that a company can finance its assets with debt, as long as the cost of financial distress exceeds the value of tax benefits. Subsequent models of capital structure have been introduced based on the Modigliani-Miller propositions.

2.1.2 Capital structure models

Myers (1984) mentions the similarity between the "The Dividend Puzzle" and the "The Capital Structure Puzzle". They have the same analogy in terms of not knowing about what the firm should do about the dividend policy and how firms choose their capital structure. It is known that changes in capital structure convey information to investors who are not aware of how firms choose the amount of debt or equity that they issue. In the 1980's, the notion of firm financing behaviour and how that behaviour affects equity returns was less understood by authors and investors. Myers (1984) adds to the capital structure literature by comparing and

contrasting the two thoughts about capital structure - a static trade-off framework and the pecking order framework. The former explains setting a debt-to-equity ratio goal and steadily moving in the direction of that goal, whereas, the latter states that firms have a preference of internal financing than external financing as well as preferring debt to equity if it issues shares.

Though Myers (1984) acknowledged the importance of the managerial and neutral mutation hypotheses in making capital structure choices, he chose to exclude them in his study. These two excluded hypotheses dwell on the information effect and financing habits that managers have, hence Myers (1984) saw it to be unreliable to explain capital structure choices as the information might either be positive or negative. If neither of the hypotheses above explains actual behaviour, the neutral mutations hypothesis will take precedence (Myers, 1984).

The Static Trade-off Hypothesis

The static trade-off hypothesis states that if a firm's assets and plans of investments are held constant, then a cost-benefit trade-off is regarded to determine a firm's optimal debt ratio. A firm adjusts its debt and equity by way of substitution for the firm value to be maximised; and if no costs of adjustments are incurred, then the firms' optimal ratio should be its observed debt-to-equity ratio. Myers (1984) mentions that debt policy is insignificant for any taxpaying firm. Tax paying firms gain by borrowing. The more a firm pays tax the more it gains from borrowing and conversely, firms that pay less tax would not gain from borrowing but gain in lending. The author further mentions that cost of financial distress exist and the literature on that supports two statements about financial behaviour. First, firms that are risky should borrow less and second, firms with tangible assets should borrow less than firms with intangible assets (Myers, 1984).

The Pecking Order Theory

The pecking order theory firstly states that firms' preference is obtaining internal rather than external finance. Secondly, even though dividends are sticky, firms decide to adjust how they pay out dividends in terms of target ratios in order to match their investment opportunities (Myers, 1984). Thirdly, cash flows that are generated from within the firm may be different to investment expenditure due to dividend policies that are sticky and volatility that is in both profitability and investment opportunities. Lastly, if external finance is required then debt is issued first as a safe security and equity issued as a last option (Myers, 1984). The author shows that external financing with asymmetric information deliberates avoiding debt issue costs or

costs of equity that come with either internal or external financing respectively. Literature on asymmetric information that give predictions that are aligned with the pecking order theory is noted in work done by Harris and Raviv (1991), Myers and Majluf (1984) and Myers (1984). This is shown with situations involving asymmetric information, where debt is priced more accurately than equity.

Myers (1984) provides five statements about financing behaviour, as it relates to capital structure. The first statement refers to internal versus external equity and it is shown that investment spending is primarily financed by debt issuance and internal funds. The second is on timing of equity issues and states that when firms seek external finance, they wait for when equity prices are high as they are more likely to issue equity (rather than debt) at that time than after they have fallen (Myers, 1984). The third is on borrowing against intangible assets and growth opportunities stating that firms with intangible assets that are valuable or growth prospects tend to take on less debt than firms with more tangible assets (Myers, 1984). The author mentions that the fourth is on exchange offers stating that on average, share prices increase when a firm decides to trade using debt for equity, and conversely decrease when it decides to trade using equity for debt (Myers, 1984). The fifth is on the issue or repurchase of shares stating that share prices usually increase when a share repurchase is announced and decrease when firms announce a share issue (Myers, 1984).

Harris and Raviv (1991) discuss how agency cost models have provided some interesting implications in the capital structure world. These models are ones in the field of capital structure that are determined by costs due to conflicts of interest. First are the conflicts between managers and shareholders where managers bear all the costs of the profit enhancement activities that they did not gain entirely from. Harris and Raviv (1991) mention that these models predict that between leverage and firm value exists a positive relationship while between leverage and growth opportunities a negative relationship is exists. It is stated that if more firm equity is owned by managers, the more the inefficiency of those activities is reduced. The second conflict is the one between equity holders and debtholders where debtholders bear all the costs if an investment fails and equity holders gain if an investment yields large returns.

Harris and Raviv (1990a) and Stulz (1990) were surveyed sharing a common concern about conflicts between managers and equity holders but contrast each other about the way the conflict arises, the effects of how debt eases the conflict and the disadvantages of debt.

Following a default, both these papers have different views. In Harris and Raviv (1990a), though shareholders prefer liquidation, managers take the decision to continue with the firm's operations that were already in progress. However, in Stulz (1990), investors see it better to pay out cash while managers prefer to invest all available funds.

Model 1 (the Harris and Raviv model) expects that firms with greater liquidation value will have a higher market value, however, they will also be expected to have more leverage and be more prone to default than similar firms with a lower liquidation value. If cash flows are low in this model, the problem is alleviated through debt by influencing investors to liquidate but the increase in debt will cause the firm to be more prone to default. Model 2 (the Stulz model) expects debt payments to decrease free cash flows which, in turn, reduces the funds available for investments that are profitable. Harris and Raviv (1991) mention that firms that are probable to have low debt levels are firms with good investments and those expected to have high debt levels are firms that are more likely to be takeover targets. Managers in this model are hesitant to enact optimal debt levels but are more likely to do so when the threat of the takeover is immense (Harris & Raviv, 1991).

Diamond (1989) and Hirshleifer and Thakor (1989) shared a common concern about conflicts between equity holders and debtholders. The two papers show how managers see the reputation of firms as important, so much so that stakeholders need to incentivise managers with equity if safe projects are pursued. Harris and Raviv (1991) mention that the model from Diamond (1989) is concerned with the reputation of a firm if projects that declare debt repayment are pursued. Hirshleifer and Thakor's (1989) model on the other hand argues how a manager of a firm has a choice of two projects that has either a success or failure outcome. Managers make the most of a project that is more prone to be a success (perhaps at the cost of a low return), despite the fact that shareholders prefer a high expected return. This reputation influence affects managers of firms that are more likely to be takeover targets and these firms are likely to have more debt than normal or anti-takeover targets.

Harris and Raviv (1991) mention that some asymmetric information theories predict a positive price effect of a debt issue while others have an absence of a price effect on the issuance of debt concerning stock price reactions to issuance of securities. Furthermore, the positive stock price response predicted increases as the exchange of debt and equity gets larger. It is also predicted that few firms observe a pecking order for equity issues and most surveyed papers

do not obtain a pecking order result that there is a debt preference over equity (Harris & Raviv, 1991). Theories on asymmetric information further predict that with higher levels of the informational asymmetry stems increases in leverage and are also positively correlated to value of other (peer) firms. Asymmetric information mentioned in Harris and Raviv (1991), shows that managers are presumed to have more information about the firm's investment opportunities or returns. Harris and Raviv (1991) mention that with the interaction of investments and capital structure, some author's show that if firm insiders are more informed about the value of the firm's assets than investors, then the market may misprice the firm's equity. With this in mind, financing new investment projects through equity may derive a net loss to current shareholders caused by investors possibly getting more than the NPV of the new project.

Harris and Raviv (1991) mention another model by Ross (1977) regarding how a proportion of debt functions as a signal of insider information. In this model, managers are better informed than investors regarding the firms' returns and performance. If the market highly values the firm's securities, then managers benefit. However, if the firm goes insolvent, then the managers are penalised. Harris and Raviv (1991) further mention that if investors see a firm taking on more debt, it signifies that the firm is of higher quality. Conversely, low quality firms do not necessarily imitate high quality firms as high bankruptcy costs are expected and associated with taking on more debt. The model by Ross (1977) mainly articulates that the financial market accepts the issuance of debt as good news.

The authors further explore some studies that talk about models based on managers risk aversion to obtain signalling. The models show that if a firm increases its leverage, managers have the allowance to preserve a larger portion of the risky equity (Harris & Raviv, 1991). This means that due to risk aversion, the larger fraction of the risky equity decreases managerial benefits; however, the decrease in benefits is not of great effect for managers of higher quality projects (Harris & Raviv, 1991).

The authors also discuss models which introduce profitability (through product marketing strategies), whereas previous literature only focused on equity value (and not necessarily on profitability). The interaction between profitability and equity value were in their initial stages as of 1991 and capital structure models based on these, have investigated how capital structure relates to either market strategy of products or the characteristics of products (Harris & Raviv, 1991). On the one hand, the authors consider the price of the product and its quantity as

variables that are determined to affect how competitors behave. On the other hand, it is noted that industry's equilibrium strategies and payoffs is affected by capital structure (Harris & Raviv, 1991). The literature shows that in the past, firms focused on maximising the value of equity disregarding product marketing strategy whereas the new literature incorporates both of them together. The second approach focusses on how debt influences the customers and suppliers interaction by identifying how the characteristics of product and product marketing interact with debt (Harris & Raviv, 1991). This approach resulted in seeing how debt is advantageous, namely that debt strengthens equity holders position to negotiate (Harris & Raviv, 1991).

Harris and Raviv (1991) noted that there are theories driven by corporate control considerations where Harris and Raviv (1988) and Stulz (1988) discussed how the outcome of takeover contests is affected by capital structure. In the corporate control sector, Harris and Raviv (1991) explored the choice between proxy fights and tender offers as determinants of corporate takeover methods, together with their outcomes and price effects. The basic idea is that the incumbent management team of a takeover target can and does affect the type of takeover attempt (tender offer or proxy contest) and its probability of success by using various resistance devices in different degrees. A change in capital structure is the focus of the resistance strategy chosen by the obligatory management team to influence the type and outcome of takeover activity. Some literature found that firms that are takeover targets will increase their debt levels while also showing a negative relationship between leverage and the increase of shares offer.

Harris and Raviv (1991) found that the empirical work of the models surveyed have acknowledged and organised which are important in different perspectives among the determinants of capital structure. The authors also found that the bankruptcy facilities, how convex the payoffs of levered equity are, the level of debt influence on equity ownership by managers and how insensitive some of the debt payoffs are to firm performance, are some properties of the debt contract that have significant consequences for determining capital structure (Harris & Raviv, 1991).

Literature on capital structure has developed since Modigliani and Miller (1958) and the contention, specifically pecking order and trade-off models, have been the subject of debate in the industry of finance. While it is noteworthy to mention some studies, most will not be discussed here as it is not the central tenet of this literature review. Some authors find that the

trade-off theory explains 50 percent of financing behaviour while pecking order describes 10 percent of the variation in leverage (Barclay and Smith, 2005; Flannery and Rangan, 2006). Further research in the South African context was explored by testing the trade-off theory using partial adjustment regressions (Ramjee and Gwatidzo, 2012; Auret, Chipeta and Krishna, 2013) while other papers show a common preference of the pecking order over the trade-off theory (Fama and French 2002; Tong and Green, 2005; Yu and Aquino, 2009). Some research shows evidence of models in favour of both theories when firm specific determinants are included in the estimated partial adjustment regressions (Ramjee and Gwatidzo, 2012; Chipeta and Deressa, 2016a). It is still not conclusive as to which model best explains firm financing behaviour.

Chipeta and McClelland (2017) tested the two theories to assess how valid the two models are in explaining the variations of leverage for firms that are listed on the Johannesburg Stock Exchange (JSE). The authors noted that the trade-off theory predicts firstly that for managers to be led to strive, target and progressively adjust for an optimal capital structure there needs to be an efficient and effective compromise between the benefits of tax and the costs of financial distress. Chipeta and McClelland (2017) note that several studies have documented evidence in favour of this prediction, for example, Chipeta, Wolmarans and Vermaak (2012) confirmed the existence of leverage targeting for firms in South Africa.

The models were tested using real and simulated data sets. The authors found that when using GMM and Censored Tobit Regressions (CTRs), the partial adjustment regressions did not dismiss their initial hypothesis, when debt ratios are recreated by the pecking order and trade-off financing approaches. The GMM model is the slightly more compelling model at dismissing the objective change speculation when debt ratios are arbitrarily created. The pecking order model from Shyam-Sunder and Myers (1999) fails to reject trade-off financing behaviour and reports the most minimal error rate when it is subjected to the arbitrary debt ratios. Chipeta and McClelland (2017) conclude that when firms are no longer a target, partially adjusted regressions need measurable power in dismissing target modification conduct for the sample of firms tested.

The authors then propose a way to deal with testing the two theories and affirm no proof found of the trade-off theory and some confirmation of the pecking order theory (Chipeta & McClelland, 2017). In alternative tests done on the trade-off theory, below-target profitable

firms with comparatively safe and substantial resources diminish their debt ratios considerably. Be that as it may, for firms that were on target, the authors found that no significant changes in the debt ratios were accounted for. Chipeta and McClelland (2017) had robust results concerning both theories using alternative methodologies. In agreement with the pecking order recommendations, the authors found that firms considerably increase their future leverage if they have lower levels of current leverage and monetary deficits. However, firms with current monetary surpluses at low and elevated leverage levels significantly decrease their future leverage (Chipeta & McClelland, 2017). The alternative conditions for the two theories are tested under incorrectly generated debt ratios, and the authors effectively dismiss irregular debt financing in most of the simulations (Chipeta & McClelland, 2017).

Based on the statement that interest payments of debt are tax deductible, the theory predicts that firms that are profitable should increase their leverage if they have adequate taxable income to protect (Chipeta & McClelland, 2017). The theory then predicts that firms that have safe tangible assets will bare less financial distress costs and as a result, they are expected to have higher debt ratios. Finally, the theory predicts that debt ratios are positively related to higher marginal tax rates while on the contrary, firms with lower tax rates will have lower debt ratios. Overall, Chipeta and McClelland (2017) advise that literature confirms that the trade-off theory works well under the third prediction that states that safe tangible assets provide opportunities for firms to access more debt. Generally, these theories are evaluated based on regressing a number of factors against a proxy for a firms financing decision. These factors vary, causing literature to be divided on the ideal determinants of capital structure.

2.1.3 Determinants of Capital Structure

Titman and Wessels (1988) broaden experimental work on capital structure theory in three ways. Initially, they expand the scope of hypothetical determinants of capital structure by looking at some of the variables not yet analysed through empirical observation. Second, since a number of these hypotheses have distinctive observational ramifications as to various kinds of debt instruments, Titman and Wessels (1988) investigate procedures that are different for short-term, long-term, and debt that is convertible as opposed to a total measure of aggregate debt. Third, a procedure is utilised that expressly mitigates the estimation issues. The authors discuss the distinctive qualities of each variable that may influence the firm's debt-equity

decision. Some examples include: resource structure, non-debt tax shields, growth, uniqueness, industry grouping, size, earnings volatility, and profitability (Titman & Wessels, 1988).

Titman and Wessels (1988) mention that most capital structure hypotheses argue that the kind of benefits possessed by a firm, somehow influences its capital structure decision. The authors discuss the views of different studies about the collateral value of assets. Scott (1977) recommends that by offering secured debt, the worth of firms' equity is increased by confiscating wealth from their current creditors that are unsecured. Myers and Majluf (1984) likewise propose that for firms to sell secured debt may be found valuable. The model by Myers and Majluf (1984) shows that the firm's managers prefer to be better informed than outside investors, about the possibility of costs related with issuing securities. Issuing debt secured by property with identified qualities maintains a strategic distance from these expenses. Thus, firms with resources that can be utilised as equity might be relied upon to issue more debt to exploit this opportunity (Titman & Wessels, 1988).

Titman and Wessels (1988) further state that studies by Galai and Masulis (1976), Jensen and Meckling (1976) and Myers (1977) recommend that investors of firms that are leveraged have an impetus to invest sub-optimally to dispossess wealth from the bondholders. This impetus may likewise result in debt ratios having a positive connection to the limitation firms have to collateralise their debt (Titman & Wessels, 1988). On the off chance that the debt can be collateralised, the borrower is confined to utilise the funds for a predetermined task. Grossman and Hart (1982) propose that higher debt levels lessen this propensity attributable to the inflated threat of being bankrupt. Managers of highly levered firms are usually not ready to consume exorbitant bonuses since the bondholders (or bankers) are prone to closely observe such firms (Titman & Wessels, 1988). Therefore, firms with resources that have less collateral may decide on higher debt levels in order to confine their managers' utilisation of bonuses (Titman & Wessels, 1988).

A model of ideal capital structure was presented by DeAngelo and Masulis (1980) where it integrates the effect of non-debt-related corporate tax shields, personal and corporate taxes. It was argued that deductions of tax for deterioration and investment tax credits are alternates for the tax breaks of debt financing (Titman & Wessels, 1988). Subsequently, firms that have less debt incorporated in their capital structures are the ones with large non-debt tax shields with respect to their normal cash flow (Titman & Wessels, 1988). Indicators of non-debt tax shields

would include: the investment tax credits over total assets ratio, depreciation over total assets ratio, and a direct estimate of non-debt tax shields over total assets ratio (Titman & Wessels, 1988).

As Titman and Wessels (1988) indicated, equity-controlled firms tend to contribute sub-optimally to dispossess wealth from the company's bondholders. The cost related with this relationship is probably going to be more for firms in developing markets, which have greater adaptability in their decision of future ventures (Titman & Wessels, 1988). Expected future development should hence be adversely identified with debt levels that are of a long-term period, however, Myers (1977) noticed that this agency problem is alleviated if the firm issues short-term instead of long-term debt. This implies that if developing firms substitute using short-term debt for long-term debt, the ratios from short-term debt may possibly be positively associated with development rates. Authors such as Jensen and Meckling (1976), Smith and Warner (1979), and Green (1984) contended that agency costs will be decreased if firms issue convertible debt, which proposes that convertible debt ratios might be decidedly identified with development prospects (Titman & Wessels, 1988). The authors state that development prospects are capital resources that increase the value of a firm yet cannot be collateralised and do not create current taxable pay. Signs of such prospects would be found in the ratios of: research and development over sales, capital expenditures over total assets and the growth of total assets measured by the percentage change in total assets (Titman & Wessels, 1988).

Titman and Wessels (1988) discuss the views of one determinant of capital structure, *uniqueness*, and mention that Titman (1984) presents a model that shows a connection between a company's liquidation choice and its insolvency status. Thus, by liquidating, the costs that organisations incur on their clients, service providers, and specialists are shown as important to their capital structure choices. The authors further state that clients, labourers, and service providers of firms that deliver unique items likely endure moderately high expenses if they liquidate. The labourers and service providers most likely have job-specific abilities and capital, and their clients could find it troublesome to seek alternative servicing for their moderately distinct items. Hence, uniqueness is usually adversely related with debt ratios (Titman & Wessels, 1988). Indicators of uniqueness incorporate expenditures on R&D over sales, selling expenses over sales, and quit rates, which is the percentage of the aggregate work drive that deliberately left their occupations in the sample years (Titman & Wessels, 1988).

Another important characteristic of capital structure stated by the authors is the industry classification. Titman (1984) recommends that organisations that make items requiring the accessibility of specific servicing and extra parts will realise that liquidation is particularly expensive. This demonstrates that manufacturing firms should be financed with generally less debt (Titman & Wessels, 1988). The author's further comment about the cost of issuing debt and equity is likewise identified with the size of firms as one of the characteristics. Specifically, to issue new equity, small firms usually pay more than large firms and to some degree they also pay more to issue debt in the long-term period (Titman & Wessels, 1988). This implies that small firms prefer to borrow in the short-term period (through bank credit) instead of issuing debt in the long-term period in light of the lower settled expenses related with this option (Titman & Wessels, 1988).

Titman and Wessels (1988) state that numerous authors have recommended that a firm's ideal debt level is a small amount compared to the instability of earnings. An indicator of volatility is the standard deviation of the percentage change in operating income that cannot be specifically influenced by the firm's level of debt (Titman & Wessels, 1988). Donaldson (1961) and Brealey and Myers (1984) recommend that organisations lean toward raising capital in different ways, initially from retained income, second from issuing debt, and third from new equity being issued. Myers (1984) proposes that this behaviour might be because of the expenses of new equity being issued. These expenses deliberated about in Myers and Majluf (1984) emerge due to asymmetric information or transaction costs. In either case, the firms past profitability and the value of income accessible ought to be vital determinants of a firms present capital structure (Titman & Wessels, 1988).

There are six ways to measure financial leverage that Titman and Wessels (1988) used in the literature - long-term, short-term, and convertible debt divided by market and by book values of equity (Titman & Wessels, 1988). Even though these measures could have been consolidated to provide a total debt ratio, Myers and Majluf (1984) state that there is justifiable reason behind not doing this. Some of the hypotheses of capital structure have distinctive implications for the diverse kinds of debt, and, for the reasons examined below, the anticipated coefficients in the basic regression may vary as indicated by whether debt ratios are estimated as according to book or market values (Titman & Wessels, 1988). Further, included in the error term are the errors that are estimated in the dependent factors and do not favour any of the coefficients in the regression (Titman & Wessels, 1988). The authors mention that Bowman (1980) showed

how large the cross-sectional correlation between the book and market value of debt is, and as a result, the misspecification due to utilising book value measures is presumably insignificant. The robustness measure described in chapter 3 utilises the market leverage and market-to-book leverage in the presence of herding which disregards the misspecification of using the book leverage.

Titman and Wessels (1988) found that a firm's distinct line of business and a firm's debt level are negatively related. The results found by Titman (1984) coincide with this evidence which implied that if liquidation occurred, firms that charge high costs on their suppliers, workers and customers have lower debt ratios (Titman & Wessels, 1988). The results in these studies show the importance of transaction costs being a determinant of capital structure choice. The negative relation between measures of historic profitability and current debt levels scaled by the equity market value is evident of the above (Titman & Wessels, 1988).

The authors also found a negative relationship between debt ratios in the short-term period and the size of a firm, and this resulted in small firms incurring high transaction costs when issuing debt in the long-term period (Titman & Wessels, 1988). Relative to other determinants of capital structure, transaction costs are usually expected to be trivial, but Titman and Wessels (1988) expressed the importance of transaction costs suggesting that the different costs related leverage and benefits thereof may not be particularly significant. This is consistent with the argument that Miller (1977) mentioned about the costs and benefits related with this decision being insignificant.

Rajan and Zingales' (1995) approach started off by firstly presenting and analysing the balance sheet in each of the Group of 7 (G7 - the USA, Japan, Germany, France, Italy, the UK, and Canada) countries. The major differences across the G7 countries and their impact on capital structure decisions were then analysed. In analysing balance sheets, it is noted that there are three noteworthy contrasts. First, not all nations expect firms consolidated balance sheets to be reported, despite the fact that the main part of firm in every nation does it (Rajan and Zingales, 1995). The authors explain that organisations with unconsolidated balance sheets report a partner's net resources as an investment in the long-term period on their asset reports. On financial records, these organisations would seem to have brought down leverage than peer firms who report united balance sheets. Second, the valuation of assets may vary significantly crosswise over nations while the third contrast identifies with what is incorporated and what is

ignored from a balance sheet in various nations (Rajan and Zingales, 1995). For instance, lease reporting changes significantly: budgetary leases show up on the asset report in the USA, Canada, and the UK however not routinely in Japan and Mainland Europe. As the degree of renting increases, a greater amount of these nations are constraining organisations to report them (Rajan and Zingales, 1995). Another distinction is that in Germany, both the subsidised and unfunded segment of pension liabilities are accounted for on the balance sheet. For the most part, German bookkeeping practices enable firms to set aside more noteworthy arrangements for future potential risk in beneficial years (Rajan and Zingales, 1995).

By considering the financing decisions of firms in developed countries, Rajan and Zingales (1995) examine the determinants of capital structure choice in other countries other than the USA. Their main objective was to study whether the determinants of capital structure of USA firms correlates with the capital structure in other countries (Rajan and Zingales, 1995). The authors do not confine themselves to reproducing the results found in the USA to other countries, but to instead understand the underlying principle behind them. They argue that firms in the UK and Germany give off an impression of being considerably less leveraged than firms in the other G7 nations. These discoveries make one wonder why firms in nations like Japan and the USA, with diverse organisations, have a comparative measure of leverage, and why firms in nations such as the UK and the USA with comparative capital markets and money related foundations have such extraordinary levels of debt. The authors initially look at the impact of the tax code on total leverage and find that literature on global capital structure in the late 1990's, contrasts claims that taxes have no illustrative power (Rajan and Zingales, 1995). The authors have demonstrated that one cannot, without much of a stretch, reject the likelihood that taxes impact total corporate leverage in a nation. It is essential that analysts incorporate both individual and corporate taxes in order to conclude on the impact of taxes (Rajan and Zingales, 1995).

The G7 nations differ extensively regarding the degree to which liquidation is underscored over renegotiation of cases, and the degree to which management has control amid the insolvency procedure (Rajan and Zingales, 1995). Bankruptcy has various impacts, where for example, a strict authorisation of creditors' rights improves *ex ante* contractibility. Moreover, if a firm gets into money related trouble, the situation allows creditors to "punish" management and equity holders, giving management motivating forces to avoid bankruptcy (Rajan and Zingales, 1995). The authors show that strict implementation diminishes the exorbitant, and protracted

wrangling between claimholders that follows when there is a probability that the original contracts might be damaged. Nations vary in the degree to which they deal with this exchange in authorising creditor rights (Rajan and Zingales, 1995).

In spite of past studies, there is no contrast found by Rajan and Zingales (1995) between the bank-based nations (Japan, Germany, France, and Italy) and in the market-based nations (USA, UK, and Canada) concerning the level of debt. The authors highlight that among the G7 countries there are most likely significant differences in the intensity of banks. The two polar cases are by banks in Germany and the USA, with the various nations falling in the middle (Rajan and Zingales, 1995). In Germany, banks are both permitted to guarantee corporate securities and to have equity in modern organisations. The authors explained that in the USA, critical breaking points are set on the two exercises. A superior measure of the significance of retaining cash in firms is the ratio of bank advances to the GDP made to the private segment. This measure recommends that the managing of an account is more important in bank-oriented economies (Rajan and Zingales, 1995). Rajan and Zingales (1995) state that the level of ownership concentration and the market for corporate control are major institutional contrasts in the G7 nations (Berglof, 1990 and Franks & Mayer, 1994). The USA, the UK and to a considerably lesser degree, Canada have firms with diffused proprietorship, yet additionally, a functioning takeover market. Given the concentrated ownership, a few financial specialists have proposed that the dynamic takeover market and controlling management should be substitutes (Rajan and Zingales, 1995). In contrast, the authors mention that in Europe and Japan, ownership is very rigorous, on account of the utilisation of inter-company cross-property, pyramiding of proprietorship and double class stock[3].

The authors deliberate that the impact of ownership concentration on capital structure is a long way from self-evident. From one viewpoint, large investors being present on the governing body ought to lessen the degree of agency costs amongst managers and investors and encourage value issues. Moreover, Rajan and Zingales (1995) state that these investors might be undiversified, which may explain their low preference for debt. Then again, if a portion of these large investors are banks, they (the banks) may have a stake in diminishing the extent of outside

[3] **Inter-company cross-property** is a subsidiary of a parent company owns shares of another subsidiary of the same parent company or the parent company itself.
Pyramiding proprietorship is controlling a company through a series of ownership relationships.
Double class stock is the issuing of different types of shares by one firm.

financing of their customers, constraining them into borrowing from the banks (Rajan and Zingales, 1995). Along these lines, the authors discuss that it is not surprising that a reasonable connection between the concentrated ownership that portrays a few nations and total leverage is not identified (Rajan and Zingales, 1995). In the event that a substantial portion of a company's assets are tangible, at that point resources should fill in as equity, lessening the danger of the loan specialist enduring the agency costs of debt. Rajan and Zingales (1995) also mention that resources ought to likewise hold more an incentive in liquidation. In this manner, the more noteworthy the extent of distinctive resources on the accounting report, the readier lenders should be to supply credit, and leverage ought to be higher. Organisations that are highly levered will probably leave behind gainful investment opportunities (Myers, 1977). Hence, for firms that are expecting high growth in the future should utilise a more prominent measure of financing equity. As proposed in Myers (1977), Rajan and Zingales (1995) measures opportunities for growth by utilising the market-to-book value of assets ratio (Rajan and Zingales, 1995).

The authors found that overall, the leverage of a firm is more comparable over the G7 nations than initially thought, and there exists differences that are not explained by institutional differences (Rajan and Zingales, 1995). The authors state that the elements (recognised by past cross-sectional investigations in the USA) to be identified with leverage appear to be likewise related in different nations too. An examination of the USA and other countries recommends that the hypothetical underpinnings of the observed relationships are still to a great extent uncertain. Rajan and Zingales (1995) emphasise that it is important to reinforce the connection between hypothetical models and exact determinations of those models, which will naturally require more data to draw empirical conclusions (Rajan and Zingales, 1995).

Awan and Amin (2014) state that the reliance on managerial and financial choices, determines whether a firm succeeds or fails. These financial choices incorporate the raising of assets from various sources where funding in the long-term period is sourced from the capital market and funding in the short-term period is sourced from the money market (Awan & Amin, 2014). The authors mention that the thought process behind this is to limit the financial costs of funds rising. There are two schools of thought on capital structure. The first says that the value of a firm is not dependent on how its capital structure is set up while the second says that value of a firm is dependent on how its capital structure is set up (Awan & Amin, 2014). Regarding the first, the authors remark that Modigliani and Miller (1958) suggested that the market value of

any firm is not dependent on how its capital structure is set up as well as the market securities in a perfect monetary market. In addition, Miller (1977) says that the tax advantage is null while considering the effects of personal taxes on the wages of shareholders as profits and capital increases; and debtholders' income on debt (Awan & Amin, 2014).

With regards to the second school of thought, the authors explain how Modigliani and Miller (1963) convey that debt gives a firm a tax shield. This demonstrates how high debt gives high tax reserves because the interest expense is a deductible cost from the company's earnings (Awan & Amin, 2014). The two theories underline the notion that directors act in the support of shareholders. Awan and Amin (2014) note that the fundamental distinction between these two is that the trade-off hypothesis incorporates all investors, both existing and potential, while the pecking order hypothesis incorporates only existing investors.

The authors' main objective is to explore the factors that influence the textile firms of Pakistan and which hypothesis regarding capital structure applies more in this sector. The authors focused on the textile sector because there was little financial behaviour research done in Pakistan relating to that sector. Awan and Amin (2014) applied panel data techniques in investigating the textile firms of Pakistan listed on the Karachi Stock Exchange from the years 2006 to 2012. The authors incorporate some variables based on the past literature to explain leverage. According to the trade-off hypothesis, there is a positive direct connection between the size of the firm and leverage, subject to high or low debt ratios. However, the pecking order hypothesis implies a negative direct connection amongst size and leverage (Awan & Amin, 2014). The authors mention that the second variable used is the profitability of a firm, where the trade-off hypothesis implies a positive direct connection between a firm's profitability and leverage. It shows that firms that are more productive have higher income to shield tax; hence, these organisations have more debt. Conversely, the pecking order hypothesis implies a negative direct connection amongst profitability and leverage of a firm. Awan and Amin (2014) explain the third variable as the tangibility of the firm, stating that the trade-off hypothesis implies a positive direct connection between a company's resources and leverage. On the contrary, the pecking order hypothesis implies a positive direct connection between resources and leverage in the long-term period of a firm, and is negatively related with leverage short-term period of a firm. Risk (given by earnings volatility of a firm) is the next variable discussed and the authors note that the trade-off hypothesis implies a negative connection between a firm's income instability and leverage, since more debt increases income unpredictability. The

pecking order hypothesis on the other hand implies a positive direct connection between a company's earnings instability and leverage (Awan & Amin, 2014). The effective tax rate of a firm is the next variable and the authors mention that the trade-off hypothesis implies a positive connection between the tax rate and leverage, as it diminishes the cost of debt. Along these lines, an expansion in the tax rate increases the tax advantage of debt funding. However, the pecking order hypothesis does not indicate how the effective tax rate is connected to the level debt (Awan & Amin, 2014).

Studies done by DeAngelo and Masulis (1980) and Myers and Majluf (1984) demonstrate that the two hypotheses indicate a negative connection between non-debt tax shields and leverage. Be that as it may, answers are mixed as a few studies demonstrate the positive relationship of non-debt tax shields with debt ratios (such as Karadeniz, Kaandir, Balcilar & Onal, 2009), while other studies indicate a negative connection between the non-debt tax shield and debt ratios (such as Sheik and Wang, 2011). The next variable, net commercial trade position, is then discussed. The pecking order hypothesis sees a commercial trade position as an internal supply of funding which endorses a negative relationship between them. Colombo (2001) also found the same relationship between them while the trade-off hypothesis recommends the contrary relationship between them (Awan & Amin, 2014). Lastly, the liquidity of a firm is discussed as a variable, indicating that the relationship between a firm being liquid and the debt ratios is positive as proposed by the trade-off hypothesis. The pecking order hypothesis predicts an opposite relationship which demonstrates that agency costs of a firm being liquid are high. The positive relationship demonstrates that a firm being highly liquid can pay off commitments as they emerge (Awan & Amin, 2014).

Awan and Amin (2014) used the Hausman test which demonstrates that a fixed effect model is preferred over a random effect model, based on their data and variables. In summary, the authors found that components like the firms liquidity, the net commercial trade position of a firm, the non-debt tax shields of a firm, profitability, tangibility, size and risks of earnings of firms have a statistically significant effect on the total debt to total asset ratios (Awan & Amin, 2014). This implies that capital structure does make a difference in the textile segment of Pakistan. In this way, all textile firms' management ought to think about these variables while choosing the ideal capital structure of their organisations. Awan and Amin (2014) also found that the components mentioned above have a measurably positive effect on total debt to total

asset ratios, while profitability, size, and risks of earnings of firms have a statistically negative effect on total debt to total asset ratios (Awan & Amin, 2014).

Notwithstanding the preference for debt or equity, managers need to also determine the ideal time for raising such capital – thus creating a debate between the use of market-values and book-values in capital structure hypothesis testing.

2.1.4 Market timing

Baker and Wurgler (2002) mention that in corporate finance, equity market timing is about knowing when to issue shares at a high price and when to repurchase them at a lower price. The goal is to take advantage of the transitory changes in the cost of equity with respect to the cost of different types of capital. The authors try to answer questions around the way capital structure is influenced by equity market timing and the kind of impact that equity market timing has on the optimal capital structure (Baker & Wurgler, 2002). One expects no less than a mechanical, short-run effect. In any case, if firms rebalance away the influence of market timing financing choices, at that point market timing would have no lasting effect on capital structure. This shows that capital structure market timing is seen as issue to be empirically addressed (Baker & Wurgler, 2002).

In the capital markets world of Modigliani and Miller (1958), there is no benefit from resourcefully interchanging among different forms of finance as the costs do not vary autonomously. In contrast to Modigliani and Miller (1958), Baker and Wurgler (2002) examine how equity timing and capital structure are related, consistent with a variety of evidence from different studies that add to this body of knowledge that suggest that equity market timing is a significant aspect of a firm financing strategy. To measure market timing opportunities, the authors use the market-to-book ratio to study the implications of equity market timing toward capital structure. While the trade-off theory, the pecking order, and the managerial entrenchment theories were discussed, the results in Baker and Wurgler's (2002) study are consistent with the market timing theory.

The authors note that it is important to know how historic market valuations influenced the capital structure (Baker & Wurgler, 2002). This persistence is documented in three separate tests. A first test utilises regressions inclusive of leverage that control for the present market-

to-book ratio, thereby lowering the variability of the weighted average market-to-book ratio. A second test for persistence is found in the regressions that are able to control for the underlying capital structure level and also express how ensuing fluctuations in evaluating markets variate capital structure far from this underlying level (Baker & Wurgler, 2002). A third test for persistence expresses how intense the lagged estimations of the market-to-book variable are, regarding the weighted average of the variable (Baker & Wurgler, 2002). The authors state that the trade-off hypothesis predicts that transitory changes in the market-to-book ratio or some other variable ought to have a temporary impact. The evidence shows that the market-to-book ratio has however a persistent impact. In the pecking order hypothesis of Myers (1984), adverse determination drives directors to abstain from issuing equity only. The authors predict that organisations with future investment opportunities may diminish leverage to abstain from issuing equity later on. Notwithstanding this statement, Baker and Wurgler (2002) mention that it is difficult to envision an adaptation of the pecking order hypothesis that clarifies the observed connection amongst leverage and investment opportunities.

Despite what was gathered on equity market timing earlier above, the overall impact that the market-to-book ratio has on changes in leverage is not self-evident. Baker and Wurgler (2002) note that firms with high market-to-book ratios develop rapidly and might be issuing as much debt as equity, for example. Baker and Wurgler (2002) report the net impact of market-to-book ratios on the yearly change in leverage and decompose this adjustment to inspect whether the impact is shown through net equity issues, as market timing suggests. In efficient markets, Modigliani and Miller (1958) demonstrate that the choice of capital structure is unnecessary. The trade-off hypothesis decides on an ideal capital structure by including different limitations, such as including taxes, costs of monetary distress, and organisation costs, yet still assumes market efficiency and no asymmetry of information (Baker & Wurgler, 2002). The authors comment that a portion of the flaws that prompt an ideal trade-off are as per the following: higher taxes on profits imply more debt (Modigliani & Miller, 1963; Miller & Scholes, 1978), a higher non-debt charge shields demonstrate less debt (DeAngelo & Masulis,1980), and higher expenses of monetary distress imply higher amounts of equity (Baker & Wurgler, 2002).

Furthermore, an excess of equity can prompt free cash flow and potentially irreconcilable situations amongst managers and investors (Jensen, 1986); while an excess of debt can prompt resource substitution and potentially irreconcilable circumstances amongst managers and bondholders (Fama & Miller, 1972; Jensen & Meckling, 1976) (Baker & Wurgler, 2002). Then

again, Harris and Raviv (1991) provide an overview of these and other conceivable influences on ideal capital structure. The market-to-book ratio can be associated with a few components of the trade-off hypothesis. Baker and Wurgler (2002) say that it is most regularly joined to costly monetary distress as in Myers (1977), Smith and Watts (1992), Rajan and Zingales (1995) and Barclay, Smith, and Watts (1992). The thinking is that organisations that have a lot to lose are the ones that develop and grow quite quickly as well as those organisations that encounter significant investment opportunities (Baker & Wurgler, 2002). Whereas the overhanging debt obligations keep new capital from being raised or prompt a wasteful liquidation arrangement amid which some venture openings are perpetually lost (Baker & Wurgler, 2002). The authors found that capital structure adjusts to changes in the market-to-book ratio and that is a significant expectation tested in the trade-off hypothesis. The evidence indicates that variety in the above ratio has a decades-in length effect on the overall capital structure (Baker & Wurgler, 2002).

Baker and Wurgler (2002) allude that in the pecking order hypothesis portrayed by Myers (1984), an ideal capital structure is non-occurring. More specifically, if there is an ideal capital structure, the cost of going astray from it is irrelevant in contrast with the cost of raising external funds. Raising external funds is exorbitant since managers are more informed than outside investors about the company's prospects (Baker & Wurgler, 2002). The authors comment that in Myers and Majluf (1984), external investors judiciously mark down the firm's share price when managers decide on issuing equity rather than debt that is riskless. To keep away from this mark down, managers shy away from equity (Baker & Wurgler, 2002). The Myers and Majluf (1984) model predicts that managers will take after a pecking order when raising capital, spending internal funds to begin with, then spending risky debt, and lastly falling back on equity. Without investment opportunities, firms hold benefits and develop money-related slack to avoid raising external finance in the future (Baker & Wurgler, 2002).

In addition, Baker and Wurgler (2002) state that the measure of opportunities in various investments is the market-to-book ratio and this is inherently supported by the pecking order hypothesis. On account of this translation, Fama and French (2000) as well as Myers (1984) concur with Baker and Wurgler (2002) that the static pecking order model is hard to accommodate with the connection between the market-to-book ratio and capital structure (Baker & Wurgler, 2002). A variation of the static form additionally proposes that periods where investment opportunities are plenty, leverage is pushed up towards the limit of debt.

(Baker & Wurgler, 2002). To the degree that high past market-to-book ratios correlate with high past investment ventures, the authors outcomes propose that such periods, leverage is pushed lower (Baker & Wurgler, 2002) which contrasts the pecking order model. The authors believe that the differences in results are explained by the capital structure being largely the cumulative result of past attempts to time the equity market. Since an optimal capital structure is absent, the authors further explain that financing decisions regarding the market timing will overtime accumulate until a capital structure result is formed (Baker & Wurgler, 2002).

Baker and Wurgler (2002) discuss that in the dynamic hypothesis of capital structure in view of managerial entrenchment (Zwiebel, 1996); there seems to be high market valuations and smart opportunities to invest in that encourage equity funding. However, this also enables managers to become entrenched in the firm as they now hold equity. Managers may then decline to raise debt in later periods as it may lower their market value of equity held. This relates to the theory of market timing, since directors will do an equity issuance when market valuations are high and do not consequently rebalance (Baker & Wurgler, 2002). Managers do not necessarily endeavour to misuse investors that are new in the market but they are misusing longstanding investors *ex post* by not rebalancing. The authors note that the two perspectives might be substantial in explaining capital structure decisions, and the outcomes of existing theory do not recognise the decisions (Baker & Wurgler, 2002).

To quantify the opportunities of timing the market observed by managers, the authors utilise the market-to-book ratio in order to follow the ramifications of timing the equity market through to capital structure. Baker and Wurgler (2002) discovered the difference between low and high leveraged firms. The former are firms that raised funds when they had high market valuations, and the latter are firms that raised funds when they had low market valuations. The authors find that fluctuations in market valuations largely affect capital structure that continues for a minimum of a decade. These outcomes are difficult to comprehend inside conventional theories of capital structure (Baker & Wurgler, 2002) because there is no optimal capital structure considered.

The authors' outcomes show that market timing has an extensive persevering impact on capital structure. The above findings are reported in conventional capital structure regressions where the dependent and independent variables are leverage and the historic weighted-average market-to-book ratio, respectively (Baker & Wurgler, 2002). The historic weighted-average

market-to-book ratio variable is a weighted average of a company's past market-to-book ratios which, for instance, takes high qualities for firms that externally raised their equity or debt finance when they had high market-to-book ratios (Baker & Wurgler, 2002). The primary regression result is that leverage is strongly adversely identified with this measure of market valuation. Capital structure is largely influenced by historic valuations of the market and this can have a financially large and measurably robust impact (Baker & Wurgler, 2002).

Zavertiaeva and Nechaeva (2017) note that a standout amongst the behavioural hypotheses on capital structure is the market timing hypothesis. Consistent with market timing, corporate financing choices and consequently a firm's capital structure are unequivocally identified with economic situations. These authors discuss literature on market timing in developed markets. Some studies mention that as indicated by the market timing hypothesis from a conduct point of view, managers will issue shares when they trust that market costs for shares are unreasonably high and after that repurchase shares when they trust that market costs are surprisingly low (Baker & Wurgler, 2002; Jenter, 2005). Managers do this to maximise on the premium they can get from issuing less share for the amount of money that they need. Nonetheless, a few economists like Frank and Goyal (2009) contend that the market timing hypothesis as well as the dynamic variant of the conventional optimising hypothesis of capital structure (which incorporates time-shifting components, such as opposing determination costs) can be deciphered. The market timing hypothesis differs from conventional theory in that it suggests that market volatility has a strong impact on capital structure. The trade-off hypothesis infers that fluctuations between the market and book value have a short-run influence on financial leverage, and the pecking order hypothesis sets that organisations issue equity if all else fails. Empirical investigations concerning equity market timing have generally demonstrated the consistency of this hypothesis for developed markets.

A conceivable foundation for this presumption is that emerging capital markets are less efficient than developed markets, which gives managers a chance to exploit market timing all the more profitably. Various empirical investigations of developing markets offer help for the equity market theory. For instance, Ni, Guo and Giles (2010) finds that market timing is an imperative in equity issuance for Chinese organisations. Another study examined organisations from 42 nations and confirmed that the capital structure decision can be explained by market timing. Additionally, utilising an example of Turkish organisations, it was demonstrated by

another study that market timing is used for "hot markets"- where the quantity of initial public offerings (IPOs) is large (Zavertiaeva & Nechaeva, 2017).

The authors further noted that as per a study of 392 American financial executives, led by Graham and Harvey (2001), 66 percent of respondents concurred that share mispricing has a significant impact on a firm's choice about equity issuance. Baker and Wurgler (2002) give the most significant empirical evidence for equity market timing utilising an example of organisations from developed markets. They researched the connection between changes in debt and measures of equity market timing for U.S. organisations and found that equity market timing has an expansive, constant impact on capital structure. Chang, Shih and Tam (2010) confirm the significant influence of market timing for an example of Japanese organisations (Zavertiaeva & Nechaeva, 2017).

Additionally, Zavertiaeva and Nechaeva (2017) notes that the literature on debt market timing research, notably for developing markets, is lacking despite the fact that it might be a significant factor in the debt–equity selection. The authors state that Graham and Harvey (2001) demonstrated that financial managers endeavour to time the debt market and issue when loan fees are low. Barry, Mann, Mihov and Rodríguez (2008) analysed the debt timing hypothesis by examining the connection between debt issues and the level of loan fees with respect to historical levels. Employing an example of new issues of corporate debt, they found that there is more debt issuance when loan costs are low in respect to historical rates, which is consistent with the theory of timing the debt market (Zavertiaeva & Nechaeva, 2017). Zavertiaeva and Nechaeva (2017) conclude by mentioning that when allowing for the capital structure factors of Russian companies, market timing theory should be incorporated.

Zavertiaeva and Nechaeva (2017) analyse a sample of Russian companies between 2008 and 2015 by analysing both equity and debt market timing to clarify the impact of market timing on firms' capital structure in developing markets. Market timing can be of great value to firms in developing countries as they operate in potentially less efficient markets and face a higher level of information asymmetry and they suggest that this gives firm executives an opportunity to explore market timing more profitably. Albeit Russian firms evidently depend more on debt financing, the authors mention that the few investigations that look at market timing in connection to Russian firms do not confirm whether equity market timing can clarify their

behaviour. These outcomes can be explained by low liquidity and the underdevelopment of the Russian equity market (Zavertiaeva & Nechaeva, 2017).

The authors' findings demonstrate that debt market timing influences an organisation's capital structure and those outcomes show that Russian firms generally want to utilise securities, as opposed to equity, to anchor external finance. The authors find that rate changes in the equity market do not explain the net equity issued - Russian firms do not time the equity market and instead retained income and changes in debt explain book leverage (Zavertiaeva & Nechaeva, 2017). The authors find that governance factors like the common age of boards of directors and the directors' average level of expertise influence capital structure. Specifically, state possession is negatively associated with leverage. Additionally, Russian organisations with a higher market-to-book ratio have brought down market leverage. These outcomes do not give sufficient confirmation to the equity market timing speculation, as historical values are excluded. By and large, the outcomes propose that Russian organisations do not have to time the equity market because they have different channels of acquiring finance.

2.1.5 Financing decisions and dividend payouts

Franc-Dabrowska (2009) studied the relationship between financing decisions and dividend payouts for Polish listed firms operating in the food sector. The reason for this choice of sector is explained in the hypothesis. The hypothesis in this study was stated as, "Polish capital companies operating within the food sector have been limiting dividend payouts, prioritising financing of own activity with equity and reinvesting their obtained profits" (Franc-Dabrowska, 2009, p. 373). The author studied the capital structure and dividend payout relationship, along with the firm's financial results and their investment expenditures. The author refers to the two hypotheses of capital structure, in whose extension the examination of dividend policy is directed; the trade-off hypothesis and the pecking order hypothesis (Franc-Dabrowska, 2009).

The trade-off hypothesis assumes that businesses search for such a debt funding to equity capital ratio that will enable them to accomplish a pre-determined enterprise value. Franc-Dabrowska (2009) states that the hazard associated with financing enterprise projects with debt capital is remunerated by tax advantages (as per Theobald, 1979) coming about because of the abatement of the tax base by interest, forming a cost component. This approach is consistent

with the Value Based Management (VBM)[4] approach. Franc-Dabrowska (2009) also mentions that the substitution hypothesis considers expenses related to financial distress and the way that an expansion of the debt capital share in the money-related structure builds the danger of losing financial liquidity and of insolvency. A fundamental angle that cannot be excluded concerning the financial related circumstance of enterprises is the need of keeping up financial liquidity, the loss of which increases the chances of bankruptcy (Franc-Dabrowska, 2009). From the perspective of selecting the ideal dividend policy, a critical point is emphasising the need of sustaining financial liquidity (Franc-Dabrowska, 2009).

The author explained that any decision to pay dividends accepted by management turns into a binding liability of the organisation and must be settled. Hence it is vital for the firm to have a certain amount of money accumulated (Franc-Dabrowska, 2009 and Ross, Westerfield, and Jordan, 2006). From the perspective of dividend policy, isolating the effects of ownership and management capacities is another issue that is considered to be part of the trade-off hypothesis (Franc-Dabrowska, 2009). The author says that this issue is generally examined in studies on agency theory. Franc-Dabrowska (2009) states that despite the fact that the essential target of an organisation is to maximise profit, some studies noted that manager's act in a way that exploits their life earnings and not the benefits of the company.

Whenever ownership and management are isolated, the desires for different interests can be opposing. It is noted that the owners may seek out dividends from the shares possessed, while managers may target their own compensation. Franc-Dabrowska (2009) acknowledged that managers ought to accomplish benefits on a level that gives the investors a sense of comfort. The trade-off hypothesis in this manner comprises of substituting equity with debt until the point where a capital structure is obtained that permits accomplishing the highest organisational value with the base level of the weighted average cost of capital (Franc-Dabrowska, 2009). This hypothesis enables one to build up an ideal capital structure, thinking about the benefits and risk of connecting with debt capital (Franc-Dabrowska, 2009).

The pecking order hypothesis on the other hand assumes that businesses characterise important sources of capital and not the ideal trade-off amongst liabilities and equity capital. Franc-Dabrowska (2009) emphasises that in the pecking order hypothesis, businesses search for the

[4] Value Based Management (VBM) is a system that encourages companies to maximise shareholder value.

least expensive sources of financing to limit both the risk and equity issuance expenses, or interest payments on credit and advances. Authors such as McManus, Gwilym, and Thomas (2006) agree that, on the off-chance that it is important to utilise debt capital, debt securities are issued first. This is the reason there is a contest between choices on reinvesting the profit and paying out dividends (Franc-Dabrowska, 2009). In spite of the fact that business practice appears to demonstrate leeway of the pecking order hypothesis, it has not been expressly found as the main hypothesis (Franc-Dabrowska, 2009).

Franc-Dabrowska (2009) agrees that the trade-off hypothesis conflicts with the pecking order hypothesis. The pecking order hypothesis expects organisations which accomplish high profits to reinvest them and are not inclined to pay dividends and bring about debt, while the trade-off hypothesis expects the inverse: that organisations in a "safe" monetary position which have high profits are prepared to expand their level of debt (Franc-Dabrowska, 2009). While the trade-off hypothesis highlighted insolvency expenses and financial troubles, the pecking order hypothesis concentrated on the issue of asymmetry of information amongst firm managers and external investors, given that managers are more informed about the firm's financial circumstance than do investors and creditors. (Franc-Dabrowska, 2009).
From the sale of securities perspective, some author's express that a more certain source of earnings is dividends compared to profits (Franc-Dabrowska, 2009). According to the anti-dividend school, it is assumed that paying dividends decreases the cost of shares. In the spirit of Litzenberger and Ramaswamy (1979), paying dividends is associated with the need of spending money, which occasionally results in its shortage in organisations following a dividend instalments arrangement (Franc-Dabrowska, 2009). In addition, it has been discovered that expanding the share of dividends in the net profit exerts a negative effect on the cost of stock. In this situation, organisations should restrain from dividend payments and assign profit to equity capital (Franc-Dabrowska, 2009).

In the period under examination, Franc-Dabrowska (2009) found that Polish organisations of the agricultural and food industry enhanced their financial positions and were developing and expanding the value of assets (Franc-Dabrowska, 2009). The author also found that most Polish business entities of the agricultural and food industry made a choice of not paying dividends and have a preference to set aside profits for infusing equity capital. Franc-Dabrowska (2009) further indicated that there exists a strong bond between the value of dividends that are paid out and the value of equity capital. Nonetheless, the results do not show such a relationship

between the value dividends that are paid out and the share of equity capital in sources of financing (Franc-Dabrowska, 2009). This affirms the belief of an interrelationship between theories of capital structure and dividend policies, showing in the predominance of the hierarchy hypothesis and the lesser significance of the substitution hypothesis (Franc-Dabrowska, 2009).

Moreover, similar conclusions were based on examining the connection between the value of dividends that are paid out, investments and amongst investment opportunities and the levels of return and debt, showing a strong relationship only in times of substantial investment expenditure (Franc-Dabrowska, 2009). This demonstrates that in the studied companies, the intensity of investments is quite small. Again, the author mentions that the results of the examined studies used panel data with a fixed effects model, and confirmed a relationship between the value of dividends that are paid out and capital structure (Franc-Dabrowska, 2009). Franc-Dabrowska (2009) found that Polish organisations of the agricultural and food industry listed on the Warsaw Stock Exchange, settled on choices concerning dividend policy, with regards to selecting the source of financing, based on relationships typically found in the hierarchy hypothesis. In other words, the management of organisations chose internal sources of financing, in the meantime constraining the instalment of dividends (Franc-Dabrowska, 2009).

2.1.6 Performance of peer firms

Peer firms play a pivotal part in forming various corporate policies, and the conduct of peer firms may matter for capital structure. Leary and Roberts (2014) refer to how Graham and Harvey (2001) express that evidence from the surveys conducted show that a substantial amount of Chief Financial Officers (CFO's) refer to the significance of peer firm financing choices for their own financing choices. Moreover, ongoing empirical work demonstrates that a financially critical determinant of a firm's capital structure average is the leverage ratios based on the industry (Leary & Roberts, 2014). The authors' objective is to distinguish how, and why peer firm conduct matters for capital structure. Managers think about the financing choices and qualities of companion firms as instructive for their own financing choices. For instance, when peers of a firm raise their leverage ratios, it is often higher than it usually would have been had peer data not been available (Leary & Roberts, 2014). In like manner, the authors note that firms may think about the development prospects or financial wellbeing of their peers in

deciding their own capital structure. In this way, peer firms' impacts on capital structure happen when the activities or qualities of associate firms unequivocally enter a company's financing target work (Leary & Roberts, 2014).

Leary and Roberts (2014) state that any connection between an organisation's financial strategies and the activities or qualities of their companions can be attributed to two reasons. The primary reason depends on the endogenous determination of firms into peer groups or an "overlooked basic factor". This determination brings about firms from a similar peer group confronting comparable institutional situations and having comparable attributes, for example, generational legacies and investment opportunities. Leary and Roberts (2014) state that the second reason is that organisations' financial strategies are somewhat determined by a reaction to their peers. This reaction can work through two channels: activities or attributes. The first emerges when firms react to financial policies of peer firms. The second emerges when firms react to changes in the attributes of their companions such as profitability and risk (Leary & Roberts, 2014).

The authors' results demonstrate that capital structures are essentially affected by their peers. Leverage is unequivocally adversely identified with equity shocks from peer firms. Deciding to issue debt and equity, respectively, comes with a negative and a positive relationship with respect to equity shocks from peer firms (Leary & Roberts, 2014). These findings are robust to a large group of estimation and endogeneity concerns. To measure the significance of peer impacts in capital structure, Leary and Roberts (2014) assess the impact of an adjustment in peer firm leverage on a specific firm's own leverage, utilising equity shocks from peer firms as an instrument for their capital structures. The authors find that a one standard deviation increase in a peer firm's leverage ratio is related with a 10 percent expansion in a specific firm's leverage ratio, an impact bigger than any other determinant (Leary & Roberts, 2014). Peer firm's choices to issue equity, and their decision amongst equity and debt, have an equally expansive impact on a specific firm's issuance choices (Leary & Roberts, 2014).

Peer firm impact on capital structure can emerge for a variety of reasons. For instance, associations between capital structure and the competition of product market can prompt financial policy imitating amongst each other. The authors also mention that a model presented by Bolton and Scharfstein (1990), state that firms that are highly levered welcome destructive price rivalry from less levered rivals (Leary & Roberts, 2014). If the normal cost of this

destructive conduct is sufficiently high, firms that are highly levered will imitate the capital structures of their rivals that are less levered. Leary and Roberts (2014) further mention that a model presented by Chevalier and Scharfstein (1996), state that firms that are highly levered underinvest amid an industry downturn and lose market share to more moderately leveraged contenders (Leary & Roberts, 2014). This misfortune can propel firms to mirror the more "traditionalist" leverage strategies of their companions.

Leary and Roberts (2014) show how Devenow and Welch (1996) believe that inspiration for impersonating conduct in capital structure originates from rational herding models. Zeckhauser, Patel, and Hendricks (1991) propose that managers that free-ride in information attainment or relative performance assessment may prompt herding behaviour in capital structure decisions. The authors remark that when a firm's own signal is noticeable and optimisation is exorbitantly costly or tedious to implement, managers may sanely put more weight on the choices of others than trusting their own information. This is particularly likely when different firms (managers) in the business are seen as having more skill (Leary & Roberts, 2014).

Managers may likewise copy other firms' strategies to impact their apparent relative quality in the labour market. The authors mention that Scharfstein and Stein's (1990) model, managers of higher quality investment reach similar conclusions about new venture opportunities, while managers of lesser quality investment get different signals (Leary & Roberts, 2014). Managers consequently mirror the investment decisions of others. The authors allude that in this situation, herding is more vital than settling on a good investment decision (Leary & Roberts, 2014).

The authors' results demonstrate that smaller market share; non-dividend paying and unrated firms in terms of debt are more sensitive to their peers' actions than are their counterparts. These findings propose that herding behaviour is most grounded among those firms with the best learning thought processes and perhaps the best need to increase reputation (Leary & Roberts, 2014). The authors' findings demonstrate that firms with smaller market share, less profitable, and with low income growth, have financial strategies that are sensitive to the leverage changes of their more effective peers (Leary & Roberts, 2014).

Leary and Roberts (2014) have demonstrated that organisations do not settle on financing choices in seclusion. Rather, the financing choices and, to a lesser degree, the attributes of peer

firms, are critical determinants of capital structure and financial policies (Leary & Roberts, 2014). Reliance on leverage ratios is driven by the interdependencies among debt and equity issuances (Leary & Roberts, 2014). In reality, peer firm conduct has an amazingly strong and extensive effect on capital structure, bigger than some other discernible determinant. A fascinating ramification of these discoveries is the nearness of externalities, which the authors show can fundamentally enhance or reduce the effect of changes in capital structure determinants. Leary and Roberts' (2014) cross-sectional evidence focuses on learning and reputational uncertainties as potential thought processes in these decisions. Herding behaviour is concentrated among smaller, younger, and highly levered firms (Leary & Roberts, 2014). The authors state that in contrast, industry pioneers are not impacted by the capital structure decisions of their less successful peers. Research about the performance of peer firms in emerging markets remains limited and could be a great opportunity to explore, especially if additional factors play a role in making the decisions that lead to the firm's performance.

2.2 A review of policy uncertainty

2.2.1 The link between policy uncertainty and finance

Recent studies in finance and economics have shown that political instability has opposing effects on the economy. The perception and decision making of market participants in the goods and capital markets can be affected by policy uncertainty. On the one hand, Cuadra and Sapriza (2008) mention that Bernanke (1983) found that the health of the overall economy can be negatively affected when businesses, consumers and investors are reluctant to make spending and investment decisions because of policy uncertainty. With high policy uncertainty in the economy, companies are likely to decide to place a hold on potential investment projects and freeze hiring which can cause a contraction in the economy. While on the other hand, Cuadra and Sapriza (2008) assert that emerging market economies are the ones that usually face larger political risk and are more crisis-prone than developed countries. Cuadra and Sapriza (2008) say that developing business sector economies commonly confront bigger political exposure and are more disaster inclined than developed nations. A considerable portion of these economies with moderately high political exposure have, as of late, experienced scenes of sovereign default, for example, Russia in 1998, Ecuador in 1999, Ukraine in 2000, Argentina in 2001, Grenada in 2004, Ecuador in 2008 and Greece in 2015 and Venezuela in 2017among others.

The authors also allude that higher sovereign loan cost spread levels and unpredictability are related with higher political hazard in these nations, recommending that political elements can help understand the conduct of their sovereign credit exposure spreads. Cuadra and Sapriza (2008) build up a dynamic stochastic open economy model to investigate hypothetically and quantitatively a portion of the channels through which a nation's political procedure may influence sovereign debt default motivators and loan cost spreads (Cuadra & Sapriza, 2008). The authors demonstrate that the relationship of foreign debt issues and political volatility have been the norm as opposed to the special case in developing economies. It is also proposed that policy uncertainty may assume a non-trivial part in deciding default motivators in addition to the level and instability of nation loan cost spreads in developing nations. Cuadra and Sapriza (2008) clarify how the political procedure of a nation, as political insecurity and polarisation, can influence incentives to get and reimburse debt, and subsequently affect sovereign loan cost spreads. Key conduct initiated by political instability is found in other studies such as Amador (2003), where policy uncertainty lessens the capacity of a nation to save, and in Azzimonti (2006), where it prompts under-investment in infrastructure and overspending in public goods.

A collection of literature calls attention to the correlation of high turnover rates of policymakers and their length of residency with the level of conflict within a nation to influence sovereign obligation, nation spreads and default rates (Cuadra & Sapriza, 2008). The authors allude that nations that are liable to bigger policy uncertainty have a tendency to be charged a higher default risk premium in worldwide credit markets. Cuadra and Sapriza (2008) try to justify these findings by building up a model of a minor open economy where two political gatherings stochastically interchange in office and default is a symmetrical result. They investigate different channels through which political factors can influence the borrowing motivating forces and credit spreads paid by developing economies in a completely stable environment. To better describe the trade-offs encountered by a policymaker in the economy and therefore evaluate the effect of political factors on governments' incentives to borrow and default, the authors create an aggregated Euler equation for the officeholder policymaker[5]. By evaluating the effect of both polarisation and policy uncertainty on default and nation risk premia, the

[5] At this point in the discussion, it is useful to note that subsequent literature uses the terms *political uncertainty* and *policy uncertainty* interchangeably. In most cases, the ruling political party of a country has a significant influence over the direction and impact of economic policy in that country.

authors also provide a way to deal with the econometric biases in the study (Cuadra & Sapriza, 2008). The authors mention that existence of political risk additionally enhances the results of quantitative models of sovereign debt and default. The previous models created too low debt/GDP levels and a strong (although statistically biased) connection between default risk and loan cost spreads (Cuadra & Sapriza, 2008). The connection between political factors and default risk endeavours to accommodate restricting systems on resource allocation between crowds that battle for control, could enhance a nation's borrowing incentives and along these lines encourage steadiness of global credit markets (Cuadra & Sapriza, 2008). Thus, this would consequently diminish the credit spreads paid by sovereign borrowers.

Using emerging markets as a platform, Mei and Guo (2004) study how policy uncertainty impacts the financial crises by examining political election cycles. The authors note that national elections in a country that operates a democratic system are a way of redistributing political power through the most important political events. This yields an uncertain outcome to both domestic and foreign investors. Furthermore, they note that political uncertainty can also affect currency values in many ways and there are models available that can help explain how political uncertainty can help prompt or intensify a financial crisis (Mei & Guo, 2004). While political uncertainty takes various shapes and forms, Mei and Guo (2004) centre around one specific sort of political uncertainty, which is related to national elections. In a democratic based framework, national elections are a noteworthy political occasion for re-conveyance of political power, which has ramifications for the future political and monetary course of a nation. Subsequently, it introduces a noteworthy uncertainty to both local and outside financial specialists (Mei & Guo, 2004).

While there are numerous ways political uncertainty can influence currency values, a few monetary models may reveal insight into the instrument through which political uncertainty can assist to trigger or aggravate a financial crisis. Mei and Guo (2004) indicate that the first-generation models are those of currency crisis described by Krugman (1979) and Surge and Garber (1984). In their models, the government utilises its cash printing machine to fund a spending shortfall while likewise attempting to uphold fixed exchange rates by exhausting constrained exchange reserves (Mei & Guo, 2004). The authors allude that astute political opposition, perceiving this unsustainable clashing of strategies, rapidly try to deplete the nation's reserves and force a relinquishment of the fixed exchange rate. Mei and Guo (2004) mention that in such models, one can see that crises will probably occur amid elections, since

this is the point at which a democratically chosen government would have the most incentive to take part in the accompanying conflicting strategies. Therefore, currency crises will probably occur amid political elections or amid the post-election conversion when the nation's reserves are probably going to be depleted because of currency market intercessions (Mei & Guo, 2004).

In the second-generation model of Obstfeld (1994), that authors say that there is a strain between the administration's aspiration to desert its fixed exchange rate on one hand and its longing to shield its exchange rate on the other (Mei & Guo, 2004). The reason the government may get a chance to devalue its currency could be because of a vast residential debt weight or high unemployment rate. Mei and Guo (2004) indicate that consequently, it might be enticed to "blow up" the debt load or to seek a more expansionary monetary policy by surrendering the fixed rate. In such a model, the cost of safeguarding the money increases when individuals speculate that the legislature is inclining towards surrendering the fixed rate. Therefore, political elections could influence investor desire and change market conduct (Mei & Guo, 2004).

While the above models laid out various components through which political uncertainty could influence currency value, Mei and Guo (2004) say that in actual fact, a crisis may continue with a wide range of variables. Political uncertainty could influence a financial crisis through a blend of the above instruments, with various systems possibly assuming an alternate part at various phases of the crisis. The authors' objective is not to discuss each contending model of currency crises, but instead to give some proof that political uncertainty plays a part in currency crises in the wake of changing monetary and budgetary conditions (Mei & Guo, 2004). The authors discovered that after controlling for different economic conditions, there is a noteworthy connection between political uncertainty and financial crises (Mei & Guo, 2004). The authors additionally found higher market instability amid political election and adjustment periods. Mei and Guo (2004) additionally confirmed the result of Radelet and Sachs (1998), that the characterising component of financial crises is the susceptibility to be alarmed, as estimated by large amounts of short-term debt to reserves. Another essential indicator of a crisis is the quick development of bank claims (Mei & Guo, 2004).

The authors' findings about political risk have a couple of intriguing applications. To begin with, Mei and Guo (2004) propose that developing market governments should expand their awareness against financial crises amid political election and progress periods. Second,

investors should take note that the probabilities of financial crises tend to be significantly bigger amid the political election time frames. Hence, appropriate insurance should be taken when making investments during those times. Mei and Guo (2004) note that political elections do not really prompt a financial crisis if a country has vast reserves and a healthy economy. Third, the pricing of developing market derivatives ought not to be founded on the presumption of a stable value of market volatility. Indeed, market volatility has a tendency to be considerably higher amid political election and adjustment periods (Mei & Guo, 2004).

In 2015, South Africa encountered a similar political debacle where there were three Finance Minister reshuffles within the space of four days[6]. An immediate reaction was seen in the foreign exchange rate when the rand plummeted from approximately R13\$ to R16\$. In 2017, another cabinet reshuffle and political upheaval prompted some of the credit rating agencies such as Standard & Poor's and Fitch to downgrade South Africa to junk status (from BBB- to BB+)[7]. This makes it more difficult, is more expensive and is seen as risky for South Africa to borrow funds in international markets. In a study of Latin American countries, Moser (2006) finds that political instability measured by cabinet reshuffles involving key policymakers increases sovereign bond spreads. Credit ratings are essential when it comes to capital structure decisions, informing investors of the firms' creditworthiness and how they choose what level of debt to issue.

Sum (2012) agrees with the above and further states that during periods with EPU, banks may have low confidence in what is happening in the markets and hence the credit accessibility may become limited (Sum, 2012). The author researches the impact of the progression of EPU in Europe on the execution of securities exchanges in the European Union, Croatia, Norway, Russia, Switzerland, Turkey and Ukraine (Sum, 2012). Firms, investors and scholars observe and investigate changes identified with monetary movements and strategies because these movements can significantly affect both the goods and capital markets. Sum (2012) mentions that investigating that part of uncertainty in the economy has, as of late, turned out to be famous among macroeconomists and financial analysts alike on the grounds that monetary uncertainty and different economic policies can influence the observation and conduct of market members in the goods and capital markets (Sum, 2012). The authors' results provide evidence of the

[6] Retrieved from https://www.cnbc.com/2017/03/31/south-africas-zuma-sacks-gordhan-as-finance-minister-in-reshuffle.html

[7] Retrieved from http://www.treasury.gov.za/comm_media/press/2015/2015121601%20-%20Government%20Media%20Statement%20-%20Response%20to%20Moody's%20Credit%20Opinion.pdf

impact of EPU on markets in Europe and suggest that amid times of high economic policy uncertainty, investors can undercut stock market indices in these European nations. Conversely, during times of lesser EPU, investors can expect higher returns from putting resources into these European markets (Sum, 2012). The author mentions that another ramification is that the broadening of systematic risk is constrained in the European markets as the changes in EPU in Europe send a negative shockwave over the European markets (Sum, 2012).

The impact of uncertainty in the economy and different financial policies on capital markets have likewise been investigated (Sum, 2012). Sum (2012) mentions that a negative relationship between policy uncertainty in government and share returns was proposed by Paster and Veronesi (2011). Sum (2012) further shows how Bansal and Yaron (2004) demonstrated that the falling of asset returns is an aftereffect of economic uncertainty. Bansal, Khatchatrian and Yaron (2005) archive the presence of a negative relationship between asset returns and the increase of EPU (Sum, 2012). Moreover, Ozoguz (2009) demonstrates that share returns are lesser when investors are uncertain about the market. Last, Dzielinski (2011) demonstrates that share returns fall in the week following a high financial uncertainty (Sum, 2012).

Julio and Yook (2012) observe the impact of EPU on the investment behaviour of firms during a period of national elections. Elections in which the national leader is elected, offer a fascinating setting to ponder the impact of EPU on investment for two vital reasons (Julio & Yook, 2012). To start with, while standard models of strategy commonly accept solitary leaders who confront constrained terms in office and might be replaced by different leaders with different policy inclinations (Julio & Yook, 2012) portray welfare-boosting organiser that settles on policy decisions over the whole economy, this present reality. Election results are pertinent to corporate choices as they have implications for regulation, monetary and trade policy, tax assessment, and, in extreme cases, the possible expropriation or nationalisation of private firms (Julio & Yook, 2012). Second, researching the effect of EPU on investment is a testing task because of the potential endogeneity amongst uncertainty and financial development as the economic downturn itself has seemingly created a lot of EPU (Julio & Yook, 2012). The authors indicate that the endogeneity is overcome by elections providing a characteristic exploratory system that concentrate political impact on corporate venture, enabling the authors to unravel a portion of the endogeneity between monetary policy and political uncertainty. On the off chance, that EPU is higher when changes in national leadership

are more likely, elections provide a recurring occasion that isolates the effect of political uncertainty on investments from other confounding components (Julio & Yook, 2012). No firm has control over the planning of national elections. Further, elections globally occur at various points in time, enabling the authors to net out any worldwide patterns in corporate venture. Julio and Yook (2012) inspect changes in corporate investment as EPU changes by looking at corporate conduct in the year paving the way to the national election results with that in non-election years (Julio & Yook, 2012). They suggest that if an election can possibly bring about a negative result from a firm's point of view, the firm may objectively postpone investment until the point when policy uncertainty has settled.

Julio and Yook (2012) state that the relationship between uncertainty and investment has been demonstrated by authors like Bloom, Bond and van Reenen (2007), and Bernanke (1983) among others. The authors state that in these models, firms end up wary and delay investment despite uncertainty. Other literature noted by Julio and Yook (2012) below have displayed the impact of EPU in a macroeconomic framework. Rodrik (1991), and Pindyck and Solimano (1993) are noticeable cases of this literature in which the uncertainty achieved by political components drives firms to decide on lower levels of investment outflows (Julio & Yook, 2012). Julio and Yook (2012) also note that Chen and Funke (2003) show the private investment choice in developing markets even with policy uncertainty. Bloom, Floetotto and Jaimovich (2009) display business cycles as an element of change in levels of macroeconomic uncertainty. Authors such as Barro (1991), and Alesina and Perotti (1996) find that measures of political unsteadiness are connected with cross-country differences in investment rates (Julio & Yook, 2012). Other authors like Pindyck and Solimano (1993), and Mauro (1995) find evidence that EPU and an index quantifying enticement and exploitation are negatively associated with investment spending (Julio & Yook, 2012). However, a few challenges emerge in translating the collective results. First, it is not certain whether the different measures of political uncertainty are exogenous to financial conditions and collective investment (Julio & Yook, 2012). Second, Julio and Yook (2012) deliberated that in Pindyck and Solimano (1993), the models about how uncertainty influences long-run equilibrium investment rates are not too clear, as uncertainty influences both the ideal capital stock and interest over the long run (Julio & Yook, 2012). Julio and Yook (2012) mention that forecasts of the models are less vague when there are transitory shocks to the level of uncertainty as the uncertainty mostly works through investment as opposed to capital stock in the short run (Julio & Yook, 2012). Bernanke (1983) demonstrates that occasions whose long-run suggestions are dubious can produce

investment cycles by increasing the returns to waiting for new data, especially when the cause of uncertainty intermittently recurs after some time (Julio & Yook, 2012). A temporary increase in uncertainty encompassing national elections may prompt quick decreases in investment outflows (Julio & Yook, 2012).

Across a variety of countries, Julio and Yook (2012) discover that a brief decrease in investment outflows is bigger in nations with common law standards, less balanced governance, a less steady government, and a higher proportion of government spending to GDP. Within nations, the cycles are more articulated for industries thought to be more sensitive to political results (Julio & Yook, 2012). Elections in which the result is close, as estimated by voting results, prompt further investment cycles than elections in which the ruling party wins by a vast edge (Julio & Yook, 2012). The authors likewise demonstrate that the decrease in investment during the election year is followed short-run increase in investment in the year promptly following the election as the uncertainty over election results diminishes (Julio & Yook, 2012). In general, due to uncertainty, the magnitude of the post-election increase in investment is less than that of the prior deterioration. They note that corporate investment is at a minimum prior to the national elections for some countries (Julio & Yook, 2012). The authors explore a few conceivable reasons for this election year impact and find that the political uncertainty theory best fits the data (Julio & Yook, 2012). That is, firms have a tendency to be more careful around elections and restrain on investment outflows until the point when the uncertainty encompassing the election result is settled (Julio & Yook, 2012). Julio and Yook (2012) likewise analyse the differences in the election impact both within and across nations. Within nations, the decline in capital outflows is bigger when the election result is harder to foresee (Julio & Yook, 2012). The authors' findings have two implications. Initially, politics do seem to make a difference for firms' investment choices. The ordinary political process and the likelihood of policy changes around elections impact the way firms settle on investment choices. Second, the significance of uncertainty in corporate investments is evident (Julio & Yook, 2012). The authors mention that changes in the level of uncertainty prompt cycles in investment outflows as proposed by Bernanke (1983) (Julio & Yook, 2012).

Huang, Wu, Yu and Zhang (2013) examine firms that have been successively paying dividends in the course of recent years (past payers) and how heightened political uncertainty influences these past payers' likelihood of future dividend payouts (Huang *et al.,* 2013). Further, the authors also study how the probability of dividend announcements from firms that have never

paid out dividends in the course of recent years (past non-payers) changes in light of escalated political uncertainty. To begin with, the authors' measure of uncertainty depends on exogenous shocks activated by global political crises. Huang *et al*. (2013) thus build up a causal relationship as opposed to a cross-sectional only relationship between uncertainty and dividend policy. Second, looking at time-varying political risk enables the authors to think about the time-series discrepancy instead of the cross-sectional discrepancy in dividend decisions (Huang *et al.,* 2013). The authors have three novel findings. To start with, Huang *et al.* (2013) demonstrate that past payers have a tendency to end their dividend instalments and that past non-payers have a tendency to be more averse to start dividend instalments amid periods of increasingly likely political crises. These outcomes are robust to an assortment of sub-tests, elective political crisis measures, and elective dividend decision factors (Huang *et al.,* 2013). Second, the authors find that dividend decisions turn out to be less influenced by political uncertainty in nations with more steady political frameworks. Third, they demonstrate how dividend decisions of both undervalued firms and firms with illiquid shares are less sensitive to political uncertainty (Huang *et al.,* 2013).

Generally, the Huang *et al.* (2013) investigation provides confirmation that firms settle on dividend payout choices over time. Specifically, the findings demonstrate that the preparatory thought processes of directors is one of the key variables that explain dividend payouts. Furthermore, the authors note that the national level heterogeneity in the sensitivity of dividends to political uncertainty shows that political solidness seems, by all accounts, to partly disguise the negative externalities activated by political events (Huang *et al.,* 2013). Lastly, the firm-level heterogeneity in the sensitivity of dividends to political risk gives off an impression of dividend payouts being unpredictable, and hard to reconcile with existing dividend theory (Huang *et al.,* 2013).

Huang *et al.* (2013) mention that in the USA, political uncertainty surrounded the government bailouts during the financial crisis of 2008, the reforms of finance and health care, the Federal Reserve's innovative monetary policy, tax policy, as well as the political strategy over the debt ceiling in 2011 and 2013 (Kelly, Pastor & Veronesi, 2016). Huang *et al.* (2013) further note that Standard & Poor's (the credit rating agency) named political uncertainty as a key reason for its first-ever downgrade of the USA Treasury debt in 2011. The authors add that in Europe, the actions of European politicians, central bankers, and Greek voters brought about great uncertainty which caused the sovereign debt crisis (Huang *et al.,* 2013). Lui, Shu, Wang and

Wei (2016) mention that uncertainty about central government actions after a crisis often has a spillover effect not only on global financial markets but also on the real economy around the world, as evidenced by the 1997 Asian financial crisis, the 2008 USA subprime crisis, and the most recent 2016 Britons' vote to leave the European Union (EU) (commonly referred to as "Brexit").

Gulen and Ion (2014) mention that one of the fundamental difficulties in this line of research is finding a fitting measure of policy uncertainty. The general uncertainty looked at by firms has been estimated utilising an assortment of factors, for example, dispersal in analyst forecasts, instability of share returns, input and output costs, total factor productivity, or firm fundamentals (Gulen & Ion, 2014). Be that as it may, estimating the part of this uncertainty related to the political and administrative framework is an overwhelming task. While a few studies have concentrated on specific kinds of policy, fundamentally less work has been done to quantify the general level of EPU (Gulen & Ion, 2014). The authors examine the impact of policy uncertainty on the capital ventures of USA public organisations, giving careful consideration to the way that this impact shows itself across firms. To catch the general level of EPU, the authors utilise a measure created by Baker *et al.* (2012); the measure is based on the recurrence of key terms in daily media articles. Utilising this measure, the authors find a strong negative relationship between policy uncertainty and capital ventures. To examine how much the negative impact of policy uncertainty on venture shifts in the cross-segment, Gulen and Ion (2014) depend on real options theory, which proposes that uncertainty builds advantages from deferring investment. In addition, the authors allude that it does so more for firms with a high level of investment (Gulen & Ion, 2014). Examining how policy uncertainty influences investment over longer prospects, Gulen and Ion (2014) found that the impact turns out to be logically more negative, at which point it declines and in the end winds up positive. While this path is steady for firms with growing investments, the authors demonstrate that it takes a few years for investments to recoup from the underlying impact of policy uncertainty (Gulen & Ion, 2014). The authors likewise find that the uncertainty-new venture relationship weakens after delayed times of constantly high policy uncertainty. This is in line with the possibility that numerous investment ventures cannot be deferred indefinitely. As time passes, cash flows lost from postponing investments can overwhelm the advantages of "sitting tight" for uncertainty to diminish (Gulen & Ion, 2014). Gulen and Ion's (2014) results have three fundamental ramifications. First, the authors recommend that when settling on policy decisions, officials ought to be aware of the way that the uncertainty encompassing these

choices can be as harmful as settling on the wrong choice. Second, the authors' findings show that in evaluating the conceivable effect of policy-related uncertainty on partnerships, it should be recognized that firms will be influenced to various degrees, contingent upon attributes. Third, the authors find that policy uncertainty can have lasting impacts, affecting investment levels for up to eight quarters.

Akey and Lewellen (2015) utilise firms' political undertakings as a focal point to think about the connection between EPU and firms' risk taking behaviour. The authors first connect economic policy uncertainty to firms' aiding of competitors in U.S. congressional elections. The authors then analyse how the determination of uncertainty following election results influences firms' ensuing risk-taking and execution, and specifically, how risk-taking and execution vary between policy-sensitive and policy-neutral firms following shocks to these organisations' political capital bases coming from close election results. Akey and Lewellen's (2015) attention on political exercises is driven by the perception that, much as firms can evade against different types of uncertainty, firms can also hedge against economic policy uncertainty by trying to impact the policy-making process. Additionally, the authors state that firms that are sensitive to changes in government policy seemingly have more incentive to take part in the political procedure than comparable, policy-neutral firms (Akey & Lewellen, 2015). To precisely gauge the impact of economic policy uncertainty on firms' consequent risk-taking, Akey and Lewellen (2015) represent firms' efforts to impact the policy-making process through the gathering and placement of political capital. This approach recommends that organisations may take an interest in the political procedure because of policy uncertainty thoughts alone. This speaks to a sharp increase in government gifts, credit accessibility and political involvement.

Akey and Lewellen (2015) connect firms' sensitivities to EPU to their consequent political movement and post-election risk-taking conduct. The authors first demonstrate that organisations that are highly sensitive to EPU donate more to political candidates than those organisations that are less-sensitive (Akey & Lewellen, 2015). Akey and Lewellen (2015) demonstrate that regarding policy-sensitive firms, changes in firms' investments, leverage, how the firm performs, CDS spreads, and alternative option-implied volatility is caused by exogenous positive shocks to political capital bases (Akey & Lewellen, 2015). These impacts are weaker among less policy-sensitive firms, proposing that the peripheral estimation of a political association is increasing in firms' ex-stake sensitivity to policy uncertainty. Akey and

Lewellen (2015) likewise inspect the term structure of credit risk and suggested instability following political capital shocks and find that these shocks are durable in nature. The author's findings cannot be explained by moral hazard or government contracting disputes. While there are no current theories that connect policy uncertainty to political capital and political capital to risk-taking, the authors mention this as a fascinating area for future research.

Using the planning of USA elections as a basis of exogenous uncertainty, Atanassov *et al.* (2016) study the connection between political uncertainty and R&D investment. The negative relationship between different measures of political uncertainty and fixed investment have driven scholars to infer that policy makers ought to be aware of the harm that extensive open deliberations about policy may inflict on the economy (Atanassov *et al.*, 2016). In any case, not all investments are expected to decrease with increases in uncertainty. The indication of the investment uncertainty relationship relies upon the properties of the investment and product market competition where for instance, R&D may react differently to uncertainty due to its long time-to-manufacture and highly differentiated nature (Atanassov *et al.*, 2016). Atanassov *et al.* (2016) mention that an additional channel through which uncertainty can conceivably spur R&D is highlighted in Bloom and van Reenen (2002), who examine licenses as choices. As licenses give the firm a legal right to avert impersonation and demoralise contestants in the product market, investment in R&D, which may result in a patent, can be recovered by offering protected innovation rights (Atanassov *et al.*, 2016). The authors mention that this somewhat balances the irreversibility of R&D investment and prompts quickened R&D investment under uncertainty. Under this situation, filing a patent can be seen as getting a reversibility alternative on R&D investment (Atanassov *et al.*, 2016). The reason of why R&D may react to increased political uncertainty is straight forward - investments that continue in stages, for example, R&D, change the trade-off between early responsibility and deferring future investment. The authors allude that the impact of political uncertainty on R&D investment by firms has no clear answer, despite corporate investment in R&D being an essential element of innovation and economic growth (Atanassov *et al.*, 2016). While the real options literature highlights that changes in expenses and fractional irreversibility may cause firms to concede R&D investment under increased political uncertainty, literature has investigated a few different instruments that may influence a firm's incentive and capacity to delay, prompting early investment (Atanassov *et al.*, 2016).

Atanassov *et al.* (2016) found novel and causal observational evidence that firms react to increased political uncertainty by defensively putting more cash in R&D during election years. The authors' results recommend that the alternate political business cycles theory, would probably not explain this finding. Political business cycles theory states that binding governors will try to stimulate the local economy to get re-elected, thereby providing incentives to higher R&D spending (Atanassov *et al.*, 2016). Additional examination uncovers a few potential channels of the causal effect. The positive relationship between political uncertainty and R&D investment is most prominent for firms that work in politically sensitive industries (Atanassov *et al.*, 2016), which confront more prominent market rivalry, that have higher investment development choices, or that are in a sector where innovation is difficult. Atanassov *et al.* (2016) allude that the connection amongst investment and political uncertainty relies upon the idea of investment and product market rivalry. Different from irreversible fixed investment, R&D is stimulated by increased political uncertainty (Atanassov *et al.*, 2016). All things considered, the long-run ramifications of political uncertainty are not clear and points to policy makers keeping away from extensive open deliberation about future policy, which is not totally justified (Atanassov *et al.*, 2016).

2.2.2 Policy Uncertainty and Capital Structure

Capital structure is an important concept when thinking about companies' injection of funds or diversification of investments. Investing equity or debt capital into domestic or international companies can influence not only the profitability of the company, but also if the company survives the adversities of the economy, such as a recession. Even though previous studies have found a negative influence of political uncertainty on corporate investment decisions, Cao *et al*. (2013) are adamant that there is still a limited understanding on how political uncertainty affects a company's financing decisions.

Cao *et al.* (2013) start by building up a basic hypothetical system that models capital structure decisions in light of uncertainty beginning from government policies. Expanding upon Holmstrom and Tirole's (1997) credit apportioning model and Tirole's (2003) common agent model, the model from Cao *et al.* (2013) predicts that there is information asymmetry between firms who borrow to fund investment ventures that have uncertain returns and investors who loan (Cao *et al.*, 2013). The authors additionally accept that governments execute policies to build the practicality of investment opportunities and that citizens consent to endure the

expenses of such activities with a specific end goal to keep getting general public goods offered by governments (Cao *et al.*, 2013). The model by Cao *et al.* (2013) shows that banks will be more restrictive in lending when they are uncertain about the adequacy of future policies on investments. Such an impact will imply a lower supply of credit and increased cost of borrowing, and firms will continue facing hardships in borrowing (Cao *et al.*, 2013). In this way, the authors propose that managers who exceedingly value monetary flexibility amid times of high political uncertainty may fall back on low leverage ratios and avoid high leverage ratios (Cao *et al.*, 2013). The authors test this theory by analysing the degree to which political uncertainty influences intertemporal capital structure choices. In particular, Cao *et al.* (2013) inspect whether firms that value financial flexibility amid times of high political uncertainty are under-levered. The authors additionally look at the impact of political uncertainty on the length of inactive periods of financial activity (Cao *et al.*, 2013). Specifically, when political uncertainty is quite high, Cao *et al.* (2013) explore to what extent the firms wait in order to issue debt. Furthermore, Cao *et al.* (2013) examine whether firms with lesser political risk coverage and better access to funds are less influenced by political uncertainty on intertemporal capital structure choices. To assess how EPU impacts capital structure choices, the authors utilise the political uncertainty index created by Baker *et al.* (2012) (Cao *et al.*, 2013). This index includes media coverage of political uncertainty, tax termination codes, and divergences in analyst monetary forecasts (Cao *et al.*, 2013). Since the political uncertainty index mirrors the general level of political uncertainty in the USA, Cao *et al.* (2013) note a few ongoing studies that have additionally chosen it to assess the impact of political uncertainty on equity returns and corporate investment (see, for example Pastor and Veronesi, 2013; Gulen and Ion, 2012).

Similar to Leary and Roberts (2005), Cao *et al.* (2013) utilise duration analysis [8] to observationally test the theory. The authors found duration analysis most appropriate for two reasons. To start with, it takes after current developments in unique capital structure theories (Fischer *et al.* (1989); Leland (1994); Goldstein *et al.* (2001); Strebulaev (2007)) (Cao *et al.*, 2013). These theories demonstrate that because of modification costs, firms do not rebalance their capital structures in a constant way; rather, firms rebalance just when their benefits achieve financing limits and stay dormant in different periods (Cao *et al.*, 2013). Second, there

[8] **Duration analysis** is a methodology that measures the change in the valuation of an asset or liability that may occur.

is an econometric reason in utilising duration analysis to test the authors' theory. That is, duration analysis empowers the authors to demonstrate the periods between capital structure changes, which cannot be caught by ordinary regression analysis (Cao *et al.*, 2013). Duration analysis likewise provides insight on how changes in independent variables influence the normal time span between two modifications (Cao *et al.*, 2013).

Cao *et al.* (2013) state that political uncertainty has significant effects on economic and monetary decisions. On the one hand, Bloom (2009) evaluates the effects of political uncertainty shocks and found that firms have a tendency to briefly stop their investment in the short run, and overshoot in output, occupation, and efficiency in the medium term (Cao *et al.*, 2013). On the other hand, Chen (2010) demonstrates that time fluctuating monetary uncertainty related with business cycles explain the credit spread puzzle and the low leverage puzzle - why credit spreads are too high to be in any way legitimised by real default rates and recuperation rates (Cao *et al.*, 2013). Chen (2010) also demonstrates why such a significant number of firms are under-levered doing without apparently vast debt tax shields. In any case, little is known about the impact of political uncertainty produced from government policies and the political condition. Cao *et al.* (2013) find a strong negative impact of political uncertainty on capital structure decisions, in particular, when dormant periods between two financing activities are stretched out and firms like to maintain low leverage amid times of high political uncertainty (Cao *et al.*, 2013). Moreover, by showing that political uncertainty increases credit spreads and firms maintain low leverage ratios reacting to political uncertainty when their investments are steady, the authors show the effect of political uncertainty on capital structure changes (Cao *et al.*, 2013). The author’s results are robust to other procedures and testing approaches, and are predictable crosswise over firm size and growth subsamples. These results concur with the view that managers who value financial flexibility depend on preservationist capital structure decisions amid times of high political uncertainty (Cao *et al.*, 2013).

In addition to the above results, Cao *et al.* (2013) also study the relationship of political uncertainty and firms' access to open debt markets and find that intertemporal capital structure changes are less delicate to political uncertainty for firms who can access open debt markets (Cao *et al.*, 2013). The author’s remark that this is in line with Faulkender and Petersen (2006), where firms without access to open debt markets will probably be fiscally guarded (Cao *et al.*, 2013). They explain that the financial frictions are additionally reinforced by the firms' cash holding choices in response to changes in the level of political uncertainty (Cao *et al.*, 2013).

If increasing money related frictions caused by high political uncertainty is the hidden driver for firms' financing choices, the authors see an expansion in cash holdings by the firm as a buffer against monetary resistances during times of moderately high political uncertainty (Cao *et al.*, 2013). They thus find a substantial and positive connection between political uncertainty and cash holdings, recommending that directors build up cash reserves possessions to alleviate the external financial imperatives produced by political uncertainty (Cao *et al.*, 2013).

These discoveries may have effects on genuine exercises through the money related accelerator component (Bernanke and Gertler, 1989; Bernanke *et al.*, 1996). Cao *et al.* (2013) suggest this component expresses that monetary markets increase and help proliferate negative shocks to the economy. In particular, declining money related markets prompt losses in consequent investment and output. Findings by Julio and Yook (2012), Cao *et al*. (2013), Zhang *et al*. (2015), Pastor and Veronesi (2013) and Gulen and Ion (2016), *inter alia*, seem to be consistent with the notion that political uncertainty negatively affects financing decisions. Pastor and Veronesi (2013) evaluate the impact of political uncertainty on share returns in a general equilibrium model. In the model, firm profitability follows a stochastic process whose mean return is influenced by the overall government strategy (Pastor & Veronesi, 2013). The authors comment that the policy's effect on the mean return is unverifiable. Both the government and the financial specialists find out about this effect in a Bayesian manner by determining realised profitability (Pastor & Veronesi, 2013). At a given point in time, the government settles on a policy choice, whether to change its policy or not; and if it does, then decides which potential new policies to embrace (Pastor & Veronesi, 2013). The potential new policies are seen as heterogeneous from the former, where specialists anticipate that diverse policies will have distinctive effects, with various degrees of uncertainty. In the event that a policy change happens, the agents' convictions are reset: the subsequent convictions about the old policy's effect are substituted by the previous convictions about the new policy's effect (Pastor & Veronesi, 2013).

When settling on its policy choice, Pastor and Veronesi (2013) deliberate that the government is inspired by both economic and non-economic targets: it boosts the investors' welfare, as a social organiser would, however it additionally considers the political disadvantages or advantages related with receiving any given policy. These disadvantages are indeterminate, because of investors that cannot completely foresee which policy the government will pick. The authors also deliberate that uncertainty about political costs is the basis of political

uncertainty in the model and define political uncertainty as uncertainty about the government's future activities (Pastor & Veronesi, 2013). Agents find out about political expenses by detecting political signs that are translated as results of different political occasions. Settling for the ideal government policy decision, Pastor and Veronesi (2013) find that a policy will probably be received if its political cost is lower and if its effect on profitability is seen to be higher or less indeterminate. Due to this choice, a policy change is more probable in weaker economic conditions, in which the present policy is regularly seen as risky (Pastor & Veronesi, 2013). By substituting inadequately performing policies in poor circumstances, the government adequately gives security to the market. The estimation of this security is lessened, however, by the ensuing uncertainty about which of the potential new policies will substitute the departing policy (Pastor & Veronesi, 2013). The authors investigate the asset pricing implications of the model and demonstrate that share returns are driven by three kinds of shocks; capital, impact, and political shocks (Pastor & Veronesi, 2013). These shocks influence share returns by influencing the measure of capital, and indirectly, by driving investors to review their convictions about the effect of the fundamental government policy. The authors refer to the immediate impact as capital shocks and to the indirect impact as effect shocks and additionally allude to both capital and effect shocks equally as fundamental economic shocks. The third kind of shock is equal to economic shocks. Pastor and Veronesi (2013) indicate that political shocks emerge because of investors finding out about the political expenses related with the potential new policies. These shocks, which mirror the stream of political news, lead financial specialists to modify their convictions about the probability of the different future government policy decisions (Pastor & Veronesi, 2013). The authors break down the equity risk premium into three components, which compare to the three shocks presented previously. Curiously, Pastor and Veronesi (2013) allude that political shocks demand a risk premium in spite of being separate to monetary shocks. Financial specialists request reward for uncertainty about the results of political occasions. Those occasions matter to investors since they influence the investors' convictions about which strategy the government may adopt later. The authors allude to the political-shock part of the equity premium as the political risk premium (Pastor & Veronesi, 2013).

Zhang *et al.* (2015) show that due to policy decision-making and execution processes, economic strategies commonly produce a high degree of uncertainty, which could force significant effects on the market and firm practices. They note that political uncertainty has a supply and demand aspect. The fundamental premise behind the supply curve is that

uncertainty in economic policies will weaken the external financing condition (Zhang *et al*., 2015). At the point when EPU increases, the information asymmetry amongst borrowers and banks would turn out to be extreme and temporary, as firms' future income would be more unstable, leading to a higher default probability (Zhang *et al*., 2015). Both effects can prompt higher external financing expenses, and firms looking for financial flexibility would, for the most part, bring down their leverage ratios. In support of this idea, Zhang *et al.* (2015) argue that experimental investigations on the USA money-related market show that the risk premium of municipal bonds is increased by EPU (Gao and Qi, 2012). They also argue that EPU decreases the average leverage ratio of firms, (Cao *et al*., 2013), and forces extra costs and more stringent non-value terms on bank credit contracts at both total and firm level (Francis *et al*., 2013). In contrast, the demand effect refers to when firms decrease the demand of financing in face of increasing EPU (Zhang *et al*., 2015). Earlier research shows that when firms face high policy uncertainty, they will be more preservationist in settling on investment choices (Bernanke, 1983; Blossom *et al.,* 2007) and bring down their investment level (Kang *et al*., 2014; Gulen and Particle, 2013; Wang *et al.,* 2014). The two effects create a negative relationship between EPU and firms' capital structure; however, it is hard to quantify the impact. Zhang *et al.* (2015) select Chinese listed firms to test the above hypotheses. The authors see it essential to test whether the hypothesised relationship between EPU and capital structure choices holds in this emerging market or not (Zhang *et al*., 2015). They find that on average, the leverage ratio is negatively related with EPU and this negative impact is more noteworthy for firms from sectors with higher capitalisation, are non-state claimed, or have no earlier banking relationship. Further, they provide evidence that the negative relationship between capital structure and EPU is sourced from the weakening of outside financing conditions caused by EPU (Zhang *et al*., 2015). Lastly, Zhang *et al.* (2015) demonstrate that firms' utilisation of credit is positively identified with EPU, implying that firms have a tendency to change their financing structure as a reaction to the uncertainty of economic policy. The findings from Zhang *et al.* (2015) add to the literature in various ways. To begin with, the authors provide an "out-of-sample" test on the relationship between EPU and firm capital structure decisions, and additionally shed light on this subject by demonstrating that Chinese firms have a tendency to change their financing choices amongst debt and credit during times of EPU (Zhang *et al*., 2015).

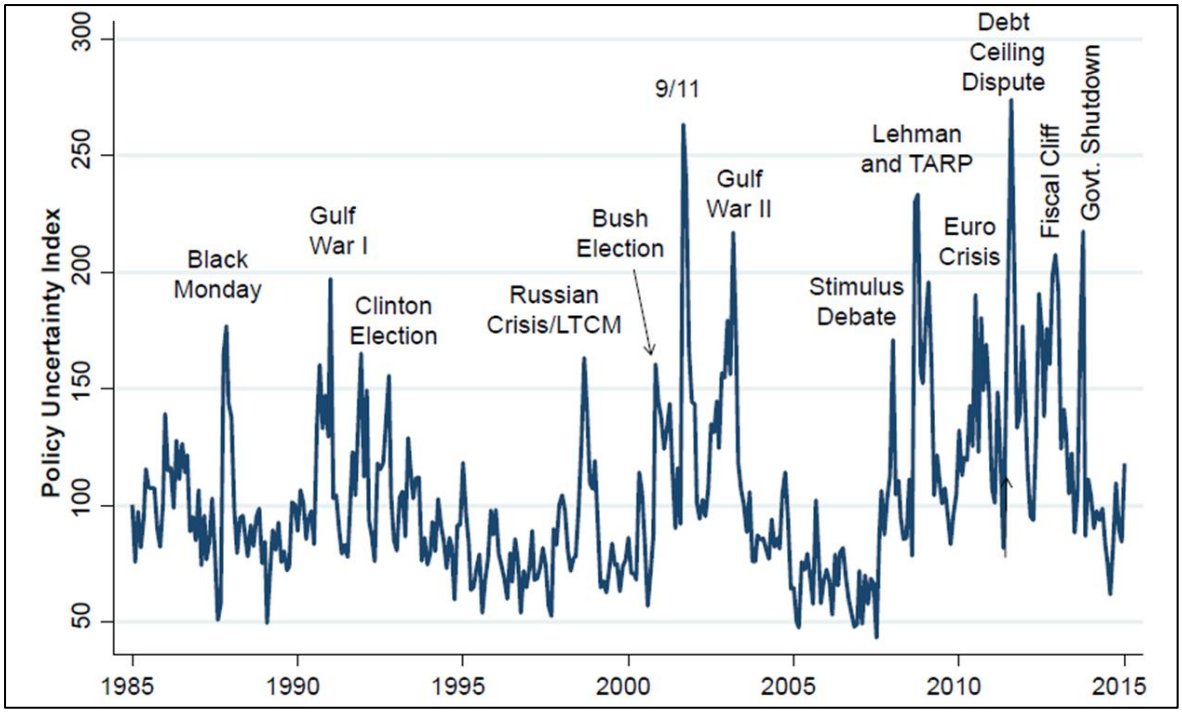
Last, Faulkender and Petersen (2006) find that firms with access to the open debt market have greater leverage ratios and Cao *et al.* (2013) show that having free access to debt can alleviate

the limitation forced by policy uncertainty. The authors provide evidence that EPU influences the firm's capital structure decisions essentially by affecting the economy (Zhang *et al*., 2015). The authors additionally analyse the impact of policy uncertainty on corporate practices and has been shown that there is a negative relationship between firm financing decisions and policy uncertainty in developed markets (Zhang *et al*., 2015).

2.2.3 Measuring EPU

Zhang *et al*. (2015) study the effect of EPU on capital structure decisions in China using the policy uncertainty index developed by Baker *et al.* (2012). Baker *et al.* (2012) developed this index because of some occurrences that intensified concerns regarding policy uncertainty such as, the Eurozone crises, the Global financial crisis and policy disputes in the USA that were biased. The authors believed that policy uncertainty caused such crises in different parts of the world and hence wanted to prove that by measuring the EPU. The reports from Federal Open Market Committee (2009) and the International Monetary Fund (2012b, 2013) concur with Baker *et al.* (2012). The reports suggest that uncertainty in the fiscal, monetary and regulatory policies of the USA and European countries contributed to a steep economic decline between 2008 and 2009 as well as the slow recoveries subsequently (Baker *et al.*, 2012).

In order to measure EPU, the authors constructed this index by building three types of elements and then aggregated them to obtain the index displayed in Figure 2.6. The first element includes monthly data, information and news articles from media coverage of policy uncertainty, predominantly from 10 largest newspapers of that specific country, containing 'uncertain' or 'uncertainty', 'economic' or 'economy', and (or) policy-relevant terms (Baker *et al.*, 2012). Baker *et al.* (2012) state that the raw monthly count of articles that meet the search criteria is scaled by to the number of articles in the same paper enclosing the word "today" (Baker *et al.*, 2012). From these papers, a normalised index is then created inclusive of all monthly news articles conversing about EPU. Baker *et al.* (2012) state that the more news articles there are about EPU, the more a higher level of EPU concerning households and businesses are reflected.



Source: Baker et al. (2012)

Figure 2.1. Index of Economic Policy Uncertainty for the USA, 1985 to 2014

The second element reflects the list of tax code provisions set to expire over the next 10 years. Baker *et al.* (2012) find that most of these provisions encompass "temporary" tax measures that generate a level of uncertainty for businesses and households, as the provisions often get rapidly reformed or prolonged after a political battle. Using data on the projected revenue impact of the scheduled expirations, found in the annual reports produced by the Congressional Budget Office (CBO), the authors constructed a discounted sum of dollar-weighted future tax code expirations (Baker *et al.*, 2012). This index gives the direction that the tax codes will take in the future as a measure of the level of uncertainty and has become an essential source of uncertainty for businesses and households.

The third element of the policy-related uncertainty index contains differences among economic forecasters about inflation and government expenditures. Indices of uncertainty about policy-related macroeconomic variables are constructed by using the differences between professional forecasters' predictions about where the levels of the Consumer Price Index, Government Expenditures, and State and Local Expenditures will be in the future. Baker *et al.* (2012) used data from the Federal Reserve Bank of Philadelphia, which surveyed approximately fifty professional analysts. They found that differences of opinion are shown by larger forecast

differences, which suggests more confusion about future developments (Baker *et al.,* 2012). On the contrary, smaller forecast differences indicate less uncertainty.

Baker *et al.* (2012, p.5) state that

> "Specifically, we compute the interquartile range of four-quarter-ahead forecasts of federal government purchases of goods and services, scaled by the median four-quarter ahead forecast of the same quantity. We then multiply by a 5-year backward-looking moving average for the ratio of nominal federal purchases to nominal GDP. These steps yield a sub-index of forecaster disagreement about federal government purchases. After obtaining an analogous sub-index of disagreement for state and local purchases, we sum the two sub-indexes, weighting by the relative size of their purchases".

In order to obtain an index of EPU, all the three elements are aggregated, giving a 50% weight to the news-based element, as it is the most extensive measure amongst all three elements. Equal weights are then given to the scheduled tax code expiration element and the economic forecasters' disagreement element. However, it was agreed upon that the news-based approach to measuring uncertainty comes with its flexibility to quantify the extent to which policy-related uncertainty accounts for overall economic uncertainty (Baker *et al.,* 2012). Therefore, an index of EPU based on newspaper coverage frequency is developed for the USA (Baker *et al.,* 2012) and the same has applied for each of the BRICS countries found on the website www.policyuncertainty.com which will be explained in the methodology section.

On the contrary, Baker, Bloom and Davis (2016) updated the index that was developed in 2012 and based it only on newspaper coverage including human readings of those newspapers as a form of measure. Baker *et al.* (2016) extended the newspaper approach to measure EPU back in time, across countries and to specific policy categories for several major countries. This index was used to investigate EPU on firm level investment rates, output and employment and found that uncertainty shocks caused negative economic effects (Baker *et al.,* 2016). This index could possibly be used in a future study as it focusses mainly on macroeconomic performance on several major economies.

South African data was not available on the website www.policyuncertainty.com and an alternative similar index from Brogaard and Detzel (2015) was used for South Africa in this study. Brogaard and Detzel (2015) tested how EPU impacts asset prices and created an index

similar to that of Baker *et al*. (2012) using the Access World News database. The sample consisted of 21 countries based on having a stock market with a market capitalisation of more than $500 billion at the beginning of 2011. Brogaard and Detzel (2015) used similar keyword search as the Baker *et al*. (2012) paper but extended it to international scenery. The measure that was used also focuses only on the news component due to data availability issues of the other two components of the Baker *et al.* (2012) measure (Brogaard & Detzel, 2015). The frequency of country-related EPU is then normalised by the total number of articles about South Africa each month. This measure will further be discussed in section 3.3.1.

During times of uncertainty, it is observed by many studies that investors tend to mimic the actions of other investors. This herding behaviour, can also however, be observed in the decisions taken by managers of firms, as discussed below.

2.3 A review of herding literature

Herding in the financial literature may be driven by different behavioural inspirations that influence individual beliefs. This notion can be understood as being either a rational or irrational form of behaviour, where the former focuses on the principal-agent problem (principals disregard their privately sourced information and imitate the actions of others) and the latter on investor psychology (investors carelessly follow other investors while neglecting what they previously believed in). Therefore, herding is extensively believed to be an important feature of financial markets in the world of finance.

Animals that usually migrate realise that roaming in a group offers security. Patel, Zeckhauser, and Hendricks (1991) suggest that monetary related players likewise may move in crowds, as when firms increase their debt-equity, Savings and Loan Associations (S&Ls) put resources into junk securities, and banks increase their third-world debt holdings. The authors mention that these changes are not immediate due to the accumulation of information and mutually well-informed decisions that result from moving in crowds. Similarly, firms might find it hazardous to "get too far out of line" with their peers (Patel *et al*., 1991). Superior information accumulation

Every decision maker must balance the advantages of rapidly moving towards the ideal against the disadvantages of straying from the crowd. The authors indicate that financial changes,

likened to recurrent animal migrations, sometimes becomes uncertain when moving into new product or industry lines of trade, as the ideal is not regularly clear (Patel *et al*., 1991). This uncertainty, coupled with the normal inclination of people to free ride on the knowledge of others, opens the possibility of overshooting targets.

Indeed, even the most attentive financial leader might be deterred from guiding his own course if there is herding to the opposite side of the market. Firms considering an expansion in their debt-equity ratio should be concerned about the impression given to banks and investors, who may be new to the Modigliani-Miller hypothesis (Patel *et al*., 1991). Bank delay to lend to a firm whose debt-equity ratio is above the industry.

Patel *et al*. (1991) analysed the yearly ratios of debt to equity for 200 largest firms over a time period of 20 years. Over that time frame, there was a constant general increase in the debt-equity ratios through extensive heterogeneity across over industries and firms. This example may be explained by a cost-of-modification model - if returns from the movement are linear, the expenses of adjustment increase, and if the parameters are steady for the period under study, at that point each firm would modify a settled sum for each period paying little attention to the behaviour of different firms (Patel *et al*., 1991).

The authors' capital structure herding migration model offers a different explanation with additional relationships of why firms herd. Assume, for the period studied, that there is a linear per unit advantage from moving the debt-equity ratio toward its ideal value, however there is a quadratic disadvantage for deviations from the group (the satisfaction of herding is linear, whereas the dissatisfaction of not herding is greater (quadratic)). Under this scenario, Patel *et al*. (1991) suggests that the company's optimal ratio will be a weighting of its very own past ratio in addition to the industries expected (future) ratio. The average firm's ratio is substituted by its lagged value; as its contemporaneous value may show a positive relationship as a result of the regular shocks that impact the market estimation of equity across firms in an industry (Patel *et al*., 1991). The authors say that a herd migration trend is shown by a significant positive sign on the industry ratio. The authors found that for 3 of the 10 industries that were studied, less than 15 percent of the firms show such tendencies significantly (Patel *et al*., 1991).

Christie and Huang's (1995) study investigates whether individual equity returns in the USA show the presence of herding behaviour during periods of market stress by using the cross-

sectional standard deviation (CSSD) of returns, to capture herding behaviour. Since investors will probably subdue their own particular convictions for the market agreement amid times of uncommon market developments, herding behaviour would in all probability rise amid times of market pressure (Christie & Huang, 1995). Contrary to Christie and Huang (1995), this study will provide an "out-of-sample" test for five emerging markets by using the linear leverage methodology of Patel, *et al.* (1991) to capture the herding effect. However, similar to Christie and Huang (1995), herding behaviour in this study will be tested as a form of market stress, proxied by policy uncertainty.

Christie and Huang (1995) mention that the scholarly literature incorporates numerous models of herding behaviour in financial markets. For instance, Scharfstein and Stein (1990) proposed a model where managers herd on the project choices of others instead of trusting their own private information (Christie & Huang, 1995). Other literature such as Trueman (1994) showed that individual analysts might herd toward earnings figures issued by other analysts, while Banerjee (1992) built a model of herding behaviour that is not affected by the issues inherent in principal-agent relationships (Christie & Huang, 1995). Froot, Scharfstein, and Stein (1992) demonstrated that investors with short horizons may herd on the same information. Welch (1992) explained how consecutive issues of IPOs can lead investors to overlook their private information and herd on the choices of prior investors.

Christie and Huang (1995) further allude that the empirical support for herding behaviour is mixed. Shiller and Pound (1989) provided evidence on herding among institutional investors. They found that institutional financial specialists put critical weight on the call of different experts on their purchase and offer choices in unpredictable shares. The test in social psychology on the behaviour of people in groups proposes that people submit to the cooperative choice, notwithstanding when they see the group to be wrong. In a market setting, herds are described by people who stifle their own convictions and construct their speculation choices exclusively in light of the aggregate activities of the market, notwithstanding when they cannot help contradicting its forecasts. Along these lines, Christie and Huang (1995) suggest that herding behaviour proposes that investors are attracted to the agreement of the market, suggesting that individual returns would not stray a long way from the market return.

Christie and Huang (1995) emphasise the value ramifications of herding by exploring whether equity returns are based on herding behaviour. To quantify the potential impact of herding on

returns, the authors firstly consider how herding behaviour may show itself in return data. Under the customary meaning of herding behaviour, a natural measure of its market effect is dispersion, characterised as the CSSD of returns (Christie & Huang, 1995). The authors further mention that dispersions measure the distance of individual returns to the mean. The authors are bound from below at zero when all returns move in harmony with the market. The level of dispersion rises as individual returns change from the market return (Christie & Huang, 1995).

The authors remark that the expectations concerning the behaviour of dispersals amid times of market pressure likewise transpire out of rational asset pricing models. These models normally relate individual returns to some basic factors, of which the market return is the most noticeable (Christie & Huang, 1995). Amid times of market pressure, rational asset pricing models foresee that substantial changes in the market return would convert into an increase in dispersion, since individual assets are affected differently to the market return (Christie & Huang, 1995). At the end of the day, spreading in factor sensitivities will repel individual returns from the market. Subsequently, herding behaviour and rational asset pricing models offer contradictory expectations for the conduct of dispersals amid times of market pressure (Christie & Huang, 1995).

Christie and Huang's (1995) empirical evidence demonstrates that dispersals increase essentially amid times of extensive absolute price changes. These results, which are consistent with the expectations of rational asset pricing, are distinguished utilising both daily and monthly returns and are available for both positive and negative movements. The authors state that this inability to recognise herding behaviour may mirror the propensity of herds to conform to pointers other than the consensus of all market members. Or perhaps, people may depend on different prompts and herd around the returns of firms that offer regular attributes (Christie & Huang, 1995). The authors indicate that a generally perceived technique for sorting such firms is by Standard Industrial Code (SIC). If individual equity returns herd around their industry normal amid times of market pressure, a noteworthy decrease in dispersions within industries ought to be examined. The authors assessed dispersions within different industry-based portfolios and found that, no matter what, significant changes in dispersions happen amid times of market pressure when they are evaluated utilising the normal average industry return (Christie & Huang, 1995).

Christie and Huang's (1995) results demonstrate that dispersions grow considerably more during up markets compared to down markets. To test whether this asymmetry is stable with the existence of herding in down markets, the authors evaluated the dispersion of expected returns that emerge from a rational asset pricing model. The authors found that the actual and the anticipated dispersions are similar and predictable with the assumption that the increase in dispersal amid down markets depends on rational pricing instead of herding (Christie & Huang, 1995).

Amid times of unusually large price movements or market pressure, the forecasts of rational asset pricing models and herding behavior differ. In particular, Christie and Huang (1995) allude that since distinct securities vary in their sensitivity to the market return, rational asset pricing models anticipate that times of market pressure trigger extended levels of dispersion. Interestingly, the herding of individual returns around the market changes into a diminished level of dispersion (Christie & Huang, 1995). The authors agree with Patel *et al*. (1991) about investor behaviour in markets which show herding. They concur that macroeconomic information has more impact on investor behaviour than firm-specific information.

Chang, Cheng and Khorana (2000) observe the investor behaviour of various markets (US, Hong Kong, Japan, South Korea, and Taiwan), particularly with respect to their propensity to display herding behaviour. The authors indicate that the investment behaviour of market members has been linked to variables such as: the investor's investment prospects, the benchmarks used to estimate performance, the conduct of other market members, the level of fundamental market instability, and the existence of fads and theoretical trading action in the financial markets (Chang *et al*., 2000).

Chang *et al*. (2000) mention that Christie and Huang (1995) look specifically at the behaviour of CSSD under different economic conditions and contend that if market members subdue their own expectations about asset prices amid times of market developments and construct their choices exclusively in light of total market behaviour, individual asset returns will not deviate considerably from the general market return, consequently bringing about a lower CSSD. Initially, the authors propose another and all the more novel way to detect herding in light of equity return behaviour. Utilising a non-linear regression, the authors analyse the relationship between the level of equity return dispersions and the general market return. Under "true" herding, one expects that return dispersals will reduce with an increase in the market return.

Second, Chang *et al*. (2000) look at the existence of herding over both developed and developing financial markets. Analysing herding is fascinating in a global setting since differences in variables, such as: the relative significance of institutional versus particular financial specialists, the quality and level of data divulgence, the level of refinement of secondary markets, amongst others, can influence investor behaviour in these markets (Chang *et al*., 2000). Third, the authors test for changes in herding behaviour post the progression of Asian financial markets (Chang *et al*., 2000).

The authors' empirical tests demonstrate that amid times of significant price developments, equity return dispersions for the USA and Hong Kong continue increasing, consequently giving some proof against the existence of herding behaviour. Chang *et al*. (2000) indicate that the results for the US are similar to those reported by Christie and Huang (1995). The authors find that in the two developing markets, South Korea and Taiwan, there is a significant non-linear relationship between equity return dispersions and the market return - the equity return dispersions either rise at a diminishing rate or decline with an increase in the value of the market return (Chang *et al*., 2000). Strangely, in all of the five markets, the rate of growth in return dispersion as an element of the total market return is higher when the market return is increasing than when it is decreasing. Chang *et al*. (2000) found this to be consistent with the directional asymmetry by McQueen *et al*. (1996) where all shares have a tendency to respond rapidly to negative macroeconomic news, yet small stocks tend to display a deferred response to positive macroeconomic news (Chang *et al*., 2000). Similarly, in South Korea and Taiwan, the proof for herding is most pronounced where systematic risk represents a large portion of general security threat. Chang *et al*. (2000) express that this evidence is linked with the view that the relative shortage of quick and precise firm-particular data in developing financial markets may make investors concentrate more on macroeconomic data. Chang *et al*.'s (2000) results for both South Korea and Taiwan remain generally robust in different sub-period tests. Additionally, the authors look at whether the existence of daily price limits forced on shares in South Korea and Taiwan, affect their results. The additional tests do not change the general evidence for herding in the equity markets of South Korea and Taiwan, implying that the existence (or not) of a price limit does not add or detract from investors herding. Even though Chang *et al*. (2000) has shown a difference of herding behaviour between developing and emerging markets and not specifically herding in different industries, the authors concur with Patel *et al*. (1991) that even the most insightful investor from either a developed or emerging market may neglect what they believe in if there is herding behaviour on the other side of the market.

Hwang and Salmon (2004) construct an alternative measure of estimating herding. By building on the developments of the CAPM, the authors can isolate a change of return driven by herding and consequently remove the herding portion from asset prices. Hwang and Salmon's (2004) approach similar to Christie and Huang's (1995), apart from the degree to which the authors use the data in cross-sectional tests of the market. The authors focus on the cross-sectional variability of factor sensitivities as opposed to returns and their measure is moderately simple to compute since it depends on returns data (Hwang & Salmon, 2004). The measure thus catches market wide herding when market convictions unite on specific assets or asset classes as opposed to herding by people or a little gathering of financial specialists (Hwang & Salmon, 2004).

Since the authors' way to deal with herding mirrors the beliefs of the market, it is normal to utilise the CSSD of the factor loadings of the individual assets in a linear factor model (Hwang & Salmon, 2004). Hwang and Salmon (2004) mention that for a one-factor model (market returns), the measure of herding is essentially ascertained from the relative dispersions of the betas for each of the assets in the market (Hwang & Salmon, 2004). At the point where there is herding behaviour towards what is in the market, the cross-sectional change of the betas will decrease, as investors herd around the agreement of all market members (Hwang & Salmon, 2004). The utilisation of linear factor models can likewise provide insight of the market may herd in view of various factors instead of the market factor. Hwang and Salmon's (2004) approach naturally incorporates time-varying changes which can be mistaken for cross-sectional difference of returns.

The Asian Crisis and specifically the Russian Crisis are distinguished as defining moments in herding behaviour. The authors allude that these results show that times of crisis or stress help return markets to a balance, inferring that proficient evaluation of returns might be helped by market pressure (Hwang & Salmon, 2004). Hwang and Salmon (2004) have additionally examined herding towards size and value factors and found results of herding towards a particular factor at various points in time in the USA market, especially since the year 2001. The authors have additionally looked at the herding behaviour over sectors; and found some basic patterns not only within sectors, but also across countries (Hwang & Salmon, 2004).

Given that herding can prompt mispricing of assets, Hwang and Salmon (2004) indicate that in the US market there were a small number of periods in the whole sample that herding, while existing in the market, was a noteworthy concern and factually large. The authors' results may lend credence to Avery and Zemsky's (1998) hypothetical study that proposes that the destructive influences of herding can just emerge when there is multi-dimensional uncertainty[9] (Hwang & Salmon, 2004).

Seetharam and Britten (2013) analyse herding behaviour in conjunction with market cycles in South Africa. Herding is analysed by means of a relative measure, through time, and the authors superimposed it with the market cycle to speculate any distinguished behaviour. Herding behaviour can be exhibited by individual and mutual investors where there is a reasonable similarity between them. The authors explain that this relationship shapes the reason for the initial two techniques for distinguishing herding behaviour, namely, the dispersal of profits (Christie & Huang, 1995) and the nonlinearity of dispersion (Chang, Cheng & Khorana, 2000) (Seetharam & Britten, 2013). These two tests look at herding in a linear and non-linear manner, correspondingly. A deficiency endured by both these tests is that they search for the presence of herding over the whole sample period (Seetharam & Britten, 2013). Seetharam and Britten (2013) mention that theoretically, if herding existed at a point in the sample period, it might not have been sufficiently noticeable to infer importance over the whole sample period. The authors utilise the beta coefficient test (Hwang and Salmon, 2001) which sees herding in a relative sense rather than an absolute one and is the favoured measure in the authors' investigation.

Seetharam and Britten (2013) indicate that investors' behaviour can be contrasted between 'ordinary' and 'extraordinary' market stages. Amid ordinary stages, investors would usually follow their own convictions and would in this way give a high dispersal in share returns through trading. In the middle of extraordinary stages, feelings tend to intensify which could lead investors to take after their companions as a sort of "consolation" where there is "safety in numbers" (Seetharam & Britten, 2013). With numerous investors settling on a similar investment choice, the dispersal of share returns would be low. The authors conducted a few tests of herding behaviour and found that herding was observed to be present relative to market conditions – in other words, it was absent within the market in general, yet significantly present

[9] **Multi-dimensional Uncertainty** – Uncertainty that involves different aspects or dimensions.

in bear markets. It was additionally discovered that herding behaviour seems to rise before a market contraction (Seetharam & Britten, 2013). Results were in accordance with developed economies, demonstrating the high level of advancement in South Africa's monetary related markets (Seetharam & Britten, 2013).

Hanafi and Abaoub (2016) deliberate whether policy uncertainty and social inconveniences lead investors to herd. Authors such as Dimic, Orlov and Piljak (2015) demonstrated that asset returns are impacted by policy uncertainty in three markets (developed, emerging and frontier stock markets). Dimic *et al.* (2015) show that the most common political risk in the three markets is government taking action in a country as well as government stability. The impact of this hazard on the asset return is more noticeable on developing markets than developed ones. Hanafi and Abaoub (2016) examine whether the social and political crisis that occurred in Tunisia brought herding behaviour in the Tunisian market. The authors attempt add insight into this issue by utilising the return dispersal approach created by Chang *et al.* (2000) and Chiang and Zheng (2010) to distinguish herding behaviour on the Tunisian stock market, both across the sample period and periods before and after the political crisis of 2011 (Hanafi and Abaoub, 2016). The authors further demonstrate that across the sample period, herding behaviour exists, while prior the crisis, herding behaviour is discovered only when the market is up. This behaviour is observed particularly on days with increased trading volume. Trading volume conveys important information about investors' behaviour in the financial market and hence is considered a significant factor in discovering herding behaviour (Hanafi and Abaoub, 2016). For the remaining sections of the literature review, some time is devoted to background on the BRICS countries.

2.4 An introduction to the BRICS countries

Emerging markets continue to mature towards becoming more like developed markets. Kearney (2012) mentions that these emerging markets are increasingly recognised as a diverse set of business, cultural, economic, financial, institutional, legal, political and social environments within which to test, reassess and renew insights about how the business world works (Kearney, 2012). Furthermore, people are enabled to make new discoveries that will enhance human welfare in all environments from the world's underdeveloped countries to the developed countries (Kearney, 2012).

Brazil, Russia, India, China and South Africa (BRICS) seem to fit Kearney's (2012) description of emerging markets. These countries are among the largest on their continents and may possibly best epitomise the priorities and apprehensions of their regions. Lemco (2016) states that in 2001, these five countries comprised about 9% of global gross domestic product (GDP). By 2016, that percentage increased to approximately 25% of GDP, and the five countries accounted for 41.4% of the world's population Lemco (2016). Although the BRICS countries show improvements to become developed and advanced, they have strengths and weaknesses in their own rights. Table 2.1 shows the countries' strengths and weaknesses. Brazil and South Africa have natural resources to advance their countries, while India and China have massive populations and economic power. Russia has a better-educated labour force and nuclear power as a strength. All five countries have weaknesses but what stands out from all of them is their political stance and governance.

Table 2.1: Strengths and Weaknesses of BRICS

	 **Brazil**	 **Russia**	 **India**	 **China**	 **South Africa**
Strengths	• Abundant natural resources. • Large population. • Stable government finances.	• Military superpower. • Well-educated labour force. • Nuclear power.	• Ambitious reform agenda. • Largest democracy in the world.	• Positive momentum in adopting structural reforms. • Economic power.	• Abundant natural resources. • Most economically developed large nation in Africa.
Weaknesses	• Currently engulfed in political scandal. • Weak educational institutions. • High Business costs. • Does not trade a lot.	• Lack of industrial diversification. • Too much dependence on petroleum reserves. • Weak governance and weak rule of law.	• Slow progress in adopting reform. • Weak infrastructure. • Unpredictable corruption.	• Mixed results in passing structural reforms. • Nondemocratic character of leadership. • Growing private sector debt obligations.	• Deteriorating fiscal and economic situation. • Weak political management.

Source: Vanguard Research Commentary (Lemco, 2016)

2.4.1 Brazil and its financial system

Brazil is South America's largest and most influential country bounded by the Atlantic Ocean, where the capital city is Brasília as shown in Figure 2.1. In 2014, it was the seventh largest economy in the world by GDP with a well-developed industrial sector, a rising economic power and a growing consumer market. It is one of the world's biggest democracies consisting of 26 states and one federal region where its main trading partners are the USA, China and Argentina with leading exports in iron ore and agricultural products. Brazil is a former Portuguese colony which is highly diverse in its large population including European settlers, ethnic Americans and the descendants of African slaves. As a developing country, the gap between rich and poor remains widespread although over the past few years Brazil made major developments in its efforts to raise millions out of poverty[10]. This occurrence could also be seen in Brazil's financial sector stability.

Source: https://globaledge.msu.edu/countries/brazil

Figure 2.2. Map of Brazil and its capital city Brasilia.

Banks make profit by earning more revenue than what they pay in expenses. Its assets are mainly loans issued out and the securities that it holds, while its liabilities are mainly its deposits and the money that it borrows. Compared to other emerging and developed countries, the Brazilian banking system seems to be very profitable, having high levels of capitalisation and liquidity over and above the limited exposure to cross-border funding and foreign exchange risks (Viñals & Eyzaguirre, 2012). Banks tend to increase profits by making use of leverage, which then implies benefiting from high

[10] The World Bank confirms that Brazil's economic and social progress between the years 2003 and 2014 lifted approximately 29 million people out of poverty and inequality among the population dropped significantly. Retrieved from http://www.worldbank.org/en/country/brazil/overview

interest rate spreads, high fees and commissions, which in turn counterbalances the high costs. Viñals and Eyzaguirre (2012) assessed Brazil's financial system stability and found that compared to other countries, interest rates are high, most debt instruments are indexed to the overnight interest rate, and domestic investments are focused on the short-term. This shows that the system is still held in a high interest rate-short duration equilibrium, which limits the development of Brazil's capital market and its potential growth. Furthermore, the authors state that further development of this financial system will progress with time and also need the assistance of improving the policy beyond the financial sector, particularly maintaining macroeconomic stability, strengthening domestic savings, and improving the business environment (Viñals & Eyzaguirre, 2012).

2.4.2 Russia and its financial system

By surface area, Russia is the largest country on earth with the capital city, Moscow, being one of the largest cities in the world as shown in Figure 2.2. This is a sovereign country in Eurasia (combined continental landmass of Europe and Asia) which emerged from a period after the Soviet economic and political turmoil to reassert itself as a world power. The government system is a federation where it has also converted from being a centrally-planned economy to a more market-based economy, making firms in the country to being privatised from being state-controlled.

Source: https://globaledge.msu.edu/countries/russia

Figure 2.3. Map of Russia and its capital city Moscow.

Banks constitute a large share of Russia's financial system. Though the Russian financial sector is relatively small, Morsink and Gordon (2016) note that banks are the lead performers and most of

them are state-owned. Nonetheless, capital from Russian banks is made available on short-term periods, which prevents the possibility of long-term investments being funded from the banks. The state is hindering the growth and development of Russia's financial sector by misrepresenting the competitive banking environment which is meant to be diverse in terms of tenure and alternatives. Morsink and Gordon (2016) articulate that if complications occur in the major state-owned commercial banks , then the current structure of the Russian financial sector system may be compelled to include fiscal costs, reduce competition and reduce the efficiency of financial intermediation.

Compared to Brazil, Turkey, India, China, and South Africa, the ratio of bank credit to GDP is low. This is reason enough why the Russian banking system structure and governance need to progress in efficiency and stability. Morsink and Gordon (2016) further mention that a combination of procedures should be implemented in order for authorities to make any changes to the existing banking system structure. These include privatisation of banks, increased competition, and terminating weak banks.

2.4.3 India and its financial system

India is the world's largest democracy with a population of more than 1.2 billion[11]. The country is located in Southern Asia where New Delhi is its capital city as shown in Figure 2.3. India's government is a federal republic and over the past decade, it has emerged as a global player shown by its rapid economic growth. However, this country like many other developing countries, have several social and economic issues like poverty and corruption. India has not used its adversities as a downfall but has risen to become the world's fastest growing economy in the G20 developing nations replacing China[12].

[11] Retrieved from https://macromon.wordpress.com/2018/01/08/worlds-fastest-growing-economies-in-2018/
[12] Retrieved from https://macromon.wordpress.com/2018/01/08/worlds-fastest-growing-economies-in-2018/

Source: https://globaledge.msu.edu/countries/india

Figure 2.4. Map of India and its capital city New Delhi.

The Indian financial system is dominated by banks and the state but Morsink and Kang (2017) notes that the Indian financial system is going through a gradual structural shift. It is seen as a diversified system as sources of financing come from different streams in the country such as a growth in the participation of the private sector and nonbank intermediaries. This is seen by a decrease in the shares that the banks hold in credit flows, subsiding from 50 percent during the 2015/16 financial year to 38 percent in the 2016/17 financial year. This was a result of firms increasing private debt and issuing commercial paper, which substituted the majority of bank financing.

2.4.4 China and its financial system

China also known as the People's Republic of China is the second largest economy in the world with a population of approximately 1.3 billion[13]. Its capital city is Beijing as shown in Figure 2.4 below and is gradually becoming an influential role in development and in the global economy. This country has greatly contributed to world growth though it still remains a developing country as its per capita income is a fraction of that in developed countries. Since shifting from a centrally-planned to a market-based economy, China has experienced rapid economic and social development while gradually became an upper middle-income country. Despite the fact that China is a highly diversified economy, it is the largest exporter and second-largest importer of goods globally, dominating in the manufacturing, industrial and agricultural sectors.

[13] Retrieved from https://macromon.wordpress.com/2018/01/08/worlds-fastest-growing-economies-in-2018/

Source: https://globaledge.msu.edu/countries/china

Figure 2.5. Map of China and its capital city Beijing.

China's financial system has grown and diversified since 2011. Sahay and Rodlauer (2017) mentioned that its financial system is bank-dominated and given the ratio of credit to GDP surpassing the benchmarks by wide margins, China appears to have the largest banking system in the world. Though there are private and publicly owned banks, there seems to be no significant competition among them. The private sector trades less in the bond and equity market as a source of finance though they are both large platforms of financing in China.

2.4.5 South Africa and its financial system

South Africa, also known officially as the Republic of South Africa (RSA), is the southernmost country in Africa with a capital city, Pretoria, as shown in Figure 2.5. This country is diverse in terms of its different cultures, languages, food and ethnic groups. Within its diverse economy, there is a combination of private liberty, centralised economic planning and government regulation. This is seen in the improvement of the citizens' wellbeing since democracy transpired in the country, though progress is slow. The slow economic growth has intensified unemployment in the country, making its unemployment rate to be one of the worlds' highest. Furthermore, though the country has emerged from its past, income inequality rates are on a global peak, real disposable income is stagnant, and households are heavily indebted (Towe & Gulde, 2014).

Source: https://globaledge.msu.edu/countries/south-africa

Figure 2.6. Map of South Africa and its capital city Pretoria.

The financial sector in South Africa is large, refined and functions in a tough economic environment. Towe and Gulde (2014) notes that four large banks, an investment bank and two smaller banks primarily dominate the financial system[14]. Although most banking assets and liabilities are domestic and expanding into Africa, foreign assets minimally exist and most bank liabilities are domestic, short-term, and wholesale. The largest source of funding comes from domestic credit while short-term credit from non-bank financial institutions and corporations form a minimal part of financial assets which have been gradually growing in the country.

Armijo (2007) deliberates that these countries are not an obvious set. The author mentions that their internal politics and economics are dissimilar and although all are federal entities, only South Africa, India and Brazil are well-institutionalised democracies, two of which are parliamentary and the other presidential, respectively (Armijo, 2007). The author further remarks that Russia is a declared democracy moving toward authoritarianism, while China is a people's republic. Armijo (2007) notes that each of the five countries embodies distinct cultural and linguistic traditions, though they share the characteristic of having been recognisable political entities for centuries (Armijo, 2007). Armijo (2007) states that all five countries possess modern industrial sectors, with ever deepening links to the global capitalist economy, along with large areas of the economy that operate informally and outside the reach of regulators and tax collectors (Armijo, 2007). The BRICS countries have recently been facing domestic predicaments in terms of policy uncertainty, which may distract their political authorities in charge of policy making, from the thinking of uniting emerging markets.

[14] The small banks specialise in unsecured lending to low income households.

Lemco (2016) claims that Brazil was in the midst of the worst political scandal in modern Latin American history in 2016, the "Lava Jato" (Car Wash) Affair where numerous public-sector officials in both the government and the government-owned Petrobras national petroleum company have been implicated (Lemco, 2016). As a consequence, the process of impeaching former Brazilian President Dilma Rousseff began. The author mentions in the *Vanguard Commentary* that Russia is dealing with crippling international sanctions, as GDP has fallen 3.7 percent in the first quarter of 2016, along with plummeting oil prices (Lemco, 2016). Lemco (2016) mentions that Prime Minister Narendra Modi of India, proposed to restructure economic proposals in the nation's modern history, however, the implementation of these proposals have proven to be challenging. Moreover, the author says that South Africa's mining sector was in disarray, the credibility of its Finance Ministry was in serious question, and the government's policy proposals appear more arbitrary each day (Lemco, 2016).

Lemco (2016, pp. 4-5) found that

> China President Xi Jinping's proposed numerous economic and political reforms are proceeding; however, implementation of these reforms will take years in some cases. But China's economic growth continues to slow, and private sector debt is increasing rapidly. For quite some time, the government has been constrained by a burgeoning credit bubble in an economy that is growing at its slowest pace in 25 years.

O'Neill *et al.* (2005) and Lemco (2016) agree that all five countries are emerging towards development albeit the process comes with many different pressures, especially policy uncertainty. Policy uncertainty in the BRICS countries has proven to affect the growth of their economies which might also be a result of firm herding within these countries or might also be mimicking developed countries behaviour.

2.5 Policy uncertainty in the BRICS countries

Firms operate in active economic environments that are affected by economic policy changes made by politicians and regulatory institutions. The uncertainty about how the financial decisions of firms will be affected by future government policies is high. Demir and Ersan (2017) state the importance of understanding how policy uncertainty affects firms and that it is also imperative to find a suitable measure of policy uncertainty. Therefore, the Economic Policy Uncertainty (EPU) index was

established by Baker *et al*. (2012) showing what economic policy actions will be agreed upon, by whom, when those economic policy decisions will be made, and the possible effects of policy actions and inactions. The BRICS countries are undergoing transformation in their different ways as well as trying to address policy and policy uncertainty.

2.5.1 Brazil

Brazil has an election cycle of four years for both the president and vice president. They are both elected by the citizens of Brazil through a majority vote over a two-round system. Approximately a decade ago, political and economic analysts saw Brazil to be a new thriving economic, diplomatic and cultural economy in the world. Brazil's state of affairs in its economy began to deteriorate when there was policy uncertainty; however, in 2014, economic growth was noticed to be declining year on year[15].

There was rising corruption in the country around the Petrobras[16] scandal when information about its dealings started being publicly available to citizens of the country. Brazilians expressed frustration in public by intensifying protests which led to the scandal being a political crisis. Corruption and stagnation towards progress was becoming a real concern for the citizens and that made it more challenging for the economy to keep growing at a decent rate. In the midst of economic and political crises, President Dilma Rousseff was prosecuted by parliament in 2016 and replaced by Vice President Michel Temer. Almost all political parties and up to approximately 80 percent of politicians in Brazil have been accused of being involved in some form of corruption or are directly involved. President Michel Temer on the other hand has also been involved in recent corruption allegations about approving bribery with a shareholder from JBS Group[17]. This scandal increased policy uncertainty in the country and a statement by Fitch ratings states that the crisis will put pressure on the bank environment while the qualitative risks of assets increase over the medium and long terms. Because this involves the presidency, there might possibly be an increase in policy and legislative uncertainty caused by the intensified political risk[18]. The Fitch rating statement agrees that banks

[15] Article "Brazil's political and economic future remain uncertain" with Dr Sabatini's commentary, retrieved from https://www.pacificcouncil.org/newsroom/brazil%E2%80%99s-political-and-economic-future-remain-uncertain
[16] Petrobras is a state-owned oil company in Brazil. The Petrobras scandal is a Brazilian scandal that began in 2014 in which businessmen and politicians stole millions of dollars through contracts with Petrobras.
[17] JBS Group is the world's largest beef and leather producer.
[18] The following statement was released by the Fitch rating agency containing comments retrieved from https://www.reuters.com/article/fitch-political-uncertainty-raises-brazi/fitch-political-uncertainty-raises-brazil-banks-credit-risks-idUSL4N1IO4IL

dominate Brazil's financial system just like other Latin American countries (International Monetary Fund, 2012a). Exposing market risk of the largest banks is limited since most of the Brazilian banks' assets are credit related. Consequently, if any political uproar causes market volatility, then the banks should face limited immediate effects while investment banks and fund managers could be heavily impacted by this market volatility (International Monetary Fund, 2012a). With this background in mind, it is expected that EPU in Brazil is high mostly due to corruption[19], resulting in a lower leverage ratio for firms – this hypothesis will be tested in Chapter 4.

2.5.2 Russia

The Russian political system embraces democracy but remains imperfect in terms of its democratic credentials. The President of the country is elected by a majority vote through a two-round system having an election cycle of a four-year term. Over the past number of years, the political system has been influenced by the power and personality of one man, Vladimir Putin, and also overpowered by the persistent practice of corruption in the country. Corruption was widespread throughout all levels of government which remains a serious problem. The government enforced the criminal consequences of official corruption, but has admitted that the law was not effectively applied, and many officials continued to practice corruption (Copenhagen Institute for Future Studies, 2005). Acts of corruption included bribery of government officials, using government's official power of position to secure personal profits, misuse of budgetary resources, theft of state property and bribes in the procurement process. Bribery and corruption acts cost the country approximately 33 percent of its GDP.

Russian middle class is developing and becoming more important to Russia's future economic growth, though reality shows that Russia's population is in decline which might see the GDP decrease. Similarly, GDP is growing at a slow rate due to low investment activities, structural weaknesses and a poor demographic outlook. This is seen through an increase of small and medium firms' privatisation, although the state still owns and influences most of the large firms. The government of Russia hinders its economic growth in many other ways as well; the country has a poorly established banking sector, an inefficient customs service and a few technical trade barriers (Copenhagen Institute for Future Studies, 2005). There is a need for an improved material infrastructure, improved and more transparent Russian laws, decrease of corruption, removal of trade

[19] Article "Brazil's political and economic future remain uncertain" with Dr Sabatini's commentary, retrieved from https://www.pacificcouncil.org/newsroom/brazil%E2%80%99s-political-and-economic-future-remain-uncertain

and investment barriers as well as those of technical trade barriers (Copenhagen Institute for Future Studies, 2005). It is noted that for major political or economic restructure to take its tall, a radical increase in investments should be in place to allow the Russian economy and foreign trade experience intensified growth. With this background in mind, it is expected that when EPU in Russia increases, it will result in a lower leverage ratio for firms – this hypothesis will be tested in Chapter 4.

2.5.3 India

The president of India is elected by an electoral college with a term of five years. This country moved from a centralised power distribution command structure to a relaxed one where leaders at every governmental level are able to address their concerns at the national level. The quality of India's political leaders has deteriorated in a sense that most are corrupt, greedy and disinterested in the country's restructure. While there are an increasing number of political leaders with criminal records, they also use bribery to get away with the power that they have by using the state's money for personal use (Bhagat, Ghosh & Rangan, 2014).

During the recent elections, political leaders intentionally left out important policy issues from election campaigns. The only policy concerns that were highlighted during the election campaigns are the administrative disorder in implementing demonetisation in the country as well as the goods and services tax (GST). The tax policy in India has been inconsistent as it constantly requires validation and continuing without proper research, preparation and regulation has caused a lot of compliance burden on the taxpayer.

Having policy uncertainty on taxes, FDI, trade, and environmental regulations can have significant effects on firms' financial decision making. On the contrary, political stability can help India to make economic decisions and moderate the risk of imbalance in the economy. Furthermore, the country's unequal society causes an imbalance in the economy where the middle and upper class want further opening up of the economy, while the poor want more health and educational investments by the state as well as to follow up and eliminate corruption (Bhagat *et al.*, 2014). Even with the usual policy uncertainties in India, economic growth has been booming in the country. With this background in mind, it is expected that an increase in EPU in India, will result in a lower leverage ratio for firms – this hypothesis will be tested in Chapter 4.

2.5.4 China

China has an election cycle of five years where the president is elected by the national people's congress through the Chinese Communist Party (CCP). CCP is the only main political party in the country and also controls the other eight small parties. China is still considered a developing country moving from a planned economy towards a market-based economy (International Monetary Fund, 2017). The 2009 global recession disturbed the balanced growth that China was constantly encountering with it being the second largest global economy and the largest exporter in the world (International Monetary Fund, 2017). More than five years later, the Chinese economy still continued to decline causing another recession in the northeast region, which is reliant on mining, heavy industry and state-owned firms.

There are many inequalities that China is encountering and are increasingly becoming a big challenge for both the Chinese authorities and investors. There is still a lack of openness of its political system because of the monopolistic political party that rules the country and other smaller parties (International Monetary Fund, 2017). Though this country still encounters many challenges, such as a decline in the labour force and an ageing population, it also has concerns of the economy being dependent on high capital spending and the expansion of credit in the country. The inequality leaves a large gap between the cities and the countryside living standards, between the upper, middle and lower classes and between the Chinese coast and the western parts of the country.

The CCP plans to make some political changes, such as preventing corruption, ending the one-child policy and expanding the welfare system. Furthermore, the party wants to abandon forced labour camps, making public services for citizens more accessible and local courts more independent. The programme that the CCP initiated has also pledged that by 2020, the country should restructure state-owned firms, openness to make financial transactions, liberating interest rates and also access and the facilitation of agricultural land sale by farmers (International Monetary Fund, 2017). The President also believes that China will be better equipped for more growth if one of the focus areas is strengthening of state control, putting emphasis on its policing aspects and adopting the new law on the fight against terrorism, the administration of NGO's and being alert of cyber security. With this background in mind, it is expected that when EPU in China increases, it will result in a lower leverage ratio for firms – this hypothesis will be tested in Chapter 4.

2.5.5 South Africa

The South African government system is a republic where the president is elected by the National Assembly and the election cycle takes a term of five years. South Africa's political system has not succeeded in creating a favourable environment to economic growth and investment. Due to bad policy choices and inconsistent governance, the economy continues to decline causing social instability conditions to worsen (Cilliers & Aucoin, 2016). Since Former President Jacob Zuma came into office as the President of South Africa in 2009, he caused a national commotion when he reshuffled his cabinet seven times. The sixth reshuffle was very brief when David van Rooyen was appointed as the minister of finance and was rapidly changed by reappointing the previous finance minister Pravin Gordhan making it the seventh reshuffle.

Ever since the global financial crisis happened in 2008, South Africa has entered a technical recession[20] for the first time in 2017 since then. Growth in the mining and agricultural sector happened at a similar period and should have improved the economy significantly but the reasons behind the recession overpowered the growth. Economists explain that this happened due to consumer, business and investor confidence in South Africa being lost. The working citizens are earning less relative to the country's inflation, interest rates remain as high as they were and a negative outlook among business and consumers by the rating agencies is slowing down commercial trade[21]. The disheartened mood of business and consumers in the country is mainly caused by political and policy uncertainty along with corruption discernments in government and business dealings (Cilliers & Aucoin, 2016).

Corruption and a sense of uncertainty in the country has had a big impact on the economy and causing a decline its economic growth. Corrupt individuals use state resources for their own personal use which bankrupts the country to fulfil its cause (Cilliers & Aucoin, 2016). Former President Jacob Zuma and the Guptas have been recent scandals in the country of stealing public funds for private use and gotten away with such malicious acts. South Africa's political system needs to be trusted again by its citizens through holding corrupt officials accountable and managing the budget deficit appropriately.

[20] **Technical Recession** – A period where there are two consecutive quarters of negative economic growth.
[21] How Corruption And Political Instability Have Thrown SA Into A Recession by Marc Davies, 06/2017, retrieved from http://www.huffingtonpost.co.za/2017/06/06/how-corruption-and-political-instability-have-thrown-sa-into-a-r_a_22128790/

South Africa's economy is not the worst in the world, but is similar to what the BRICS nations encounter. The 2017 technical recession implies that consumer, business and investor confidence may continue to decline but what makes the situation hopeful is that corruption and policy uncertainty have been exposed and brought forward by media and civil society. Given that when the degree of EPU in South Africa increases, it is expected that firms are likely to decrease their leverage ratios.

2.6 Summary of literature review

Two capital structure models are explored by different authors, a static trade-off framework and the pecking order framework. After explaining all aspects of the static trade-off and pecking-order theories, it was found that investors seem to be content with static trade-off theory as it yields the best internal debt ratio. Authors such as Myers (1984), Chipeta and McClelland (2017), Fama and French (2002), Tong and Green (2005), and Yu and Aquino (2009) agree with the pecking order framework as it identifies both the costs of financial distress and asymmetric information between managers and investors. Factors influencing capital structure have been debated for many years in the corporate finance literature. Authors also found a common negative relationship between debt ratios in the short-term period and firm size, and this shows the high transaction costs that small firms incur when issuing debt in the long-term period (Titman & Wessels, 1988). They also found that it is indeed true that firms attract debt capital when interest rates are currently lower than historical rates, which is consistent with the debt market timing hypothesis. Even with timing the market, it is clear that the performance of peer firms is important in influencing firm capital structures and financial policies (Titman & Wessels, 1988).

During periods of high policy uncertainty, banks makes credit limited because of low business confidence and fear of what is happening in the market. (Sum, 2012). Authors have shown that when investors become uncertain about the market, share prices are lower and that following a high economic uncertainty period, share prices plummet. Results from these studies imply that policy uncertainty can have long-term effects on investment levels. Results are also consistent with the understanding of political elections being likely to discourage foreign investment due to policy uncertainty, creating uncertainty about the stable exchange rate policy and making incentives around fixed currency regimes. Policy uncertainty affects the way a firm is financed. Cao *et al*. (2013) show that during periods of increased policy uncertainty, under-leveraged firms are more likely to maintain low debt ratios for lengthy periods. For firms that are exposed to higher political risk, the authors found that the policy uncertainty effect is more significant (Cao *et al*., 2013). Firms tend to postpone

the issuance of debt when there is confusion and uncertainty and firms with access to debt markets on a public platform are less affected by borrowing constraints caused by policy uncertainty (Cao *et al*., 2013).

Emerging markets such as the BRICS countries also are affected by policy uncertainty. These are among the largest countries on their continents and may possibly best epitomise the priorities and apprehensions of their regions. Their internal politics and economics are dissimilar and although all are federal entities, only South Africa, India and Brazil are well-institutionalised democracies, two of which are parliamentary and the other presidential, respectively (Armijo, 2007). The BRICS countries are undergoing transformation as well as trying to address policy uncertainty.

Brazil saw a rise in corruption around the Petrobras scandal when information about its dealings started becoming publicly available to its citizens. It is noted that for major political or economic restructure to take its toll in Russia, a radical increase in investments should be in place to allow the Russian economy and foreign trade experience to both grow. The tax policy in India has been inconsistent as it constantly requires validation and continuing with it without proper grounding, preparation and regulation has caused much compliance burden on the taxpayer. China's inequalities are increasingly becoming a big challenge for both the Chinese authorities and investors. There is still a lack of openness of its political system because of the monopolistic political party that rules the country and other smaller parties. Due to bad policy choices and inconsistent governance in South Africa, the economy continues to decline causing social instability conditions to worsen.

In order to measure EPU, Baker *et al*. (2012) constructed the EPU index by building three types of elements and then aggregated them to obtain the index. The first element includes monthly data, information and news articles from media coverage of political/policy uncertainty, predominantly from 10 largest newspapers of that specific country, containing 'uncertain' or 'uncertainty', 'economic' or 'economy', and/or policy-relevant terms (Baker *et al.*, 2012). The second element uses reports that reflect lists of tax code provisions set to expire over the next 10 years. The third element of the policy-related uncertainty index uses the differences among economic forecasters about inflation and government expenditures. However, it was agreed upon by Baker *et al*. (2012) that the news-based approach to measuring uncertainty would be the one used as it comes with flexibility to quantify the extent to which policy-related uncertainty accounts for overall economic uncertainty (Baker *et al.*, 2012).

Herding is believed to be an important feature of financial markets in the world of finance. Chang *et al*. (2000) believe that there is investor herding behaviour in both developed and developing countries. Other authors explore the cross-sectional movements of the market and detect mispricing due to herding, especially when there are expectations of market returns. Evidence of herding was found towards the market portfolio, especially during the Asian Crisis and the Russian Crisis when the market was either increasing or decreasing.

This literature leads to the purpose of this study in answering the questions: During times of policy uncertainty, how do firms rationalise making leverage financing decisions; and do they herd their leverage financing decisions towards what the market or other firms have decided?

3 DATA AND METHODOLOGY

Chapter 3 provides an overview of the empirical data used in this study and of the research approach applied during the dissertation. While the data selection process will be discussed in *Section 3.1*, *Section 3.2* and *3.3* describe the measure of returns and Generalised Method of Moments respectively. *Section 3.4* shows how the BRICS countries' EPU and leverage will be measured. *Section 3.5* and *3.6* will focus on the herding and robustness checks respectively.

3.1 Data

The sample firms are selected based on Top 80 listed firms by market capitalisation, as of June 2017, in their respective country stock exchanges. This study attempts to understand how the firms have performed from the beginning of the sample period until the end of the sample period for them to have made it on the Top 80 list. *Appendix A* shows the Top 80 firms listed on the B3 Stock Exchange (BVMF3), the National Stock Exchange (NSE), the Hong Kong Stock Exchange (HKSE), the Johannesburg Stock Exchange (JSE) and Top 50 on the Moscow Exchange (MOEX), in Brazil, India, China, South Africa and Russia respectively. Russia's available and accessible listed firm information on both the MOEX website and Bloomberg is limited to the Top 50 firms. These firms will be split into two sub-groups of the first 40 listed firms and the next 40 listed firms, however, in the case of Russia it will be first 25 listed firms and the next 25 listed firms. This is achieved by including a dummy variable in the regression discussed later.

Performance at the beginning of the period is determined to be different to the end of the sample period because of variability of factors such as economic policy uncertainty, financial incidents and listing at various points. The Top 80 firms are chosen consequently by way of mitigating the industry sector biasness found in fewer firms chosen. A total of 370 firms will be sampled over a period of 15 years from the beginning of June 2002, the year after the five countries were noted to be emerging at a faster rate than others, to the end of June 2017. The sample period is suited for data availability on all the five stock exchanges. Figure 3.1, 3.2, 3.3, 3.4 and 3.5 below show that although looking at the complete sample size in 2017 for all the countries, there are some firms that are not listed yet at the beginning of 2002 while others have been there throughout. At any point in time, the graphs show that there are still enough firms to work with for all the countries with the exception of Russia that started off with having 12 listed firms in 2002.

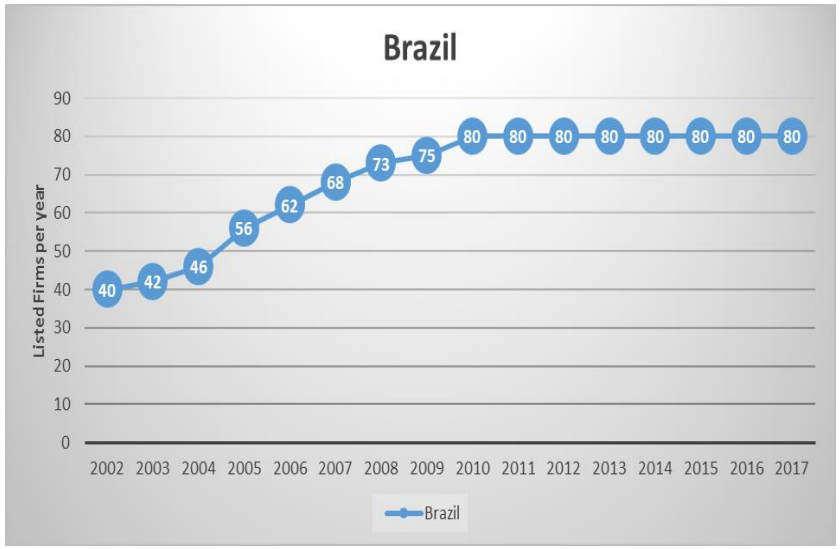


Figure 3.1: Brazil listed firms 2002 - 2017.

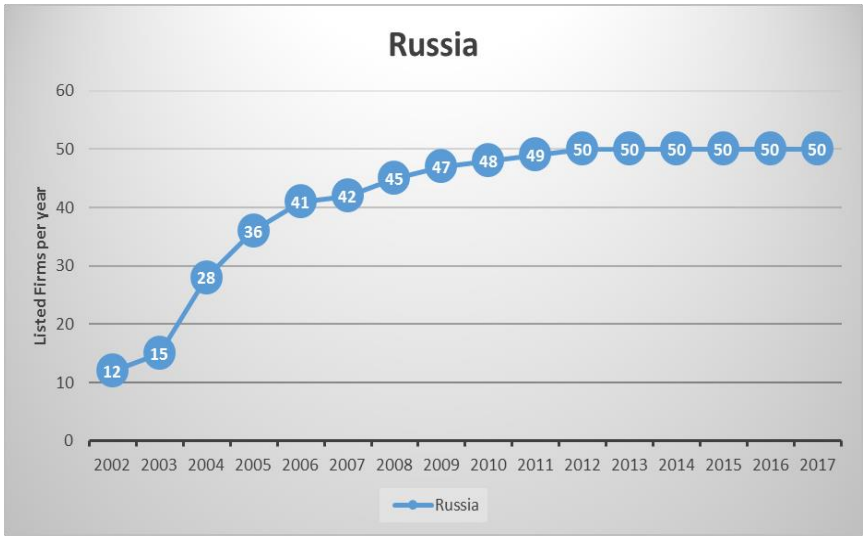


Figure 3.2: Russia listed firms 2002 - 2017.

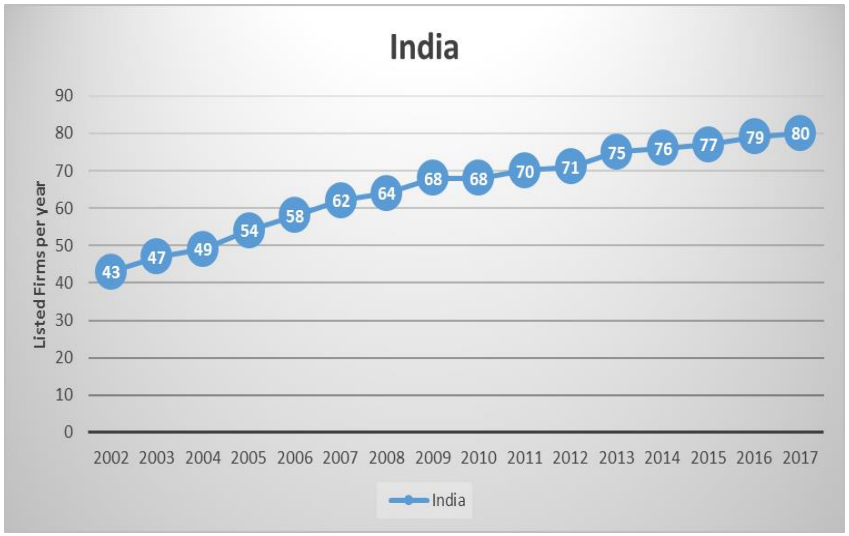


Figure 3.3: India listed firms 2002 - 2017.

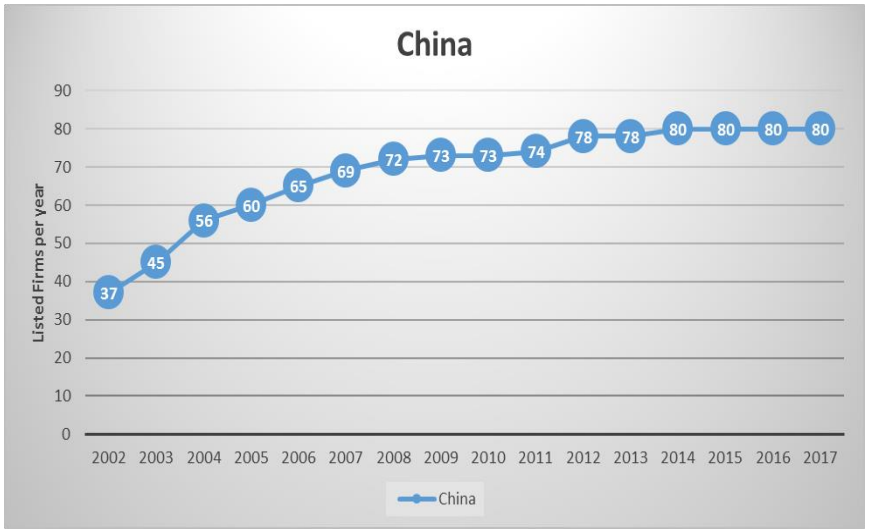


Figure 3.4: China listed firms 2002 - 2017.

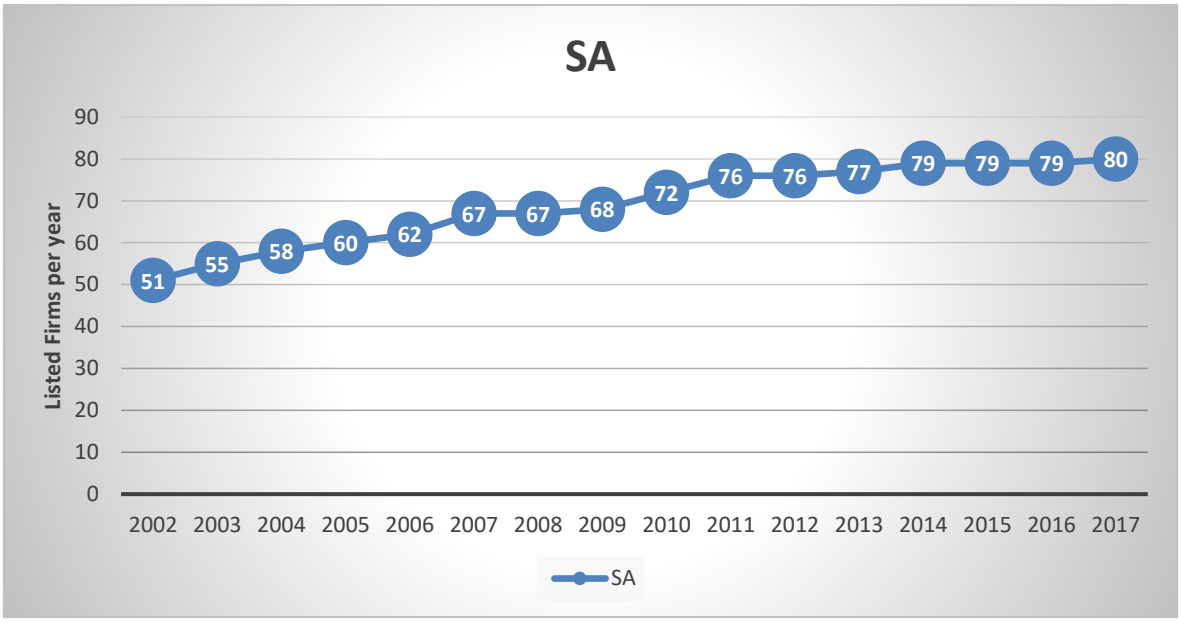


Figure 3.5: South Africa listed firms 2002 - 2017.

The annual financial statements of the Brazilian, Russian, Indian, Chinese and South African listed companies are used to examine the effect of economic policy uncertainty on leverage financing decisions. The financial statement information is sourced from Bloomberg and the annual data are used to discover more time-series variations, as per Leary and Roberts (2014). All the monthly closing share data (including dividends) are obtained from the I-Net Bridge database, Global Financial Data and Bloomberg, whereas accounting data is sourced from both Bloomberg and the McGregor Bureau of Financial Analysis database, and the EPU index from Baker *et al.* (2012), available at www.policyuncertainty.com, which will be explained in *section 3.4*.

The closing share price data and the EPU data will be obtained monthly from the beginning of June 2002 to the end of June 2017, whereas the financial statements data will be obtained on an annual basis for the period noted. This difference in frequency will be highlighted in the methodology section. Based on previous studies on capital structure, financial industry firms that are specially regulated will be excluded as they usually have high leverage ratios. Special treatment or particular transfer firms which are observed due to their reduced operating performances, according to their exchanges that they are listed on, will also be excluded. Firms that are listed and delisted during the sample period will be accounted for their listed period on the exchange, that is, if a firm was listed at the start of the study period and delisted in the middle, this implies that the return will be 0% after delisting. The same goes for firms that were listed in the middle of the period, their returns at the beginning of the study period will be 0%. Moreover, dual listed firms will be excluded from the sample as they create a reasonable amount of clutter in analysing results. In this case, there are two

dual listed companies in all five countries. *Glencore* is dual listed on both the JSE and HKSE, while *United Company RUSAL* is dual listed on HKSE and MOEX. These two companies will be excluded from the sample making it a total of 367 firms being sampled.

If monthly observations on the shares are taken into consideration then the monthly continuously compounded return is given by:

$$R_t = ln\frac{S_i}{S_{i-1}} \quad (1)$$

Where R_t is the monthly return, S_i and S_{i-1} is the stock prices at time *i* and *i-1*, respectively.
If R_t *(t = 1, 2, …, n)* is the monthly return, then the mean return using *n* observations is:

$$\bar{R}_t = \frac{\sum_{t=1}^{n} R_t}{n} \quad (2)$$

where $\bar{R}_t$ is the mean return per share across the sample period.

Each country will have its own monthly risk-free rates obtained as the 91 day Treasury Bill Rates from Bloomberg as shown in Appendix B. To achieve the objective of this study, regressions will be run on eViews using the dynamic Generalised Method of Moments (GMM) model. Percentage changes in the variables will be used in the regressions while levels of variables will be used as a robustness check.

3.2 Generalised Method of Moments (GMM) model Methodology

Generalised Method of Moments (GMM) is a statistical concept that was first introduced by Hansen (1982) as a method of estimating parameters of a probability distribution. This is done by testing what possible values of the parameters lead to the appropriate moments of the sample. Moments are the measures that define the shape of the distribution and in the case of the normal distribution; these are the mean, variance, skewness and kurtosis. Since this concept was introduced, it has become one of the main statistical tools of financial and economic data analysis.

3.2.1 The method of moments

Nielsen (2005) mentions that the method of moments uses sample moments to estimate unknown parameters. Suppose a set of *n* observations, $y_1,\ldots, y_n$ are independent and identically distributed.

Since the expectation of this series is a constant, $E[y_t] = \lambda$, a population moment condition is $E[y_t] - \lambda = 0$.As a result, a natural method to estimate the unknown parameter is to use the sample average,

$$\frac{1}{n}\sum_{t=1}^{n} y_t - \bar{\lambda}_t = 0 \tag{3}$$

where the method of moments estimator is:

$$\bar{\lambda}_t = \frac{1}{n}\sum_{t=1}^{n} y_t \tag{4}$$

which converges to λ as the sample size grows large. Simple moment conditions are noted as the following:

Population		*Sample*	
$\mathrm{E}[y_t] = 0$	$\longrightarrow$	$\frac{1}{n}\sum_{t=1}^{n} \bar{y_t} = 0$	(5)
$\mathrm{cov}[X_t, y_t] = 0$	$\longrightarrow$	$\frac{1}{n}\sum_{t=1}^{n} X_t' \bar{y}_t = 0$	(6)

These are the basic conditions for GMM.

3.2.2 GMM

When effecting tests, some models can have biased figures and error terms which will further lead to biased estimations. Hausman (1978) developed tests that examine if correlation between the error terms and the regressors in the model exist. These tests are used to check which between the fixed and random effect model is appropriate (Hausman, 1978). The fixed effect model is a statistical model where the model parameters are fixed variables whereas the random effect model is a statistical model where the model parameters are random variables. The null hypothesis is that there is no correlation between the error terms and the regressors where the random effects model is preferred and the alternate hypothesis is that there is correlation between the two (fixed effects model) (Hausman, 1978). If the probability value is less than 0.05 then the fixed effect model is appropriate otherwise random effect model. If the probability value is more than 0.05 then do not reject the null hypothesis, and use the random effects model.

GMM extends the classical methods of moments setup in two important ways. The first is to solve the problem of having two or more moment conditions that have information about unknown parameters (Nielsen, 2005). The second important generalisation of GMM is that quantities other than sample moments can be used to estimate the parameters (Nielsen, 2005). If information is to be used from a second moment then,

$$E[y_t^2] - \lambda_t^2 - 1 = 0 \tag{7}$$

Where the second moment condition becomes:

$$\frac{1}{n}\sum_{t=1}^{n} y_t^2 - \bar{\lambda}_t^2 - 1 = 0 \tag{8}$$

Then the GMM estimator of λ_0 based on $E[f(y_t, \lambda_0)] = 0$ is defined to be

$$\bar{\lambda}_t = argmin_{\lambda \in \Theta} Q_t(\lambda) \tag{9}$$

Where *argmin* is the argument of the minimum, and is where the points of the domain of a function at which the function values are minimised. Then the criterion function is defined as:

$$Q_t(\lambda) = \frac{1}{n}\sum_{t=1}^{n} f(y_t, \lambda)' W_t \frac{1}{n}\sum_{t=1}^{n} f(y_t, \lambda) \tag{10}$$

Where W_t is known as the weighting matrix.

Let $f(.)$ be a ***q* x 1** matrix and λ be a ***p* x 1** matrix, then:

- If $q = p$, then GMM = Method of moments based on $E[f(y_t, \lambda_0)] = 0$.
- If $q > p$, then GMM estimator is the value of λ closest to solving sample moment condition.
- $Q_t(\lambda)$ is a measure of the "closeness to zero" and for this measure to make sense, W_t is need to satisfy certain restrictions so that *inter alia* $Q_t(\lambda) \geq 0$.

3.3 Testing for economic policy uncertainty (EPU) and leverage

3.3.1 Measuring EPU of BRICS countries

To measure policy-related economic uncertainty for all the BRICS countries, an index is developed by Baker *et al*. (2012), available at www.policyuncertainty.com, which is based on frequency counts of newspaper articles. South African data was not available and used an alternative similar index from Brogaard and Detzel (2015) discussed below. Similar to the EPU index developed for the USA, the

same methodology applies for the BRICS countries according to individual country newspaper coverage. The EPU indices are then selected to correspond to the sample period in this study (2002 to 2017).

Brazilian EPU

The Brazil monthly EPU index was constructed from newspaper coverage of policy-related economic uncertainty which started from January 1991 to the present. This index was constructed following the same methods used to create the USA news-based EPU index in Baker *et al.* (2012). In each month, from 1991 onwards, the *Folha de Sao Paulo* newspaper was used to extract and count articles comprising terms such as *incerto* or *incerteza*, *econômico* or *economia*, *regulação, déficit, orçamento, imposto, banco central, alvorada, planalto, congresso, senado, câmara dos deputados, legislação, lei and tarifa* (some of which are policy relevant terms)[22]. To obtain the monthly EPU rate, the raw EPU counts are measured by counting the number of articles that include the terms above in the same newspaper and month[23]. The Brazilian EPU index was then normalised to a mean value of 100.

Russian EPU

A nationally distributed daily newspaper *Kommersant*, predominantly focusing on economics and politics, was used to obtain the index. The number of newspaper articles comprising the terms *uncertain* or *uncertainty*, *economic* or *economy*, and one or more policy terms were counted. The policy terms comprise the Russian language equivalents of *policy*, *tax*, *spending*, *regulation*, *central bank*, *law*, terms connecting to political institutions like the *Duma*, *budget*, and other terms (Economic Policy Uncertainty Index, 2012).

The rate of recurrence of the total number of articles in the same newspaper and month is measured, however, interpolating to obtain the January 1997 and January 1999 index values, because the digital newspaper archive that was used only covers insufficient days in those two months (Economic Policy Uncertainty Index, 2012). Prior to 2012, the Russian EPU index was then normalised to a mean value of 100. With each monthly update, data from the preceding two months may be revised slightly, as well. This is driven by the fact that some online newspapers do not immediately update their online

[22] Sourced from www.policyuncertainty.com

[23] Appreciation goes to Emanuel Ornelas, Claudio Ferraz, Sergio Lamucci, and Jose Scheinkman for helpful comments on a preliminary version of the Brazil EPU Index found in www.policyuncertainty.com.

archives with all articles, leading to slightly changing totals for the previous 1-2 months[24] (Economic Policy Uncertainty Index, 2012).

Indian EPU

The Indian news-based EPU index is constructed using seven Indian newspapers which are *the Economic Times, the Times of India, the Hindustan Times, the Hindu, the Statesman, the Indian Express,* and *the Financial Express* (Economic Policy Uncertainty Index, 2012). To measure EPU for India, the number of news articles for each newspaper is counted, containing at least one term from each of three term groups. The first group comprises the terms *uncertain, uncertainties, or uncertainty*. The second contains *economic or economy*. The third consists of policy relevant terms such as *regulation, central bank, monetary policy, policymakers, deficit, legislation, and fiscal policy*[25] (Economic Policy Uncertainty Index, 2012).

The monthly EPU article counts are measured by counting the number of articles in the same newspaper and month. The time-series standard deviation of the scaled article counts is then normalised to one prior to the year 2011 for each newspaper independently (Economic Policy Uncertainty Index, 2012). Next, the normalised scaled counts are added together across the 7 newspapers month-by-month. The resulting sum is then re-normalised to attain a mean of 100 prior to the year 2011 which then produces India's news-based EPU index.

Chinese EPU

The Chinese news-based EPU index is constructed using Hong Kong's leading English-language newspaper, *the South China Morning Post (SCMP).* To measure policy-related economic uncertainty for China, the number of news articles in SCMP is counted monthly, containing at least one term from each of the China economic uncertainty term sets: {*China, Chinese*} and {*economy, economic*} and {*uncertain, uncertainty*} (Economic Policy Uncertainty Index, 2012). Second, articles that also discuss policy matters are then identified to satisfy the following text filter: {{*policy, spending, budget, political, interest rates or reform*} and {*government, Beijing or authorities*}} or {*tax, regulation, regulatory, central bank, People's Bank of China, PBOC, deficit or WTO*} (Economic Policy Uncertainty Index, 2012). Third, an automated search is then applied over every SCMP article published since 1995 which yields a monthly occurrence count of SCMP articles about EPU in China.

[24] Appreciation goes to Olga Deriy and Vladimir Dashkeev for their help in developing the Russian EPU index found in www.policyuncertainty.com.
[25] Sourced from www.policyuncertainty.com

Fourth, the monthly frequency count is then divided by the number of all the articles found in SCMP in the same month and finally normalising the resulting series to a mean value of 100[26] (Economic Policy Uncertainty Index, 2012).

South African EPU

Brogaard and Detzel (2015) tested how EPU impacts asset prices and created an index similar to that of Baker *et al.* (2012) using the Access World News database, one of the largest news source accumulators. South Africa was part of the 21 countries that were sampled and the data was supplied by the authors[27]. The 21 countries sampled were: Australia, Brazil, China, Canada, England, France, Germany, Hong Kong, India, Italy, Japan, Mexico, Malaysia, Netherlands, Russia, South Africa, South Korea, Spain, Sweden, Switzerland and the United States. The 21 countries were chosen based on having a stock market with a market capitalisation of more than $500 billion at the beginning of 2011. Brogaard and Detzel (2015) used similar keyword search as the Baker *et al.* (2012) paper but extended it to international scenery. The measure that was used also focuses only on the news component due to data availability issues of the other two components of the Baker *et al.* (2012) measure (Brogaard & Detzel, 2015).

For each month between 1990 and 2012, Brogaard and Detzel (2015) search for key terms such as *tax* and *regulation* in cooperation with words that convey uncertainty such as *unsure* and *unclear*. The country's name is mentioned in the search, South Africa in this case, in order for the article to count towards its economic policy uncertainty. Access World News captures the number of articles it returns that contain these key words and uses the frequency of articles to quantify the level of such uncertainty in the economy (Brogaard & Detzel, 2015). The frequency of country-related EPU is then normalised by the total number of articles about South Africa each month.

3.3.2 Measuring Leverage

In line with Zhang *et al*. (2015), the same index incorporating data for each relevant country will be used on Brazil, Russia, India and South Africa. The sample will be split into top half and bottom half

[26] Sourced from www.policyuncertainty.com

[27] Authors were emailed for data assistance from the index they have created: Jonathan Brogaard, Foster School of Business, University of Washington, (Email) brogaard@uw.edu, (Tel) 206-685-7822; Andrew Detzel, Foster School of Business, University of Washington, (Email) adetzel@uw.edu, (Tel) 206-543-0721.

of each country's Top 80 (50), based on the market capitalisation of the firms. Zhang *et al.* (2015) show the impact of EPU on capital structure by using the following empirical model:

$$Leverage_{i,t} = \alpha + \beta_1 \Delta EPU_{i,t-j} + \gamma X_{i,t-1} + \sum Month + \sum Industry + \varepsilon_{i,t} \quad (11)$$

Where *Leverage* is the monthly book leverage ratio, defined as total debt to total assets, and the indices *i* and *t* correspond to firm and month, respectively. *EPU* represents the economic policy uncertainty index where the optimal lag can be empirically tested. The *EPU* index of Baker *et al.* (2012) is monthly based, thus EPU will be annualised and changes in EPU will be used in this equation as opposed to levels.

X presents a set of control variables such as firm size, firm age, profitability, sales growth rate (ΔSales) and tangibility. The month fixed effect (which refers to the month of the firm's financial year end (FYE)) and industry fixed effect are included in the model to control for overall macroeconomic factors over time, seasonality in corporate financing decisions and industry characteristics. Lastly, ε is the error term.

Total debt can be split into short-term debt plus long-term debt using the following model:

$$Leverage_{i,t} = \frac{Total\ Debt}{Total\ Assets} = \frac{D_T}{A_T} = \frac{D_S + D_L}{A_T} \quad (12)$$

Where D_T is the total debt that is split into D_S *and* D_L, which is the short-term debt and the long-term debt respectively. A_T is denoted as the total assets.

Then the short-term and long-term debt values are calculated as follows:

$$D_S = D_T - D_L \quad (13)$$

$$D_L = D_T - D_S \quad (14)$$

3.4 Testing for herding

Welch (2002) demonstrates that managers neglect to readjust their capital structure considering external stock returns. The author considered uniqueness, taxes, profitability, growth, firm and equity volatility as well as industry herding as additional variables to debt and equity in the model. Welch (2002) realised that a firms capital structure is not brought about by attempts to time the market,

minimize tax and bankruptcy costs or maximize firm value or even analyse industry herd behaviour. Rather, capital structure is for the most part determined by lagged stock returns (Welch, 2002).

The author defines the herding behaviour as the difference between the firm's debt ratio and industry's debt ratio and explores that variable as a behavioural hypothesis. This hypothesis will be used for testing herding in this study. The hypothesis in the paper states that firms are motivated to adjust their firm capital structure towards that of their specific industry (Welch, 2002). Welch (2002) concluded that the coefficients of the herding behaviour are always highly statistically significant. Thus, one ought to reason that capital structure is resolved essentially by external stock market impacts such as herding, and not by internal corporate optimising decisions (Welch, 2002).

Leary and Roberts (2014) found herding among peer firms in their results. It was noted that smaller firms followed suit of the bigger firms in terms of corporate financing decisions. This concept links with one of the objectives of this study which is to study if there is herding among firms in emerging markets with the exception that this study deals with the Top 80 firms instead. There is a link between herding in share prices and herding in financing decisions (Leary & Roberts, 2014). It is noted by some authors that firms with high leverage levels cause less-levered firms to partake in predatory share price competition. This causes highly levered firms to herd the financing decisions of their less-levered firms only if the expected cost of this behaviour is severe enough. Similarly, during an industry downturn, highly levered firms underinvest and lose market share to more conservatively financed firms. This loss can motivate firms to mimic the more conservative leverage policies of their peers (Leary & Roberts, 2014). This shows that changes in share prices impact changes in financing decisions. Results from the peer firm herding study done by Leary and Roberts (2014) can be used for robustness check with the results of this study containing the Top 80 firms.

Herding behaviour is seen as the difference between the firm's debt ratio and industry's debt ratio (Welch, 2002),

$$h_{m,t} = D_I - D_F \tag{15}$$

where $h_{m,t}$ is the difference between industry debt ratio (D_I) and firm debt ratio (D_F) and is a herding parameter that changes over time, $h_{m,t} \leq 1$. When $h_{m,t} = 0$, then $D_I = D_F$ which means that there is no herding. When $h_{m,t} = 1$, it suggests the perfect herding toward the industry debt ratio in the sense that all the firm debt ratios move in the same direction and with the same magnitude as the

industry debt ratio. In general, when $0 > h_{m,t} < 1$, some degree of herding exists in the market determined by the magnitude of $h_{m,t}$. This measure is calculated across the entire sample.

The effect of herding will be tested to determine how it impacts the outcome of the leverage equation without the inclusion of EPU.

$$Leverage_{i,t} = \alpha + \beta_2 h_{m,t} + \gamma X_{i,t-1} + \sum Month + \sum Industry + \varepsilon_{i,t} \quad (16)$$

Equation (11) will be expanded upon by adding the herding factor in equation (15) to form equation (17).

$$Leverage_{i,t} = \alpha + \beta_1 \Delta EPU_{i,t-1} + \beta_2 h_{m,t} + \gamma X_{i,t-1} + \sum Month + \sum Industry + \varepsilon_{i,t} \quad (17)$$

Where $h_{m,t}$ is the herding factor calculated in equation (15). All other variables and factors remain the same, as explained in equation (11).

BRICS countries have diverse political systems, varied economies and different views on significant policy issues but can be grouped according to political systems. For instance, China and Russia are authoritarian and practice variants of state capitalism, while India, Brazil and South Africa are democracies. Thought provoking groupings of leverage and herding results, are grouped according to the country's political regimes to see any similarities in countries with similar regimes. This is shown in section 4.4.1 below.

3.5 Robustness Checks

The leverage results will be checked for robustness using both book and market value. Leary and Roberts (2014) used the change in market leverage as the dependent variable in all equations, which incorporated all firm-specific and peer firm averages used as control variables. Robustness will be checked by repeating this analysis for the level of market leverage, the level of book leverage as well as the change in book leverage. It is expected that the book leverage and the change in book leverage move in the same direction as the market leverage even though the market leverage is higher than firm leverage. This implies that for firms to decide on the target leverage, market-to-book ratio is one of the variables which need to be taken into account.

It is also expected from the regression results that a strong negative relationship exists between leverage and market-to-book ratio. However, a positive relationship with leverage is also expected among the following control variables; size of the firm, growth of the firm, liquidity of the firm and tangibility of the firm. Any positive change on these control variables will therefore lead to an increase in the leverage positions. The reasons for this may be because growth will lead to increased demand for external funds, size will encourage the firm to borrow, liquidity has the impact of leading to favourable credit assessments and tangibility has the role of providing assets for collateral.

In order to see herding on the leverage equation as a robustness measure, the impact of the three factors (EPU, leverage and herding) need to be understood by asking a few questions. Does EPU cause leverage? Does herding influence leverage? Does EPU impact herding which then impacts leverage? Or does EPU directly impact leverage? The inclusion of EPU in the leverage regression measures if EPU is significant or not. With the additional inclusion of herding to the leverage equation that comprises of EPU, it implies that herding will be another control variable in the equation. In the presence of EPU, herding is expected to be insignificant, as EPU should directly impact the leverage financing decision. This argument points more towards EPU impacting leverage, which in turn will minimise the effect of herding.

Another robustness check is to consider the CAPM in equilibrium, where it is meant to reflect a different effect of herding using firm betas and the market beta. It is an important and widely used model for evaluating the risk of a portfolio of assets obtained through leverage with respect to market risk and, in this case, with respect to firms within specific countries. Using this approach, it can be explored in a more detailed way whether the degree of herding has increased or decreased significantly over time.

Consider the following CAPM in equilibrium,

$$E_t(r_{i,t}) = \beta_{i,m,t} E_t(r_{m,t}) \tag{18}$$

Where $r_{i,t}$ and $r_{m,t}$ are the excess returns on asset i and the market at time t, respectively, $\beta_{i,m,t}$ is the systematic risk measure, and E_t is conditional expectation at time t (Hwang & Salmon, 2004). When herding is present towards the market portfolio and the equilibrium relationship no longer holds, both the beta and the herding expectation of asset i's return will be biased. Assumed is the following relationship that holds in the presence of herding towards the market (Hwang & Salmon, 2004);

$$\frac{E_t^b(r_{i,t})}{E_t(r_{m,t})} = \beta_{i,m,t}^b = \beta_{i,m,t} - h_{m,t}(\beta_{i,m,t} - 1) \tag{19}$$

Where $\mathrm{E_t^b(r_{i,t})}$ and $\beta_{i,m,t}^{b}$ are the market's biased short run conditional expectation on the excess returns of asset *i* and its beta at time *t*, and $h_{m,t}$ is a herding parameter that changes over time, where $h_{m,t} \leq 1$. $E_t(r_{m,t})$ is assumed to be given and thus $h_{m,t}$ is conditional on market fundamentals (Hwang & Salmon, 2004).

When $h_{m,t} = 0$, $\beta_{i,m,t}^{b} = \beta_{i,m,t}$ which means that there is no herding and the equilibrium CAPM applies. When $h_{m,t} = 1$, $\beta_{i,m,t}^{b} = 1$ which is the beta on the market portfolio and the expected excess return on the individual asset will be the same as that on the market portfolio (Hwang & Salmon, 2004). So, an $h_{m,t}$ of 1 suggests perfect herding toward the market portfolio, in the sense that all the individual assets move in the same direction with the same magnitude as the market portfolio. In general, when $0 < h_{m,t} < 1$, some degree of herding exists in the market determined by the magnitude of $h_{m,t}$ (Hwang & Salmon, 2004). Therefore, the herding factor can be calculated this way:

$$h_{m,t} = \frac{\beta_{i,m,t} - \beta_{i,m,t}^{b}}{\beta_{i,m,t} - 1} \qquad (20)$$

The effect of herding on returns will be tested to determine how it impacts the outcome of making leverage finance decisions in the leverage equation. Therefore, the herd measure is not assumed to be affected by market-wide mispricing like bubbles, but is designed to capture cross-sectional herd behaviour only within the market (Hwang & Salmon, 2004).

These checks examine how the leverage and herding factors behave when the regression specification is modified. If the coefficients are plausible and robust, this is commonly interpreted as evidence of structural validity.

4 RESULTS

A qualitative view of the data used in the study is presented, followed by descriptive statistics. Thereafter, the regression results and robustness checks are conducted.

4.1 Preliminary analysis

In the year 2002, the start of the sample period, Brazil had 40/80 listed firms, Russia had 12/50 listed firms, India had 43/80 listed firms, China had 37/80 listed firms and South Africa had 51/80 listed firms. The rest of the firms were listed during the sample period to make the full listed firms at the end of the sample period. Figure 4.1 shows that since the beginning of the sample period, the average share price of all the companies in Brazil across the entire sample period has been exponentially increasing. The first forty firms' average share prices seem to be higher than the second group of forty firms. However, the two groups of firms are moving in a similar pattern and have been very close to each other between the years 2007 and 2008. It is seen that the second Top 40 firms mimic or overtake the performance of the first group of firms considering market trends. This is due to that fact that Brazil maintains macroeconomic stability and improves the business environment (Viñals & Eyzaguirre, 2012). Firms have control over their book value whereas the share price is affected by the markets demand and supply. However, due to the high political risk in this country, sometimes mimicking other firms' performance can be seen as a viable option taking into consideration what happens in the market.

Russia shows a different pattern in Figure 4.2, where the first group of twenty-five firms' average share prices seem to be higher than the second group of twenty-five firms. The firms' average share prices were increasing from the beginning of the sample period and suddenly dipped in the year 2006 and increased again into 2007. There was a further decrease during 2008 but going forward there was an exponential increase. Looking at the second group of twenty five firms' average share prices, they seem to have very low prices as compared to the first group which shows a distinct gap between the two groups. It was expected that there would not be a big gap between the first and second group because of how the market moves but the results show otherwise. It was mentioned in section 2.5.2 that the bribery and corruption actions in Russia cost the country the approximately 33 percent of the country's GDP and this could be the explanation behind the biased Top 25 firms. The fact that a few firms have been privatised and many more being under the control of the government which is where

corruption comes from, shows how Russia looks out for the interests of only the few whom benefit from such tactics.

India's two groups move in sync and look competitive as they sometimes overtake each other. There is little gap between the average prices of the two groups of firms in India as the two graphs hover around each other as they grow exponentially over 15 years as shown in Figure 4.3. The second group of forty firms overtake the first group between the years 2006 and 2008 and again in 2015. This pattern makes sense according to a normal movement in the market. Though there are social differences and other uncertainty issues, such as bribery and corruption in this country, economic growth does not stop.

Though growing exponentially, China shows a distinct gap between the two groups of firms in Figure 4.4 where the first group is growing at an increasing rate and the second group is growing at a decreasing rate. There is dip in both groups during similar periods between 2008 and 2009 and again between 2015 and 2016. This shows that both groups are affected by similar market shocks though at different levels of performance. Due to China's monopolistic political party that makes most of the policy decisions, it is expected to see some firms being biased to the way the market performs, hence the gap between the two groups.

The two groups in South Africa started off well together and a difference was noted from 2006 when the two groups parted. The first Top 40 group started growing at an increasing rate and the second Top 40 at a decreasing rate. The gap between the two groups is notably big from 2012 until the end of the sample period which was towards the end of President Jacob Zuma's first presidential term. There were policies that were made during that term that affected the performance of firms and did not greatly affect the Top firms but rather benefited them. Corruption also took its toll where the poor were affected more than the rich where a similar thing happened with these two groups.

The growth and movement in share price of firms in these countries is not only affected by policy changes but other market shakers in specific countries. Corruption takes its toll in most of these countries which affects market confidence in their firm performance. Though there are top performers in the market, it is easy to understand that peers move consequently with their competitors though trying to outperform them in their area of expertise.

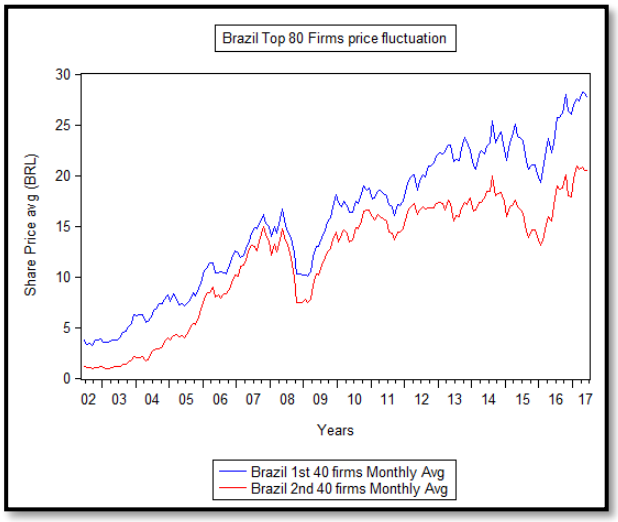


Figure 4.1: Brazil Top 80 firms share price fluctuation from June 2002 to June 2017.

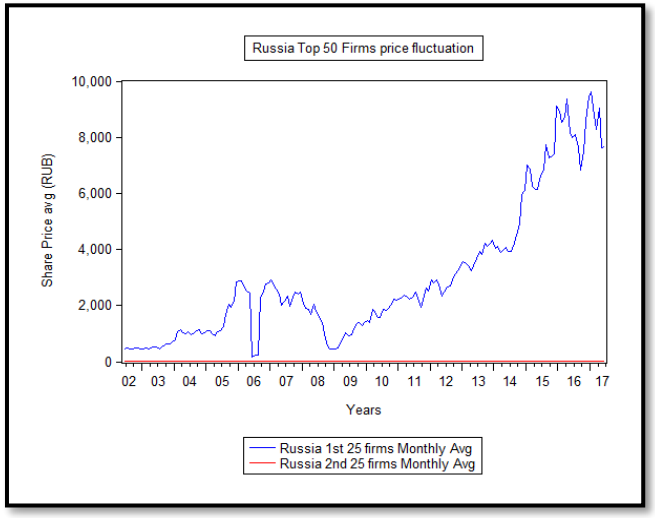


Figure 4.2: Russia Top 50 firms share price fluctuation from June 2002 to June 2017.

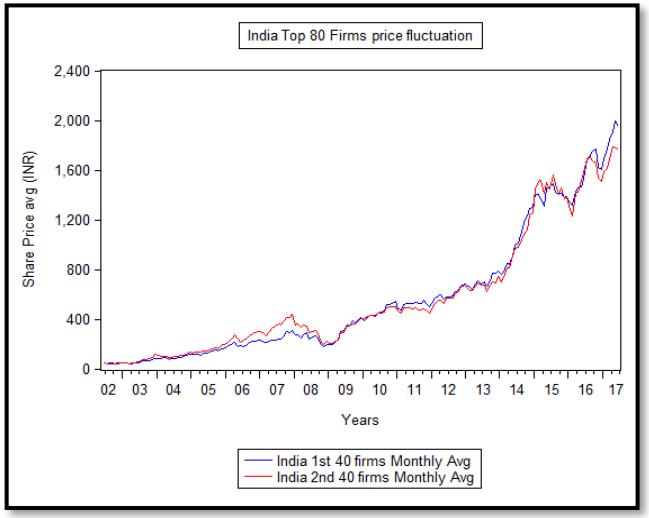


Figure 4.3: India Top 80 firms share price fluctuation from June 2002 to June 2017.

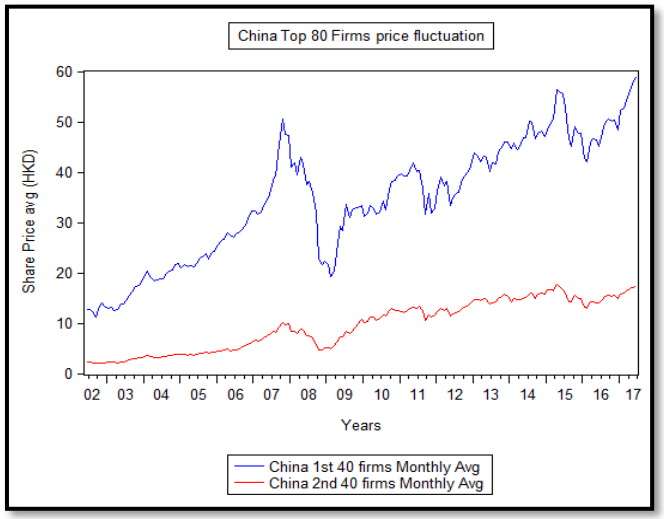


Figure 4.4: China Top 80 firms share price fluctuation from June 2002 to June2017.

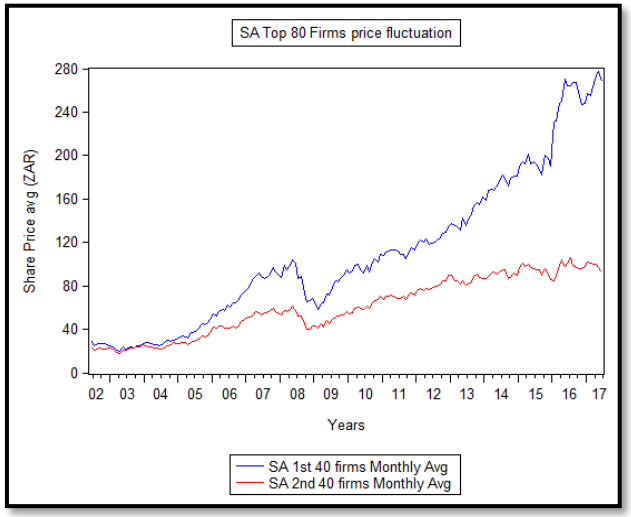


Figure 4.5: South Africa Top 80 firms share price fluctuation from June 2002 to June 2017.

4.2 Descriptive Statistics

The descriptive statistics for the key variables used in this study are presented in the below tables. EPU, Market Capitalisation, Long-Term Leverage, Tangibility, Profitability and Sales growth were logged because they showed a marginal effect that is changing size in volumes. The data used here are based on the book value of leverage, whereas the robustness check using market values are presented later.

Brazil

Table 4.1 shows that there are 725 observations within Brazil looking at the variables denoted as EPU, short-term leverage, long-term leverage, leverage, market capitalisation, profitability, sales growth, tangibility and firm age. Brazil's data lacks symmetry as seen by the majority of variables being positively skewed while only profitability and tangibility are negatively skewed. Brazil's kurtosis distribution is leptokurtic although the variables EPU, long-term leverage and firm age are leaning more towards being mesokurtic, taking the sample size into consideration. The Jacques-Bera statistic in Table 4.1 illustrates that the skewness and kurtosis series are not normally distributed as the null hypothesis is rejected seeing that there is no skewness or excessive kurtosis. The probability values are all zero, which implies non-normality.

Russia

There are 389 observations and the data lacks symmetry but not that far off from being normally distributed as seen by the majority of variables being negatively skewed while only short-term leverage, tangibility and firm age are positively skewed. Russia's kurtosis distribution is leptokurtic although the EPU variable is leaning more towards being mesokurtic, taking the sample size into consideration. The Jacques-Bera statistic illustrates that the series are not normally distributed as the null hypothesis is rejected seeing that there is no skewness or excessive kurtosis. The probability values are all zero, which implies non-normality.

India

Table 4.3 illustrates that there are 771 observations and that it lacks symmetry as seen by the majority of variables being positively skewed while only profitability is negatively skewed and leverage is somewhat normally distributed. India's kurtosis distribution is leptokurtic although the variables leverage, EPU and short-term leverage are leaning more towards being mesokurtic, taking the sample

size into consideration. The Jacques-Bera statistic above illustrates that the series are not normally distributed as the null hypothesis is rejected seeing that there is no skewness or excessive kurtosis. This infers to the normality of the distribution showing also that the various series are not normally distributed.

China

Table 4.4 shows that there are 775 observations and China's data lacks symmetry as seen by the majority of variables being positively skewed although only leverage is somewhat close to symmetry. China's kurtosis distribution is leptokurtic although four of the variables: EPU, long-term, leverage and short-term leverage are leaning more towards being mesokurtic, taking the sample size into consideration. The table illustrates that the Jacque-Bera statistic for all the variables are statistically significant, implying that the null hypothesis has to be rejected that the variables do not experience excessive kurtosis, subsequently the series are not normally distributed. This violates the independent and identically distributed (IID) assumption needed for Least Squares estimation. This refers to the normality of the distribution showing also that the various series are not normally distributed.

South Africa

Table 4.5 shows that there are 399 observations and South Africa's kurtosis distribution is leptokurtic although the long-term leverage, short-term leverage and leverage are leaning more towards being mesokurtic, taking the sample size into consideration. The Jacques-Bera statistic illustrates that the series are not normally distributed as the null hypothesis is rejected that there is no skewness or excessive kurtosis. The probability values are all zero, which implies non-normality. This infers to the normality of the distribution showing also that the various series are not normally distributed.

Table 4.1: Brazil descriptive statistics for the key variables used.

	EPU	SHORT_TERM _LEVERAGE	LONG_TERM_ LEVERAGE	LEVERAGE	MARKET_CAPI TALISATION	PROFITABILI TY	SALES_GRO WTH	TANGIBILIT Y	FIRM_AGE
Mean	0.074	0.239	0.322	0.561	1.339	0.112	0.137	0.114	20.068
Median	-0.019	0.200	0.335	0.559	0.151	0.115	0.108	0.096	10.000
Maximum	1.068	0.882	0.889	1.417	15.605	2.950	8.196	1.859	72.000
Minimum	-1.058	0.036	0.000	0.070	-1.592	-2.610	-1.297	-2.096	-8.000
Std. Dev.	0.552	0.152	0.165	0.192	4.020	0.380	0.392	0.276	20.602
Skewness	0.196	1.333	0.105	0.158	2.835	-0.343	12.569	-0.572	0.972
Kurtosis	2.248	4.631	2.782	3.695	9.204	18.526	251.975	20.793	2.508
Jarque-Bera	21.730	295.090	2.754	17.608	2133.886	7296.002	1891666.000	9602.788	121.471
Probability	0.000	0.000	0.252	0.000	0.000	0.000	0.000	0.000	0.000
Sum	53.562	172.989	233.658	406.679	970.931	81.046	99.525	82.506	14549.000
Sum Sq. Dev.	220.867	16.712	19.754	26.797	11702.350	104.723	111.321	55.131	307283.700
Observations	725	725	725	725	725	725	725	725	725

This table provides the descriptive statistics for the key variables used in this study at 90% and 95% confidence level. Source: eViews output

Table 4.2: Russia descriptive statistics for the key variables used.

	EPU	SHORT_TERM _LEVERAGE	LONG_TERM_ LEVERAGE	LEVERAGE	MARKET_CAPI TALISATION	PROFITABILI TY	SALES_GRO WTH	TANGIBILIT Y	FIRM_AGE
Mean	0.045	0.274	0.261	0.529	0.088	0.105	0.128	0.142	10.350
Median	0.061	0.201	0.237	0.529	0.108	0.115	0.125	0.103	7.000
Maximum	1.576	2.862	0.967	1.776	1.813	3.522	0.756	1.973	52.000
Minimum	-0.846	0.012	-5.283	-2.421	-2.570	-3.209	-0.619	-0.309	-4.000
Std. Dev.	0.402	0.271	0.338	0.310	0.645	0.601	0.177	0.217	11.179
Skewness	-0.167	3.610	-11.185	-1.856	-0.647	-0.309	-0.217	2.812	1.827
Kurtosis	3.805	26.684	186.725	23.606	5.244	10.045	4.422	19.083	5.957
Jarque-Bera	12.318	9936.879	555220.700	7105.811	108.780	810.698	35.841	4705.096	358.134
Probability	0.002	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Sum	17.647	106.480	101.530	205.792	34.155	40.901	49.744	55.173	4026.000
Sum Sq. Dev.	62.721	28.493	44.398	37.297	161.590	140.071	12.192	18.304	48484.450
Observations	389	389	389	389	389	389	389	389	389

This table provides the descriptive statistics for the key variables used in this study at 90% and 95% confidence level. Source: eViews output

Table 4.3: India's descriptive statistics for the key variables used.

	EPU	SHORT_TERM _LEVERAGE	LONG_TERM_ LEVERAGE	LEVERAGE	MARKET_CAP ITALISATION	PROFITABIL ITY	SALES_GRO WTH	TANGIBILIT Y	FIRM_AGE
Mean	-0.010	0.344	0.230	0.574	0.221	0.167	0.170	0.180	33.904
Median	-0.176	0.313	0.174	0.557	0.182	0.171	0.152	0.158	31.000
Maximum	1.770	1.143	1.166	1.533	2.053	3.286	3.183	2.126	169.000
Minimum	-0.893	0.000	-0.269	0.000	-1.351	-4.750	-1.112	-0.426	1.000
Std. Dev.	0.730	0.209	0.213	0.268	0.420	0.531	0.217	0.180	24.412
Skewness	0.832	1.016	1.290	0.343	0.617	-1.440	3.943	3.169	2.030
Kurtosis	2.935	3.893	4.790	2.927	5.039	22.218	57.258	28.328	11.681
Jarque-Bera	89.175	158.332	316.641	15.319	182.424	12131.320	96571.420	21899.710	2950.224
Probability	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Sum	-8.081	265.481	177.019	442.500	170.220	128.613	131.188	139.089	26140.000
Sum Sq. Dev.	410.615	33.695	34.999	55.139	135.902	216.774	36.122	24.971	458872.900
Observations	771	771	771	771	771	771	771	771	771

This table provides the descriptive statistics for the key variables used in this study at 90% and 95% confidence level. Source: eViews output

Table 4.4: China's descriptive statistics for the key variables used.

	EPU	SHORT_TERM _LEVERAGE	LONG_TERM_ LEVERAGE	LEVERAGE	MARKET_CAP ITALISATION	PROFITABIL ITY	SALES_GRO WTH	TANGIBILIT Y	FIRM_AGE
Mean	0.067	0.270	0.293	0.562	0.155	0.174	0.157	0.166	38.468
Median	0.000	0.194	0.194	0.538	0.133	0.164	0.135	0.130	25.000
Maximum	2.040	1.323	1.130	1.967	4.425	7.108	4.671	2.531	153.000
Minimum	-2.020	0.000	-0.293	-0.208	-1.933	-4.666	-2.388	-1.402	-12.000
Std. Dev.	1.034	0.235	0.292	0.286	0.489	0.769	0.353	0.219	35.224
Skewness	-0.161	1.060	1.128	0.186	0.964	0.960	2.920	2.887	1.409
Kurtosis	2.930	3.466	2.900	2.387	12.624	20.169	46.250	31.415	4.150
Jarque-Bera	3.489	152.203	164.615	16.619	3110.754	9637.409	61504.850	27149.930	299.150
Probability	0.175	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Sum	52.261	209.198	226.691	435.889	120.197	134.474	121.350	128.962	29813.000
Sum Sq. Dev.	827.609	42.813	66.096	63.304	184.727	458.071	96.692	37.203	960313.000
Observations	775	775	775	775	775	775	775	775	775

This table provides the descriptive statistics for the key variables used in this study at 90% and 95% confidence level. Source: eViews output

Table 4.5: South Africa's descriptive statistics for the key variables used

	EPU	SHORT_TERM _LEVERAGE	LONG_TERM_ LEVERAGE	LEVERAGE	MARKET_CAPI TALISATION	PROFITABILI TY	SALES_GRO WTH	TANGIBILIT Y	FIRM_AGE
Mean	0.020	0.286	0.310	0.594	0.173	0.144	0.117	0.133	33.085
Median	0.066	0.233	0.231	0.580	0.199	0.174	0.121	0.118	31.000
Maximum	0.116	0.850	0.999	1.196	1.215	3.996	1.904	1.380	149.000
Minimum	-0.094	0.001	0.000	0.057	-1.151	-3.829	-0.983	-0.681	-6.000
Std. Dev.	0.075	0.202	0.255	0.239	0.349	0.735	0.250	0.201	27.279
Skewness	-0.191	0.821	1.058	0.005	-0.557	-0.598	0.404	1.520	1.737
Kurtosis	1.360	2.762	3.156	2.174	4.385	11.417	12.769	12.457	7.485
Jarque-Bera	47.166	45.772	74.896	11.338	52.544	1201.684	1597.327	1640.555	535.117
Probability	0.000	0.000	0.000	0.003	0.000	0.000	0.000	0.000	0.000
Sum	7.876	114.288	123.539	236.929	69.208	57.428	46.510	53.203	13201.000
Sum Sq. Dev.	2.223	16.175	25.836	22.793	48.520	214.968	24.906	16.113	296163.100
Observations	399	399	399	399	399	399	399	399	399

This table provides the descriptive statistics for the key variables used in this study at 90% and 95% confidence level. Source: eViews output

4.3 Ordinary Least Squares (OLS) and GMM Estimation results

The OLS estimation will form the foundational aspect of the analysis and the GMM estimation will be discussed thereafter. The Top 40 is a dummy variable, where if a firm is in the Top 40 then the variable has a value of 1 and if not (firm being in the second group of Top 40) then it has a value of 0. Differencing of variables was taken into account; hence, the number of time observations are reduced.

Before regressions are run, Hausman test is assessed in order to check if the regression has fixed or random effects. Appendix C shows the results of the Hausman test for the BRICS countries and confirms that the model parameters for all the five countries are fixed variables. This is proven by rejecting the null hypothesis that there is no correlation between the error terms and the regressors and resolve that a fixed effects model is appropriate.

4.3.1 Brazil OLS and GMM estimation results

The following results presented are for Brazil. The Diagnostic checks were conducted on the series which include checks of multicollinearity, stationarity and autocorrelation. The variance inflation factor (VIF) methodology was used to check for multicollinearity. The rule of thumb is that if the system shows VIF >10 then there exists excessive multicollinearity that should warrant remedial action.

Table 4.6 below shows that there is no multicollinearity amongst the variables as all the coefficient variables are less than 10. The tests for stationarity were the Augmented Dickey Fuller, Phillip-Perron and Levin, Lee and Chin. The tests show that all variables are stationary except profitability, EPU and tangibility which were less than the norm of 1 respectively. The following table shows the results of the test:

Table 4.6: The VIF check for multicollinearity in Brazilian firms (2002-2017)

Variance Inflation Factors Sample: 2002 2017 Included observations: 691			
Variable	**Coefficient Variance**	**Uncentered VIF**	**Centered VIF**
C	0.687864	2.653538	NA
D(EPU)	4.82E-05	1.073582	1.019362
FIRM_AGE	0.000549	2.100256	1.126928
D(MARKET_CAPITALISATION)	7.68E-10	1.108470	1.102447
D(PROFITABILITY)	2.14E-14	1.188301	1.171015
DSALES	8.79E-15	1.540340	1.430601
TOP_40	1.146480	2.304167	1.103733
D(TANGIBILITY)	2.76E-16	1.296123	1.254921
LEVERAGE(1)	0.001474	1.008737	1.008710

Table 4.7 presents the OLS estimations without *herding* being present. The effect of EPU on book leverage is analysed on the sample period from June 2002 to June 2017. The model is estimated using total *Leverage* as the dependent variable and independent variables being EPU, sales, age, market capitalisation, profitability and tangibility. The OLS estimation results illustrate that firm age alone is statistically significant at a 10% significance level, in determining the leverage that the firm will have at some given time. The older the firm gets, its leverage will decrease by 0.045 units. The variable of interest in the analysis, changes in EPU, is found to be statistically insignificant in the determination of firm leverage. Similarly, the Top 40 dummy variable is found to be statistically insignificant as well as Market Capitalisation, pointing to the suspicion that firm size would not affect its ability to raise new debt, or repay it. There is a loss of observations due to the (log) differencing required to attain stationary regressors, hence the panel period is shorter. The R-squared value of 0.007271 is significantly low, showing that the model poorly fits the data; this is further reinforced by the F-statistic that is not statistically significant. This implies that the model has poor joint significance. The Durbin-Watson *d* statistic is larger than 2, implying that there is a slight amount of negative autocorrelation in the data. The Brazil regression outputs for the least squares estimates are as follows:

Table 4.7: The effect of EPU on Leverage (2002-2017) without herding being present in Brazil firms

Dependent Variable: LEVERAGE
Method: Panel EGLS (Cross-section random effects)
Sample (adjusted): 2003 2016
Periods included: 14
Cross-sections included: 78
Total panel (unbalanced) observations: 691
Swamy and Arora estimator of component variances

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.143834	0.829375	0.173425	0.8624
D(EPU)	0.002709	0.006944	0.390134	0.6966
FIRM_AGE	-0.045281	0.023441	-1.931707	0.0538*
D(MARKET_CAPITALSATION)	2.35E-06	2.77E-05	0.084816	0.9324
D(PROFITABILITY)	-8.40E-09	1.46E-07	-0.057402	0.9542
DSALES	2.52E-08	9.37E-08	0.268427	0.7885
TOP_40	1.457690	1.070738	1.361388	0.1738
D(TANGIBILITY)	6.93E-09	1.66E-08	0.417292	0.6766
LEVERAGE(1)	-0.008539	0.038394	-0.222410	0.8241

Effects Specification	S.D.	Rho
Cross-section random	0.000000	0.0000
Idiosyncratic random	13.38374	1.0000

Weighted Statistics

R-squared	0.007271	**Mean dependent var**	0.066533
Adjusted R-squared	-0.004374	**S.D. dependent var**	13.32823
S.E. of regression	13.35735	**Sum squared resid**	121681.6
F-statistic	0.624405	**Durbin-Watson stat**	2.269956
Prob(F-statistic)	0.757695		

Unweighted Statistics

R-squared	0.007271	**Mean dependent var**	0.066533
Sum squared resid	121681.6	**Durbin-Watson stat**	2.269956

Note: This table presents the OLS estimations without herding being present in Brazil firms. The effect of economic policy uncertainty on book leverage is analysed on the sample period from June 2002 to June 2017. * Significant at the 10% level, ** Significant at the 5% level, *** Significant at the 1% level.

The short-term leverage results are illustrated below in Table 4.8, showing that the differenced EPU term is statistically insignificant in determining the level of leverage that a firm will have at time *t*. This implies that the changes in EPU do not affect the short-term debt decisions of Brazilian firms. The Top 40 dummy variable is also statistically insignificant. The firm age is statistically significant, subsequently older firms tend to increase their short-term leverage by a factor of 0.0456 units per year. Overall, the model has poor significance as illustrated by the statistically insignificant F-statistic, at the 10% significance level. The goodness of fit is also poor, with a low R-squared value

of 0.008074. The model might suffer from a little negative autocorrelation detected by the Durbin-Watson D-stat of 2.279278.

Table 4.8: The effect of EPU on Short-term Leverage (2002-2017) without herding being present in Brazil firms

Dependent Variable: SHORT_TERM_LEVERAGE
Method: Panel Least Squares
Sample (adjusted): 2003 2016
Periods included: 14
Cross-sections included: 77
Total panel (unbalanced) observations: 669

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.469759	0.735064	0.639072	0.5230
D(EPU)	-0.002060	0.006102	-0.337680	0.7357
FIRM_AGE	0.045671	0.022062	2.070078	0.0388**
D(MARKET_CAPITALSATION)	-5.85E-07	2.49E-05	-0.023479	0.9813
D(PROFITABILITY)	4.29E-08	2.03E-07	0.211003	0.8329
DSALES	-2.79E-08	1.03E-07	-0.271926	0.7858
TOP_40	-1.229105	0.927691	-1.324908	0.1857
D(TANGIBILITY)	-9.94E-10	1.63E-08	-0.061029	0.9514
LEVERAGE(1)	0.008234	0.033138	0.248480	0.8038

R-squared	0.008074	**Mean dependent var**	0.686772
Adjusted R-squared	-0.003949	**S.D. dependent var**	11.52250
S.E. of regression	11.54523	**Akaike info criterion**	7.743783
Sum squared resid	87972.95	**Schwarz criterion**	7.804399
Log likelihood	-2581.296	**Hannan-Quinn criter.**	7.767264
F-statistic	0.671549	**Durbin-Watson stat**	2.279278
Prob(F-statistic)	0.716855		

Note: This table presents the OLS estimations without herding being present in Brazil firms. The effect of EPU uncertainty on short-term leverage is analysed on the sample period from June 2002 to June 2017. * Significant at the 10% level, ** Significant at the 5% level, *** Significant at the 1% level.

The long-term leverage results are illustrated below in Table 4.9, depicting that the differenced EPU term is statistically insignificant in determining the level of leverage and the coefficient does not follow prior and theoretical expectations of having a negative signage. As with the short-term leverage, this points to the inference that the changes in EPU do not affect the long-term debt decisions of Brazilian firms. The Top 40 dummy variable is also statistically insignificant. The firm age is statistically significant, at the 5% significance level, so older firms tend to decrease their long-term leverage by a factor of 0.099 units per year. Similar with overall leverage, the model has poor significance as illustrated by the statistically insignificant F-statistic, at even the 10% level. The goodness of fit is also poor, with a low R-squared value of 0.008202. The model might suffer from negative autocorrelation detected by the Durbin-Watson D-stat of 2.285141.

Table 4.9: The effect of EPU on Long-term Leverage (2002-2017) without herding being present in Brazil firms

Dependent Variable: LONG_TERM_LEVERAGE
Method: Panel Least Squares
Sample (adjusted): 2003 2016
Periods included: 14
Cross-sections included: 77
Total panel (unbalanced) observations: 666

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-0.192453	1.608604	-0.119640	0.9048
D(EPU)	0.004637	0.013310	0.348369	0.7277
FIRM_AGE	-0.099876	0.048137	-2.074822	0.0384**
D(MARKET_CAPITALISATION)	1.53E-06	5.43E-05	0.028160	0.9775
D(PROFITABILITY)	-9.60E-08	4.43E-07	-0.216805	0.8284
DSALES	6.20E-08	2.24E-07	0.277353	0.7816
TOP_40	2.709727	2.026730	1.336995	0.1817
D(TANGIBILITY)	3.30E-09	3.55E-08	0.093000	0.9259
LEVERAGE(1)	-0.017924	0.072247	-0.248092	0.8041

R-squared	0.008202	**Mean dependent var**	-0.652319
Adjusted R-squared	-0.003875	**S.D. dependent var**	25.12199
S.E. of regression	25.17062	**Akaike info criterion**	9.302653
Sum squared resid	416248.9	**Schwarz criterion**	9.363481
Log likelihood	-3088.783	**Hannan-Quinn criter.**	9.326221
F-statistic	0.679131	**Durbin-Watson stat**	2.285141
Prob(F-statistic)	0.710190		

Note: This table presents the OLS estimations without herding being present in Brazil firms. The effect of EPU on long-term leverage is analysed on the sample period from June 2002 to June 2017. * Significant at the 10% level, ** Significant at the 5% level, *** Significant at the 1% level.

Table 4.10 below presents the OLS estimations in the presence of *herding* in Brazilian firms. The effect of EPU on book leverage is analysed on the sample period from June 2002 to June 2017. This is to inspect if industry herding is significant in explaining leveraging behaviour by firms. The least squares estimation of the equation, that is inclusive of the herding variable illustrates that the herding effect is statistically significant and is positively related to the leverage ratio of firms. Market capitalisation is also statistically significant in determining leverage at some time *t*. As the difference of industry debt increases relative to firm debt, the firms will respond by reducing their own leverage levels. Although not statistically significant, the differenced EPU term is consistent with prior expectations of a negative relation to leverage. Compared to the original least squares regression, the R-squared value is larger, so it is a better fit. The model has negative autocorrelation detected by the Durbin-Watson D-stat of 2.236636. This implies that a positive error in leverage is causing negative errors in the dependent variables.

Table 4.10: The effect of EPU on Leverage (2002-2017) with herding being present in Brazil firms

Dependent Variable: LEVERAGE
Method: Panel Least Squares
Sample (adjusted): 2003 2016
Periods included: 14
Cross-sections included: 78
Total panel (unbalanced) observations: 691

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-0.123099	0.094762	-1.299035	0.1944
D(EPU)	-0.000711	0.000793	-0.896445	0.3703
FIRM_AGE	0.003299	0.002687	1.227867	0.2199
D(MARKET_CAPITALSATION)	1.50E-05	3.17E-06	4.738156	0.0000**
D(PROFITABILITY)	-7.02E-09	1.67E-08	-0.419594	0.6749
DSALES	-3.18E-09	1.07E-08	-0.296560	0.7669
TOP_40	0.017138	0.122494	0.139911	0.8888
D(TANGIBILITY)	-2.86E-09	1.90E-09	-1.505214	0.1327
LEVERAGE(1)	-0.001272	0.004387	-0.289876	0.7720
HT	0.999148	0.004409	226.6352	0.0000**

R-squared	0.987010	**Mean dependent var**	0.066533
Adjusted R-squared	0.986839	**S.D. dependent var**	13.32823
S.E. of regression	1.529062	**Akaike info criterion**	3.701552
Sum squared resid	1592.199	**Schwarz criterion**	3.767227
Log likelihood	-1268.886	**Hannan-Quinn criter.**	3.726954
F-statistic	5749.410	**Durbin-Watson stat**	2.236636
Prob(F-statistic)	0.000000		

Note: This table presents the OLS estimations with herding being present in Brazil firms. The effect of EPU on leverage in the presence of herding is analysed on the sample period from June 2002 to June 2017. * Significant at the 10% level, ** Significant at the 5% level, *** Significant at the 1% level.

Table 4.11 below presents the GMM estimations without *herding* in Brazilian firms. The above GMM estimation illustrates that none of the variables are statistically significant and this could be a result of an autocorrelation problem. The EPU term, though biased, meets prior expectation by having a negative sign. This is further illustrated by a low R-squared value of -0.292348 showing that it is not a good fit. The J-statistic is also very low, below the value of 10 indicating to the failure to meet the GMM system's over identification criteria. The Durbin-Watson statistic is lower than two, indicating to the existence of some positive autocorrelation. The Brazil regression outputs for the GMM estimates are as follows:

Table 4.11: The GMM estimation on Leverage without herding being present in Brazil firms (2002-2017)

Dependent Variable: LEVERAGE
Method: Panel Generalized Method of Moments
Sample (adjusted): 2004 2016
Periods included: 13
Cross-sections included: 78
Total panel (unbalanced) observations: 672
2SLS instrument weighting matrix
Instrument specification: C LEVERAGE(-1) FIRM_AGE(-1) EPU(-1) SALES_GROWTH PROFITABILITY(-1) TANGIBILITY(-1) MARKET_CAPITALISATION(-1) DSALES(-1)
Constant added to instrument list

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	4.292587	45.05528	0.095274	0.9241
D(EPU)	-0.007047	0.177876	-0.039617	0.9684
FIRM_AGE	-0.055280	0.630019	-0.087744	0.9301
D(MARKET_CAPITALISATION)	-3.41E-05	0.000792	-0.043017	0.9657
D(PROFITABILITY)	-5.58E-07	7.54E-06	-0.073928	0.9411
DSALES	3.18E-07	4.21E-06	0.075561	0.9398
TOP_40	-7.330213	85.73174	-0.085502	0.9319
D(TANGIBILITY)	1.04E-07	1.09E-06	0.095193	0.9242
LEVERAGE(1)	-0.320349	15.19151	-0.021087	0.9832

R-squared	-0.292348	**Mean dependent var**	0.052804
Adjusted R-squared	-0.307942	**S.D. dependent var**	13.51530
S.E. of regression	15.45682	**Sum squared resid**	158399.5
Durbin-Watson stat	1.473436	**J-statistic**	7.31E-25
Instrument rank	9		

Note: This table presents the GMM estimations without herding being present in Brazil firms. The effect of EPU on leverage is analysed on the sample period from June 2002 to June 2017. * Significant at the 10% level, ** Significant at the 5% level, *** Significant at the 1% level.

Table 4.12 contains the Method of Moments estimation results for the short-term leverage. In the table it is found that the EPU term is statistically insignificant in determining the leverage behaviour of firms. The term does not meet prior expectations as the EPU coefficient has a positive signage. All the likelihood estimates are statistically insignificant, even the Top 40 dummy coefficient, which states that a firm being a Top 40 firm should increase the leverage ratio by 4.770073 units. This value is significantly large especially because the leverage ratio of a firm is theoretically not larger than 1 or smaller than 0. The GMM estimated model has some negative autocorrelation indicated by the Durbin-Watson statistic and it fails to meet the over-identification criterion of the J-statistic.

Table 4.12: The GMM estimation on Short-term Leverage without herding being present in Brazil firms (2002-2017)

Dependent Variable: SHORT_TERM_LEVERAGE
Method: Panel Generalized Method of Moments
Sample (adjusted): 2004 2016
Periods included: 13
Cross-sections included: 75
Total panel (unbalanced) observations: 651
2SLS instrument weighting matrix
Instrument specification: SHORT_TERM_LEVERAGE C EPU(-1) FIRM_AGE(-1) MARKET_CAPITALISATION(-1) PROFITABILITY(-1) DSALES(-1) SALES_GROWTH(-1) TOP_40 TANGIBILITY(-1)

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-0.687980	10.06735	-0.068338	0.9455
D(EPU)	0.016046	0.029655	0.541089	0.5886
FIRM_AGE	0.016275	0.088980	0.182907	0.8549
D(MARKET_CAPITALISATION)	-0.000492	0.003818	-0.128841	0.8975
D(PROFITABILITY)	7.98E-07	1.28E-05	0.062161	0.9505
DSALES	-1.65E-06	1.58E-05	-0.104176	0.9171
TOP_40	4.770073	51.71713	0.092234	0.9265
D(TANGIBILITY)	1.95E-07	2.02E-06	0.096971	0.9228
SHORT_TERM_LEVERAGE(1)	0.756962	3.098187	0.244324	0.8071

R-squared	-1.600610	**Mean dependent var**	0.687402
Adjusted R-squared	-1.632421	**S.D. dependent var**	11.57459
S.E. of regression	18.77947	**Sum squared resid**	230645.2
Durbin-Watson stat	2.675349	**J-statistic**	5.37E-25
Instrument rank	9		

Note: This table presents the GMM estimations without herding being present in Brazil firms. The effect of EPU on short-term leverage is analysed on the sample period from June 2002 to June 2017. * Significant at the 10% level, ** Significant at the 5% level, *** Significant at the 1% level.

Table 4.13 below illustrates the regression results of the GMM estimation, with long-term leverage as the regressand. The table shows that the differenced EPU is found to be statistically insignificant at the 10% significance level, although the signage follows theoretical expectations. A positive change in EPU would result in firms reducing their leverage by a value of 0.050974 units. This is due to the prospect of higher debt servicing costs in the long-term. The Top 40 coefficient as well as the differenced Market capitalisation terms are also insignificant in the analysis, however each giving contrasting inferences about their effects on long-term leverage. Positive changes in market capitalisation will increase the long-term leverage by 0.00000827 units, whilst a firm having a market capitalisation large enough to be a Top 40 company will realise a reduction in leverage. The initial leverage level is not significant in the determination of the path of the long-term leverage of the firm. This removes the effect of current debt levels on the ability of the firm to raise new debt. The model does not meet the over-identification criteria of the J-statistic as it is statistically insignificant at the

10% level and the model could also exhibit serial correlation and model specification error indicated by the Durbin-Watson test statistic.

Table 4.13: The GMM estimation on Long-term Leverage without herding being present in Brazil firms (2002-2017)

Dependent Variable: LONG_TERM_LEVERAGE
Method: Panel Generalized Method of Moments
Sample (adjusted): 2003 2016
Periods included: 14
Cross-sections included: 75
Total panel (unbalanced) observations: 656
2SLS instrument weighting matrix
Instrument specification: C EPU(-1) FIRM_AGE MARKET_CAPITALISATION(-1) PROFITABILITY(-1) DSALES TOP_40 TANGIBILITY(-1) LONG_TERM_LEVERAGE(-1) SALES_GROWTH
Constant added to instrument list

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	1.055638	6.755236	0.156270	0.8759
D(EPU)	-0.050974	0.154446	-0.330047	0.7415
FIRM_AGE	0.028717	0.626942	0.045804	0.9635
D(MARKET_CAPITALISATION)	8.27E-05	0.003108	0.026614	0.9788
D(PROFITABILITY)	-5.58E-07	1.09E-05	-0.050983	0.9594
DSALES	3.67E-07	1.05E-05	0.035014	0.9721
TOP_40	-1.395874	18.95709	-0.073633	0.9413
D(TANGIBILITY)	-7.15E-08	1.48E-06	-0.048216	0.9616
LONG_TERM_LEVERAGE(1)	1.336864	6.528783	0.204765	0.8378

R-squared	-1.809553	**Mean dependent var**	-0.683856
Adjusted R-squared	-1.844948	**S.D. dependent var**	25.54754
S.E. of regression	43.09097	**Sum squared resid**	1179088.
Durbin-Watson stat	2.648600	**J-statistic**	0.005590
Instrument rank	10	**Prob(J-statistic)**	0.940400

Note: This table presents the GMM estimations without herding being present in Brazil firms. The effect of EPU on long-term leverage is analysed on the sample period from June 2002 to June 2017. * Significant at the 10% level, ** Significant at the 5% level, *** Significant at the 1% level.

Table 4.14 below depicts the GMM regression results for the leverage model inclusive of industry leverage behaviour, this being incorporated by the herding effect term. Unlike the least squares analysis, the herding effect coefficient is not picked up by the two step likelihood procedure as being statistically significant from zero at the 10% level of significance. The differenced EPU term is also insignificant from zero, along with the other regressor coefficients. Similarly, the J-statistic is also not statistically significant from zero, such that the over-identification criteria is not satisfied. The model also has a DW statistic that is close to 3, suggesting the existence of negative autocorrelation and model specification errors.

Table 4.14: The GMM estimation on Leverage with herding being present in Brazil firms (2002-2017)

Dependent Variable: LEVERAGE
Method: Panel Generalized Method of Moments
Sample (adjusted): 2004 2016
Periods included: 13
Cross-sections included: 78
Total panel (unbalanced) observations: 672
2SLS instrument weighting matrix
Instrument specification: C LEVERAGE(-1) FIRM_AGE(-1) EPU(-1) SALES_GROWTH PROFITABILITY(-1) TANGIBILITY(-1) MARKET_CAPITALISATION(-1) DSALES(-1) HT(-1)
Constant added to instrument list

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	20.18500	6996.725	0.002885	0.9977
D(EPU)	-0.091448	25.95921	-0.003523	0.9972
FIRM_AGE	-0.942110	314.3145	-0.002997	0.9976
D(MARKET_CAPITALISATION)	-0.008268	2.901971	-0.002849	0.9977
D(PROFITABILITY)	9.00E-07	0.000273	0.003303	0.9974
DSALES	-2.18E-05	0.007601	-0.002867	0.9977
TOP_40	66.65906	22691.60	0.002938	0.9977
D(TANGIBILITY)	3.66E-06	0.001273	0.002880	0.9977
LEVERAGE(1)	64.48032	21968.25	0.002935	0.9977
HT	-75.34551	25858.76	-0.002914	0.9977

R-squared	-10100.595080	**Mean dependent var**	0.052804
Adjusted R-squared	-10237.927944	**S.D. dependent var**	13.51530
S.E. of regression	1367.581	**Sum squared resid**	1.24E+09
Durbin-Watson stat	2.903279	**J-statistic**	4.07E-24
Instrument rank	10		

Note: This table presents the GMM estimations with herding being present in Brazil firms. The effect of EPU on leverage is analysed on the sample period from June 2002 to June 2017. * Significant at the 10% level, ** Significant at the 5% level, *** Significant at the 1% level.

4.3.2 Russia OLS and GMM estimation results

The Diagnostic checks with the data will be of the multicollinearity, and the stationarity conditions of the data series. As with the other countries, the VIF methodology is used to test the multicollinearity hypothesis. Table 4.15 results below illustrates that there is no excessive Multicollinearity as the VIF is less than 10. The unit root tests find that the leverage variables are all stationary at levels, as well as Market Capitalisation. The remaining variables are found to be integrated of the first order, thus difference stationary. The test yields the following results:

Table 4.15: The VIF check for multicollinearity in Russian firms (2002-2017)

Variance Inflation Factors
Sample: 2002 2017
Included observations: 407

Variable	Coefficient Variance	Uncentered VIF	Centered VIF
C	0.000744	6.330069	NA
EPU	6.28E-08	1.163749	1.052511
FIRM_AGE	1.01E-06	1.796797	1.067934
MARKET_CAPITALISATION	4.07E-16	2.804171	1.811974
PROFITABILITY	1.98E-20	1.032783	1.025116
DSALES	6.77E-21	1.509012	1.313070
TOP_40	0.000728	2.803056	1.533479
TANGIBILITY	2.75E-22	1.526179	1.388611
LEVERAGE(1)	0.001352	4.375879	1.089192

Table 4.16 results illustrate that all the variables are statistically insignificant at the 5% and 10% significance level except for the constant, tangibility and leverage. All else constant, leverage increases by 0.183491 units seen by the significant constant and leverage factor. Tangibility is statistically significant at the 10% significance level implying that the more a firm has tangible assets the more its leverage slightly increases. The variable of interest in the analysis, changes in EPU, is found to be statistically insignificant in the determination of firm leverage. This infers that the changes in EPU do not affect the short-term debt decisions of Russian firms. Similarly, Market Capitalisation is statistically insignificant as well as, pointing to the suspicion that firm size would not affect its ability to raise new debt, or repay it. The R-squared value of 0.496458 shows somewhat a good model fit. The Durbin-Watson d statistic is larger than 2, implying that there is a small amount of negative autocorrelation in the data. The Russia regression outputs for the least squares estimates are as follows:

Table 4.16: The effect of EPU on Leverage (2002-2017) without herding being present in Russian firms

Dependent Variable: LEVERAGE				
Method: Panel Least Squares				
Sample (adjusted): 2004 2016				
Periods included: 13				
Cross-sections included: 49				
Total panel (unbalanced) observations: 393				
Variable	**Coefficient**	**Std. Error**	**t-Statistic**	**Prob.**
C	0.183491	0.027283	6.725505	0.0000**
D(EPU)	-0.000377	0.000251	-1.506050	0.1329
FIRM_AGE	-0.001156	0.001005	-1.150747	0.2506
MARKET_CAPITALSATIO N	1.59E-08	2.02E-08	0.787540	0.4315
D(PROFITABILITY)	1.09E-10	1.41E-10	0.772464	0.4403
DSALES	-7.05E-11	8.23E-11	-0.856837	0.3921
TOP_40	-0.019219	0.026977	-0.712416	0.4766
D(TANGIBILITY)	3.21E-11	1.66E-11	1.933624	0.0539*
LEVERAGE(1)	0.656368	0.036769	17.85094	0.0000**
R-squared	0.496458	**Mean dependent var**		0.522523
Adjusted R-squared	0.485968	**S.D. dependent var**		0.299837
S.E. of regression	0.214972	**Akaike info criterion**		-0.213988
Sum squared resid	17.74570	**Schwarz criterion**		-0.122985
Log likelihood	51.04861	**Hannan-Quinn criter.**		-0.177924
F-statistic	47.32471	**Durbin-Watson stat**		2.754911
Prob(F-statistic)	0.000000			

Note: This table presents the OLS estimations without herding being present in Russian firms. The effect of EPU on book leverage is analysed on the sample period from June 2002 to June 2017. * Significant at the 10% level, ** Significant at the 5% level, *** Significant at the 1% level.

The short-term leverage results are illustrated in Table 4.17 below, showing that the differenced EPU term is statistically insignificant in determining the level of short-term leverage that a firm will have at some time *t*. This implies that the changes in EPU do not affect the short-term debt decisions of Russian firms. Tangibility is statistically significant at the 5% significance level implying that the more a firm has tangible assets, the more its leverage slightly increases. All else constant, short-term leverage increases by 0.105134 and 0.649719 units seen by the significant constant and short-term leverage (lagged) factors respectively. Similar with overall leverage, the model has good significance as illustrated by the statistically significant F-statistic at the 5% level. The goodness of fit is also good, with an R-squared value of 0.487533. The model might suffer from a little negative autocorrelation detected by the Durbin-Watson D-stat of 2.723663.

Table 4.17: The effect of EPU on Short-term Leverage (2002-2017) without herding being present in Russian firms

Dependent Variable: SHORT_TERM_LEVERAGE				
Method: Panel Least Squares				
Sample (adjusted): 2004 2016				
Periods included: 13				
Cross-sections included: 49				
Total panel (unbalanced) observations: 393				
Variable	**Coefficient**	**Std. Error**	**t-Statistic**	**Prob.**
C	0.105134	0.018978	5.539812	0.0000**
D(EPU)	2.78E-05	0.000221	0.125847	0.8999
FIRM_AGE	-0.000768	0.000875	-0.877927	0.3805
MARKET_CAPITALSATION	1.59E-08	1.78E-08	0.892958	0.3724
D(PROFITABILITY)	1.20E-10	1.24E-10	0.966090	0.3346
DSALES	-3.99E-11	7.25E-11	-0.549489	0.5830
TOP_40	-0.038834	0.024002	-1.617961	0.1065
D(TANGIBILITY)	2.94E-11	1.46E-11	2.009951	0.0451**
SHORT_TERM_LEVERAGE(1)	0.649719	0.037418	17.36386	0.0000**
R-squared	0.487533	**Mean dependent var**		0.272242
Adjusted R-squared	0.476857	**S.D. dependent var**		0.261908
S.E. of regression	0.189435	**Akaike info criterion**		-0.466911
Sum squared resid	13.78003	**Schwarz criterion**		-0.375907
Log likelihood	100.7479	**Hannan-Quinn criter.**		-0.430847
F-statistic	45.66456	**Durbin-Watson stat**		2.723663
Prob(F-statistic)	0.000000			

Note: This table presents the OLS estimations without herding being present in Russian firms. The effect of EPU on short-term leverage is analysed on the sample period from June 2002 to June 2017. * Significant at the 10% level, ** Significant at the 5% level, *** Significant at the 1% level.

The long-term leverage results are illustrated in Table 4.18 below, depicts that differenced EPU term is statistically insignificant in determining the level of long-term leverage and though biased, meets prior expectation by having a negative sign. The constant and long-term leverage are statistically significant at the 5% level of significance. All other variables are statistically insignificant in determining leverage. Similar with overall leverage, the model has good significance as illustrated by the statistically significant F-statistic at the 5% significance level. The model is not a good fit as illustrated by a low R-squared value of 0.070770. The model might suffer from a little negative autocorrelation detected by the Durbin-Watson D-stat of 2.383586.

Table 4.18: The effect of EPU on Long-term Leverage (2002-2017) without herding being present in Russian firms

Dependent Variable: LONG_TERM_LEVERAGE
Method: Panel Least Squares
Sample (adjusted): 2004 2016
Periods included: 13
Cross-sections included: 49
Total panel (unbalanced) observations: 393

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.194686	0.029345	6.634358	0.0000**
D(EPU)	-0.000311	0.000377	-0.826008	0.4093
FIRM_AGE	-0.001885	0.001501	-1.256313	0.2098
MARKET_CAPITALSATION	1.23E-08	3.04E-08	0.404556	0.6860
D(PROFITABILITY)	-6.17E-11	2.12E-10	-0.291462	0.7709
DSALES	-1.46E-12	1.23E-10	-0.011834	0.9906
TOP_40	0.028446	0.040460	0.703064	0.4824
D(TANGIBILITY)	6.64E-12	2.43E-11	0.273477	0.7846
LONG_TERM_LEVERAGE(1)	0.233044	0.048847	4.770869	0.0000**

R-squared	0.070770	**Mean dependent var**	0.255722
Adjusted R-squared	0.051411	**S.D. dependent var**	0.332363
S.E. of regression	0.323706	**Akaike info criterion**	0.604674
Sum squared resid	40.23771	**Schwarz criterion**	0.695677
Log likelihood	-109.8184	**Hannan-Quinn criter.**	0.640737
F-statistic	3.655693	**Durbin-Watson stat**	2.383586
Prob(F-statistic)	0.000403		

Note: This table presents the OLS estimations without herding being present in Russian firms. The effect of EPU on long-term leverage is analysed on the sample period from June 2002 to June 2017. * Significant at the 10% level, ** Significant at the 5% level, *** Significant at the 1% level.

In the analysis of the EPU variable, the leverage variable was added as a regressor in Table 4.19. This is to inspect if industry herding is significant in explaining leveraging behaviour by firms. In the extended model, the constant, EPU, firm age, market capitalisation, leverage and the herding effect are statistically significant in determining leverage in the presence of herding at some time *t* at a 5% significance level. A positive change in EPU would result in firms decreasing their leverage by a value of 0.000188 units. The differenced EPU term has the expected sign and this makes its consistent with the findings of Zhang *et al.* (2015), which show that increased EPU will cause firms to deleverage. The older the firm gets, its leverage will increase slightly by 0.000586 units. Positive changes in market capitalisation will slightly increase the leverage by 0.00000827 units, this shows that firm size affects the firm's ability to raise debt or repay it in the presence of herding. All else equal, the constant, leverage and herding factors increase leverage in the presence of herding by 0.504782, 0.059848 and 0.964966 units respectively. Compared to the original least squares regression, the R-squared value is larger, so it is a better fit. The Durbin-Watson *d* statistic is less than 2, implying that there is positive autocorrelation in the data.

Table 4.19: The effect of EPU on Leverage (2002-2017) with herding being present in Russian firms

Dependent Variable: LEVERAGE
Method: Panel Least Squares
Sample (adjusted): 2004 2016
Periods included: 13
Cross-sections included: 49
Total panel (unbalanced) observations: 393

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.504782	0.009189	54.93480	0.0000**
D(EPU)	-0.000188	7.16E-05	-2.622351	0.0091**
FIRM_AGE	0.000586	0.000288	2.035614	0.0425**
MARKET_CAPITALSATIO N	1.24E-08	5.76E-09	2.149219	0.0322**
D(PROFITABILITY)	-6.11E-12	4.01E-11	-0.152248	0.8791
DSALES	-2.70E-11	2.35E-11	-1.151060	0.2504
TOP_40	-0.011323	0.007699	-1.470789	0.1422
D(TANGIBILITY)	-2.28E-12	4.76E-12	-0.478730	0.6324
LEVERAGE(1)	0.059848	0.013864	4.316819	0.0000**
HT	0.964966	0.014660	65.82530	0.0000**

R-squared	0.959106	**Mean dependent var**	0.522523
Adjusted R-squared	0.958145	**S.D. dependent var**	0.299837
S.E. of regression	0.061342	**Akaike info criterion**	-2.719574
Sum squared resid	1.441189	**Schwarz criterion**	-2.618459
Log likelihood	544.3963	**Hannan-Quinn criter.**	-2.679503
F-statistic	998.0661	**Durbin-Watson stat**	0.638802
Prob(F-statistic)	0.000000		

Note: This table presents the OLS estimations with herding being present in Russian firms. The effect of EPU on leverage is analysed on the sample period from June 2002 to June 2017. * Significant at the 10% level, ** Significant at the 5% level, *** Significant at the 1% level.

Table 4.20 below illustrates the regression results for the GMM estimations without herding in Russian firms. The above model is consistent with its least squares counterpart in that the regressors are found to be statistically insignificant from zero at both the 5% and 10% significance level except leverage. The EPU term, though biased, meets prior theoretical expectations by having a negative sign. Similarly, the market capitalisation and Top 40 terms are also statistically insignificant in estimating leverage. This is further illustrated by a low negative R-squared value of 0.319651. The J-statistic is also very low, below the value of 10 inferring to the failure to meet the GMM system's over identification criteria. The Durbin-Watson *d* statistic is greater than 2, pointing to the existence of some negative autocorrelation. The Russia regression outputs for the GMM estimates are as follows:

Table 4.20: The GMM estimation on Leverage without herding being present in Russian firms (2002-2017)

Dependent Variable: LEVERAGE
Method: Panel Generalized Method of Moments
Sample (adjusted): 2004 2016
Periods included: 13
Cross-sections included: 46
Total panel (unbalanced) observations: 359
2SLS instrument weighting matrix
Instrument specification: C LEVERAGE(-1) FIRM_AGE(-1) EPU(-1) SALES_GROWTH PROFITABILITY(-1) TANGIBILITY(-1) MARKET_CAPITALISATION(-1)
Constant added to instrument list

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-0.038844	0.101677	-0.382037	0.7027
D(EPU)	-0.000100	0.000729	-0.137642	0.8906
FIRM_AGE	0.000405	0.001570	0.257992	0.7966
MARKET_CAPITALISATION	9.97E-09	8.51E-08	0.117079	0.9069
D(PROFITABILITY)	5.15E-11	4.08E-10	0.126297	0.8996
DSALES	2.84E-12	5.50E-10	0.005158	0.9959
TOP_40	-0.002876	0.167170	-0.017204	0.9863
D(TANGIBILITY)	-1.07E-11	9.56E-11	-0.111831	0.9110
LEVERAGE(1)	1.044961	0.107184	9.749195	0.0000**
R-squared	0.319651	**Mean dependent var**		0.517912
Adjusted R-squared	0.304056	**S.D. dependent var**		0.306488
S.E. of regression	0.255682	**Sum squared resid**		22.81535
Durbin-Watson stat	3.213710	**J-statistic**		7.42E-26
Instrument rank	9			

Note: This table presents the GMM estimations without herding being present in Russian firms. The effect of EPU on book leverage is analysed on the sample period from June 2002 to June 2017. * Significant at the 10% level, ** Significant at the 5% level, *** Significant at the 1% level.

Table 4.21 below contains the Method of Moments estimation results for short-term leverage. The table shows that the EPU term is statistically insignificant in determining the short-term leverage behaviour of firms. And though biased, the EPU term meets prior theoretical expectations by having a negative sign. All the likelihood estimates are statistically insignificant in determining the short-term leverage. The GMM estimated model has some negative autocorrelation indicated by the Durbin-Watson statistic and it fails to meet the over identification criterion of the J-statistic.

Table 4.21: The GMM estimation on Short-term Leverage without herding being present in Russian firms (2002-2017)

Dependent Variable: SHORT_TERM_LEVERAGE
Method: Panel Generalized Method of Moments
Sample (adjusted): 2004 2016
Periods included: 13
Cross-sections included: 46
Total panel (unbalanced) observations: 359
2SLS instrument weighting matrix
Instrument specification: C LEVERAGE(-1) FIRM_AGE(-1) EPU(-1) SALES_GROWTH PROFITABILITY(-1) TANGIBILITY(-1) MARKET_CAPITALISATION(-1)
Constant added to instrument list

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-0.017260	0.086038	-0.200615	0.8411
D(EPU)	-0.000514	0.000698	-0.736270	0.4621
FIRM_AGE	-0.000131	0.001371	-0.095767	0.9238
MARKET_CAPITALISATION	-2.32E-08	7.87E-08	-0.294805	0.7683
D(PROFITABILITY)	2.14E-11	3.80E-10	0.056222	0.9552
DSALES	1.17E-10	4.93E-10	0.236385	0.8133
TOP_40	0.025959	0.155746	0.166678	0.8677
D(TANGIBILITY)	-2.06E-12	1.03E-10	-0.020012	0.9840
SHORT_TERM_LEVERAGE(1)	1.077387	0.171482	6.282793	0.0000**

R-squared	0.262154	**Mean dependent var**	0.267064
Adjusted R-squared	0.245240	**S.D. dependent var**	0.263574
S.E. of regression	0.228985	**Sum squared resid**	18.29947
Durbin-Watson stat	3.145536	**J-statistic**	5.11E-27
Instrument rank	9		

Note: This table presents the GMM estimations without herding being present in Russian firms. The effect of EPU on short-term leverage is analysed on the sample period from June 2002 to June 2017. * Significant at the 10% level, ** Significant at the 5% level, *** Significant at the 1% level.

Table 4.22 below illustrates the regression results of the GMM estimation, with the long-term leverage as the regressand. The table shows that the differenced EPU is found to be statistically insignificant at the 5% significance level, although the term does not meet prior expectations as the EPU coefficient has a positive sign. A positive change in EPU would result in firms increasing their leverage by a value of 0.000249 units. This is due to the prospect of higher debt servicing costs in the long-term. The Top 40 coefficient as well as the differenced market capitalisation term are also insignificant in the analysis, however showing that positive changes in market capitalisation will increase the long-term leverage, whilst a firm having a market cap large enough to be a Top 40 company will realise a decrease in leverage. The model does not meet the over-identification criteria of the J-statistic as it is statistically insignificant at the 5% level and the model could also exhibit serial correlation and model specification error indicated by the Durbin-Watson test statistic.

Table 4.22: The GMM estimation on Long-term Leverage without herding being present in Russian firms (2002-2017)

Dependent Variable: LONG_TERM_LEVERAGE
Method: Panel Generalized Method of Moments
Sample (adjusted): 2004 2016
Periods included: 13
Cross-sections included: 46
Total panel (unbalanced) observations: 359
2SLS instrument weighting matrix
Instrument specification: C LEVERAGE(-1) FIRM_AGE(-1) EPU(-1) SALES_GROWTH PROFITABILITY(-1) TANGIBILITY(-1) MARKET_CAPITALISATION(-1)
Constant added to instrument list

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-0.016141	0.168942	-0.095544	0.9239
D(EPU)	0.000249	0.001394	0.178594	0.8584
FIRM_AGE	0.000451	0.002688	0.167764	0.8669
MARKET_CAPITALISATION	1.76E-08	1.42E-07	0.123771	0.9016
D(PROFITABILITY)	4.84E-11	6.56E-10	0.073702	0.9413
DSALES	-2.82E-11	9.36E-10	-0.030164	0.9760
TOP_40	-0.018580	0.267245	-0.069524	0.9446
D(TANGIBILITY)	-7.05E-12	1.21E-10	-0.058053	0.9537
LONG_TERM_LEVERAGE(1)	0.996739	0.378245	2.635166	0.0088**

R-squared	-0.562439	**Mean dependent var**	0.256167
Adjusted R-squared	-0.598254	**S.D. dependent var**	0.344224
S.E. of regression	0.435174	**Sum squared resid**	66.09252
Durbin-Watson stat	3.400520	**J-statistic**	8.16E-28
Instrument rank	9		

Note: This table presents the GMM estimations without herding being present in Russian firms. The effect of EPU on long-term leverage is analysed on the sample period from June 2002 to June 2017. * Significant at the 10% level, ** Significant at the 5% level, *** Significant at the 1% level.

Table 4.23 below illustrate the GMM estimation results for the 50 Russian companies in the panel analysis. The table depicts the GMM regression results for the leverage model inclusive of industry leverage behaviour, this being incorporated by the herding effect term. All the variables are statistically insignificant at the 5% significance level except for leverage factor. The differenced EPU term does not meet prior expectations as the EPU coefficient has a positive signage. Market capitalisation contrasting inferences about their effects on long-term leverage, positive changes in market capitalisation will decrease the leverage in the presence of the herding effect, whilst a firm being more profitable will increase the leverage in the presence of the herding effect. Similarly the J-statistic is also statistically insignificant from zero, such that the over identification criteria is not satisfied. The model could also exhibit serial correlation and model specification error indicated by the Durbin-Watson test statistic that is more than 2.

Table 4.23: The GMM estimation on Leverage with herding being present in Russian firms (2002-2017)

Dependent Variable: LEVERAGE
Method: Panel Generalized Method of Moments
Sample (adjusted): 2004 2016
Periods included: 13
Cross-sections included: 46
Total panel (unbalanced) observations: 359
2SLS instrument weighting matrix
Instrument specification: C LEVERAGE(-1) FIRM_AGE(-1) EPU(-1) SALES_GROWTH PROFITABILITY(-1) TANGIBILITY(-1) MARKET_CAPITALISATION(-1) HT(-1)
Constant added to instrument list

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-0.105030	0.245846	-0.427220	0.6695
D(EPU)	0.000155	0.000811	0.190933	0.8487
FIRM_AGE	0.000356	0.001807	0.197076	0.8439
MARKET_CAPITALISATION	-3.84E-09	1.31E-07	-0.029354	0.9766
D(PROFITABILITY)	7.48E-11	4.94E-10	0.151495	0.8797
DSALES	2.96E-11	6.77E-10	0.043729	0.9651
TOP_40	0.015186	0.171465	0.088567	0.9295
D(TANGIBILITY)	-6.30E-12	1.18E-10	-0.053486	0.9574
LEVERAGE(1)	1.151172	0.423814	2.716222	0.0069**
HT	-0.115039	0.483199	-0.238079	0.8120
R-squared	0.161901	**Mean dependent var**		0.517912
Adjusted R-squared	0.140226	**S.D. dependent var**		0.306488
S.E. of regression	0.284188	**Sum squared resid**		28.10548
Durbin-Watson stat	3.221396	**J-statistic**		5.58E-25
Instrument rank	10			

Note: This table presents the GMM estimations with herding being present in Russian firms. The effect of EPU on leverage is analysed on the sample period from June 2002 to June 2017. * Significant at the 10% level, ** Significant at the 5% level, *** Significant at the 1% level.

4.3.3 India OLS and GMM estimation results

The following results presented are for India. The Diagnostic checks were conducted on the series; these include checks of multicollinearity, stationarity and autocorrelation. The variance inflation factor (VIF) methodology was used to check for multicollinearity. The rule of thumb is that if the system shows VIF >10 then there exists excessive multicollinearity that should warrant remedial action.

Table 4.24 results show that there are satisfactory levels of multicollinearity amongst regressors except for the constant which might be caused by cross-sectional fixed effects. The regressors in the model are all stationary at levels except EPU, tangibility, market capitalisation, Sales growth as well as profitability. Sales growth, EPU and Market Capitalisation are integrated of order 1 whilst the

others are integrated of order 2. They will be remedied for this with differencing prior to estimation. The following table shows the results of the test:

Table 4.24: The VIF check for multicollinearity in Indian firms (2002-2017)

Variance Inflation Factors
Sample: 2002 2017
Included observations: 796

Variable	Coefficient Variance	Uncentered VIF	Centered VIF
C	0.000430	12.92114	NA
EPU	7.96E-09	4.083675	1.022411
FIRM_AGE	5.36E-08	2.861626	1.017061
MARKET_CAPITALISATION	2.86E-16	5.895794	3.723625
PROFITABILITY	6.20E-20	5.561631	3.863147
DSALES	2.22E-21	1.172997	1.080937
TOP_40	0.000171	2.744636	1.282669
TANGIBILITY	8.03E-24	1.551878	1.394155
LEVERAGE(1)	0.000537	6.494156	1.137499

Table 4.25 results illustrate that all the variables are statistically insignificant at both the 5% and 10% significance level except for the constant and leverage. All else constant, leverage increases by 0.824918 units seen by the significant constant and leverage factor. The variable of interest in the analysis, changes in EPU, is found to be statistically insignificant in the determination of firm leverage. Similarly Market Capitalisation to be statistically insignificant as well as, pointing to the suspicion that firm size would not affect its ability to raise new debt, or repay it. The R-squared value of 0.635546 shows a good model fit. The Durbin-Watson d statistic is larger than 2, implying that there is a little bit of negative autocorrelation in the data. The India regression outputs for the least squares estimates are as follows:

Table 4.25: The effect of EPU on Leverage (2002-2017) without herding being present in Indian firms

Dependent Variable: LEVERAGE
Method: Panel Least Squares

Sample (adjusted): 2004 2016
Periods included: 13
Cross-sections included: 72
Total panel (unbalanced) observations: 680

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.107342	0.018163	5.909902	0.0000**
D(EPU)	6.87E-05	6.72E-05	1.022554	0.3069
FIRM_AGE	9.15E-05	0.000248	0.369311	0.7120
D(MARKET_CAPITALISATION)	2.45E-08	3.05E-08	0.802402	0.4226
D(PROFITABILITY,2)	2.42E-10	2.12E-10	1.137603	0.2557
DSALES	4.09E-11	4.58E-11	0.892748	0.3723
TOP_40	-0.008077	0.012465	-0.647976	0.5172
D(TANGIBILITY,2)	2.57E-11	3.95E-11	0.649876	0.5160
LEVERAGE(1)	0.824918	0.023581	34.98203	0.0000**

R-squared	0.635546	**Mean dependent var**	0.577787
Adjusted R-squared	0.631749	**S.D. dependent var**	0.265293
S.E. of regression	0.160989	**Akaike info criterion**	-0.803262
Sum squared resid	17.41662	**Schwarz criterion**	-0.750060
Log likelihood	281.1089	**Hannan-Quinn criter.**	-0.782669
Durbin-Watson stat	2.253118		

Note: This table presents the OLS estimations without herding being present in Indian firms. The effect of EPU on book leverage is analysed on the sample period from June 2002 to June 2017. * Significant at the 10% level, ** Significant at the 5% level, *** Significant at the 1% level.

The short-term leverage results are illustrated in Table 4.26 below, showing that the differenced EPU term is not statistically significant in determining the level of leverage that a firm will have at some time *t*. This infers that the changes in EPU do not affect the short-term debt decisions of Indian firms. The sales variable is statistically significant at the 5% significance level, so the more firms increase their sales the more the leverage increases as well. All else zero, short-term leverage increases by 0.844844 units seen by the significant constant and short-term leverage factor. Similar with overall leverage, the model has good significance as illustrated by the statistically significant F-statistic, at even the 5% level. The goodness of fit is also good, with a relatively high R-squared value of 0.727079. The model might suffer from a little negative autocorrelation detected by the Durbin-Watson D-stat of 2.070251.

Table 4.26: The effect of EPU on Short-term Leverage (2002-2017) without herding being present in Indian firms

Dependent Variable: SHORT_TERM_LEVERAGE
Method: Panel Least Squares
Sample (adjusted): 2004 2016
Periods included: 13
Cross-sections included: 72
Total panel (unbalanced) observations: 680

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.044716	0.010599	4.218949	0.0000**
D(EPU)	3.15E-05	4.60E-05	0.684385	0.4940
FIRM_AGE	0.000130	0.000171	0.758914	0.4482
D(MARKET_CAPITALISATION)	7.24E-09	2.08E-08	0. 347844	0.7281
D(PROFITABILITY,2)	-1.69E-12	1.45E-10	-0.011618	0.9907
DSALES	8.22E-11	3.13E-11	2.627614	0.0088**
TOP_40	0.001481	0.008544	0.173329	0.8624
D(TANGIBILITY,2)	1.92E-11	2.71E-11	0.707429	0.4795
SHORT_TERM_LEVERAGE(1)	0.844844	0.020625	40.96255	0.0000**

R-squared	0.727079	**Mean dependent var**	0.346097
Adjusted R-squared	0.723825	**S.D. dependent var**	0.204596
S.E. of regression	0.107520	**Akaike info criterion**	-1.609136
Sum squared resid	7.757108	**Schwarz criterion**	-1.549284
Log likelihood	556.1061	**Hannan-Quinn criter.**	-1.585969
F-statistic	223.4488	**Durbin-Watson stat**	2.070251
Prob(F-statistic)	0.000000		

Note: This table presents the OLS estimations without herding being present in Indian firms. The effect of EPU on short-term leverage is analysed on the sample period from June 2002 to June 2017. * Significant at the 10% level, ** Significant at the 5% level, *** Significant at the 1% level.

The long-term leverage results are illustrated in Table 4.27 below depicting that differenced EPU term is not statistically significant in determining the level of leverage and the coefficient though does not follow prior and theoretical expectations. As with the short-term leverage, this points to the inference that the change in EPU does not affect the long-term debt decisions of Indian firms. The constant and long-term leverage are statistically significant, at the 5% level of significance. All other variables are statistically insignificant in determining leverage. Similar with overall leverage, the model has good significance as illustrated by the statistically significant F-statistic, at the 5% significance level. The goodness of fit is okay, with an R-squared value 0.585140. The model might suffer from a little negative autocorrelation detected by the Durbin-Watson D-stat of 2.022273.

Table 4.27: The effect of EPU on Long-term Leverage (2002-2017) without herding being present in Indian firms

Dependent Variable: LONG_TERM_LEVERAGE
Method: Panel Least Squares
Sample (adjusted): 2004 2016
Periods included: 13
Cross-sections included: 72
Total panel (unbalanced) observations: 680

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(EPU)	3.63E-05	5.87E-05	0.618497	0.5365
FIRM_AGE	-7.54E-05	0.000217	-0.347730	0.7282
D(MARKET_CAPITALISATION)	1.44E-08	2.67E-08	0.539927	0.5894
D(PROFITABILITY,2)	2.44E-10	1.85E-10	1.315031	0.1889
DSALES	-4.04E-11	4.00E-11	-1.011008	0.3124
TOP_40	-0.010413	0.010897	-0.955575	0.3396
D(TANGIBILITY,2)	3.10E-12	3.44E-11	0.090138	0.9282
LONG_TERM_LEVERAGE(1)	0.800702	0.026354	30.38199	0.0000**
C	0.063034	0.013030	4.837483	0.0000**

R-squared	0.585140	**Mean dependent var**	0.231691
Adjusted R-squared	0.580193	**S.D. dependent var**	0.211743
S.E. of regression	0.137194	**Akaike info criterion**	-1.121700
Sum squared resid	12.62963	**Schwarz criterion**	-1.061849
Log likelihood	390.3779	**Hannan-Quinn criter.**	-1.098533
F-statistic	118.3015	**Durbin-Watson stat**	2.022273
Prob(F-statistic)	0.000000		

Note: This table presents the OLS estimations without herding being present in Indian firms. The effect of EPU on long-term leverage is analysed on the sample period from June 2002 to June 2017. * Significant at the 10% level, ** Significant at the 5% level, *** Significant at the 1% level.

Table 4.28 presents the OLS estimations with herding being present. The effect of EPU on book leverage is analysed on the sample period from June 2002 to June 2017. In the analysis of the EPU variable, the leverage variable was added as a regressor. This is to inspect if industry herding is significant in explaining leveraging behaviour by firms. In the extended model, the herding effect is statistically significant in determining leverage at some time *t*. The change in market capitalisation and EPU are also statistically significant at a 5% significance level. This implies that firm size would affect its ability to raise new debt or repay it, whereas the differenced EPU term is not consistent with prior expectations of a negative relation to leverage. Compared to the original least squares regression, the R-squared value is larger, so the model is a better fit in explaining leverage. The Durbin-Watson d statistic is less than 2, implying that there is positive autocorrelation in the data.

Table 4.28: The effect of EPU on Leverage (2002-2017) with herding being present in Indian firms

Dependent Variable: LEVERAGE
Method: Panel Least Squares

Sample (adjusted): 2004 2016
Periods included: 13
Cross-sections included: 72
Total panel (unbalanced) observations: 680

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.566792	0.004733	119.7494	0.0000**
D(EPU)	3.35E-05	1.24E-05	2.695185	0.0072**
FIRM_AGE	2.71E-05	4.58E-05	0.592081	0.5540
D(MARKET_CAPITALISATION)	2.03E-08	5.64E-09	3.601361	0.0003**
D(PROFITABILITY,2)	-3.60E-11	3.93E-11	-0.916725	0.3596
DSALES	1.00E-11	8.48E-12	1.183116	0.2372
TOP_40	0.001064	0.002305	0.461703	0.6444
D(TANGIBILITY,2)	4.27E-12	7.30E-12	0.584533	0.5591
LEVERAGE(1)	0.011803	0.007339	1.608195	0.1083
HT	0.988839	0.007180	137.7192	0.0000**

R-squared	0.988180	**Mean dependent var**	0.577787
Adjusted R-squared	0.988021	**S.D. dependent var**	0.265293
S.E. of regression	0.029036	**Akaike info criterion**	-4.225994
Sum squared resid	0.564853	**Schwarz criterion**	-4.159492
Log likelihood	1446.838	**Hannan-Quinn criter.**	-4.200253
F-statistic	6223.771	**Durbin-Watson stat**	1.292936
Prob(F-statistic)	0.000000		

Note: This table presents the OLS estimations with herding being present in Indian firms. The effect of EPU on leverage is analysed on the sample period from June 2002 to June 2017. * Significant at the 10% level, ** Significant at the 5% level, *** Significant at the 1% level.

Table 4.29 below illustrates the regression results for the GMM estimations without herding in Indian firms showing that the coefficients are all statistically insignificant. The EPU term, though biased, still does not meet prior expectation of having a negative sign. Similarly, the market capitalisation and Top 40 terms are also statistically insignificant in estimating leverage. This is further illustrated by a low negative R-squared value of -21.919530. The J-statistic is also very low, below the value of 10 inferring to the failure to meet the GMM system's over identification criteria. The Durbin-Watson d statistic is greater than 2, pointing to the existence of some negative autocorrelation.

The India regression outputs for the GMM estimates are as follows:

Table 4.29: The GMM estimation on Leverage without herding being present in Indian firms (2002-2017)

Dependent Variable: LEVERAGE
Method: Panel Generalized Method of Moments
Sample (adjusted): 2004 2016
Periods included: 13
Cross-sections included: 72
Total panel (unbalanced) observations: 679
2SLS instrument weighting matrix
Instrument specification: C LEVERAGE(-1) FIRM_AGE(-1) EPU(-1) SALES_GROWTH PROFITABILITY(-1) TANGIBILITY(-1) MARKET_CAPITALISATION(-1)
Constant added to instrument list

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.482513	1.698351	0.284107	0.7764
D(EPU)	0.001122	0.002992	0.375180	0.7076
FIRM_AGE	3.04E-05	0.002193	0.013881	0.9889
D(MARKET_CAPITALISATION)	-6.07E-06	1.67E-05	-0.363542	0.7163
D(PROFITABILITY,2)	-7.99E-09	2.29E-08	-0.349362	0.7269
DSALES	-1.55E-09	3.45E-09	-0.448608	0.6539
TOP_40	0.257548	0.666540	0.386395	0.6993
D(TANGIBILITY,2)	1.20E-09	4.45E-09	0.269979	0.7873
LEVERAGE(1)	0.663995	1.559803	0.425692	0.6705

R-squared	-21.919530	**Mean dependent var**	0.577568
Adjusted R-squared	-22.193196	**S.D. dependent var**	0.265427
S.E. of regression	1.278276	**Sum squared resid**	1094.774
Durbin-Watson stat	2.121190	**J-statistic**	6.03E-26
Instrument rank	9		

Note: This table presents the GMM estimations without herding being present in Indian firms. The effect of EPU on book leverage is analysed on the sample period from June 2002 to June 2017. * Significant at the 10% level, ** Significant at the 5% level, *** Significant at the 1% level.

Table 4.30 contains the Method of Moments estimation results for the short-term leverage. The table shows that the EPU term is statistically insignificant in determining the short-term leverage behaviour of firms. The term does not meet prior expectations as the EPU coefficient has a positive signage. All the likelihood estimates are statistically insignificant in determining the short-term leverage at both the 5% and 10% significance levels. The GMM estimated model has some negative autocorrelation indicated by the Durbin-Watson statistic and it fails to meet the over identification criterion of the J-statistic.

Table 4.30: The GMM estimation on Short-term Leverage without herding being present in Indian firms (2002-2017)

Dependent Variable: SHORT_TERM_LEVERAGE
Method: Panel Generalized Method of Moments
Sample (adjusted): 2004 2016
Periods included: 13
Cross-sections included: 72
Total panel (unbalanced) observations: 679
2SLS instrument weighting matrix
Instrument specification: C LEVERAGE(-1) FIRM_AGE(-1) EPU(-1) SALES_GROWTH PROFITABILITY(-1) TANGIBILITY(-1) MARKET_CAPITALSATION(-1) SALES_GROWTH
Constant added to instrument list

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.110092	0.358364	0.307208	0.7588
D(EPU)	0.000251	0.000523	0.480110	0.6313
FIRM_AGE	7.78E-05	0.000518	0.150079	0.8807
D(MARKET_CAPITALISATION)	-1.35E-06	2.83E-06	-0.476904	0.6336
D(PROFITABILITY,2)	-1.42E-09	3.48E-09	-0.407659	0.6837
DSALES	-1.98E-10	4.74E-10	-0.417133	0.6767
TOP_40	0.053509	0.107349	0.498456	0.6183
D(TANGIBILITY,2)	3.98E-10	1.40E-09	0.284717	0.7759
SHORT_TERM_LEVERAGE(1)	0.841120	0.557488	1.508769	0.1318

R-squared	-1.136330	**Mean dependent var**	0.346088
Adjusted R-squared	-1.161838	**S.D. dependent var**	0.204747
S.E. of regression	0.301043	**Sum squared resid**	60.71993
Durbin-Watson stat	2.114346	**J-statistic**	5.12E-26
Instrument rank	9		

Note: This table presents the GMM estimations without herding being present in Indian firms. The effect of EPU on short-term leverage is analysed on the sample period from June 2002 to June 2017. * Significant at the 10% level, ** Significant at the 5% level, *** Significant at the 1% level.

Table 4.31 below illustrates the regression results of the GMM estimation, with the long-term leverage as the regressand. The table shows that the differenced EPU is found to be statistically insignificant at the 5% significance level, although the term does not meet prior expectations as the EPU coefficient has a positive signage. A positive change in EPU would result in firms increasing their leverage by a value of 0.001055 units. This is due to the prospect of higher debt servicing costs in the long-term. The Top 40 coefficient as well as the differenced Market capitalisation terms are also not significant in the analysis, however each giving contrasting inferences about their effects on long-term leverage, positive changes in market capitalisation will decrease the long-term leverage, whilst a firm having a market cap large enough to be a Top 40 company will realise an increase in leverage. The initial leverage levels are insignificant in the determination of the path of the long-term leverage of the firm. This removes the effect of current debt levels on the ability of the firm to raise new debt. The model does not meet the over identification criteria of the J-statistic as it is

statistically insignificant at the 5% level and the model could also exhibit serial correlation and model specification error indicated by the Durbin-Watson test statistic.

Table 4.31: The GMM estimation on Long-term Leverage without herding being present in Indian firms (2002-2017)

Dependent Variable: LONG_TERM_LEVERAGE
Method: Panel Generalized Method of Moments
Sample (adjusted): 2004 2016
Periods included: 13
Cross-sections included: 72
Total panel (unbalanced) observations: 679
2SLS instrument weighting matrix
Instrument specification: C LEVERAGE(-1) FIRM_AGE(-1) EPU(-1) SALES_GROWTH PROFITABILITY(-1) TANGIBILITY(-1) MARKET_CAPITALSATION(-1) SALES_GROWTH
Constant added to instrument list

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.411541	1.959352	0.210039	0.8337
D(EPU)	0.001055	0.004367	0.241545	0.8092
FIRM_AGE	-0.000192	0.002581	-0.074560	0.9406
D(MARKET_CAPITALISATION)	-5.77E-06	2.48E-05	-0.232514	0.8162
D(PROFITABILITY,2)	-8.46E-09	3.76E-08	-0.225123	0.8220
DSALES	-2.05E-09	8.80E-09	-0.232391	0.8163
TOP_40	0.348663	1.760877	0.198005	0.8431
D(TANGIBILITY,2)	4.66E-10	1.75E-09	0.265648	0.7906
LONG_TERM_LEVERAGE(1)	0.321801	4.391381	0.073280	0.9416

R-squared	-32.180513	**Mean dependent var**	0.231480
Adjusted R-squared	-32.576698	**S.D. dependent var**	0.211828
S.E. of regression	1.227445	**Sum squared resid**	1009.437
Durbin-Watson stat	2.130464	**J-statistic**	3.92E-26
Instrument rank	9		

Note: This table presents the GMM estimations without herding being present in Indian firms. The effect of EPU on long-term leverage is analysed on the sample period from June 2002 to June 2017. * Significant at the 10% level, ** Significant at the 5% level, *** Significant at the 1% level.

Table 4.32 depicts the GMM regression results for the leverage model inclusive of industry leverage behaviour, this being incorporated by the herding effects term. Unlike the least squares analysis, the constant, differenced EPU, market capitalisation, profitability and herding effect statistically significant from zero at the 5% level of significance. The differenced EPU term does not meet prior expectations as the EPU coefficient has a positive signage. Market capitalisation contrasting inferences about their effects on long-term leverage, positive changes in market capitalisation will decrease the leverage in the presence of the herding effect, whilst a firm being more profitable will also decrease the leverage in the presence of the herding effect. Similarly the J-statistic is also

statistically insignificant from zero, such that the over identification criteria is not satisfied. The Durbin-Watson d statistic is less than 2, pointing to the existence of some positive autocorrelation.

Table 4.32: The GMM estimation on Leverage with herding being present in Indian firms (2002-2017)

Dependent Variable: LEVERAGE
Method: Panel Generalized Method of Moments

Sample (adjusted): 2004 2016
Periods included: 13
Cross-sections included: 72
Total panel (unbalanced) observations: 679
2SLS instrument weighting matrix
Instrument specification: C LEVERAGE(-1) FIRM_AGE(-1) EPU(-1) SALES_GROWTH PROFITABILITY(-1) TANGIBILITY(-1) MARKET_CAPITALISATION(-1) HT(-1)
Constant added to instrument list

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.624510	0.106184	5.881390	0.0000**
D(EPU)	0.000240	4.87E-05	4.922398	0.0000**
FIRM_AGE	-5.16E-05	0.000113	-0.455997	0.6485
D(MARKET_CAPITALISATION)	-2.10E-07	5.11E-08	-4.107391	0.0000**
D(PROFITABILITY,2)	-5.44E-10	2.08E-10	-2.613151	0.0092**
DSALES	-2.54E-11	1.01E-10	-0.252735	0.8006
TOP_40	-0.027472	0.022241	-1.235191	0.2172
D(TANGIBILITY,2)	7.33E-11	9.22E-11	0.795001	0.4269
LEVERAGE(1)	-0.033800	0.177569	-0.190350	0.8491
HT	1.016027	0.144751	7.019121	0.0000**

R-squared	0.940999	**Mean dependent var**	0.577568
Adjusted R-squared	0.940205	**S.D. dependent var**	0.265427
S.E. of regression	0.064905	**Sum squared resid**	2.818258
Durbin-Watson stat	1.892429	**J-statistic**	2.79E-19
Instrument rank	10		

Note: This table presents the GMM estimations with herding being present in Indian firms. The effect of EPU on leverage is analysed on the sample period from June 2002 to June 2017. * Significant at the 10% level, ** Significant at the 5% level, *** Significant at the 1% level.

4.3.4 China OLS and GMM estimation results

The following results presented are for China. The diagnostic checks were conducted on the series; these include checks of multicollinearity, stationarity and autocorrelation. The VIF methodology was used to check for multicollinearity. The rule of thumb is that if the system shows VIF >10 then there exists excessive multicollinearity that should warrant remedial action.

Table 4.33 below is used in the initial series checks for multicollinearity. As with other countries, the VIF is used to check this phenomenon within the data. The table above illustrates that the uncentered

VIF values for all variables are less than 10, inferring that there does not exist any excessive multicollinearity among the various series. Along with the checks for multicollineariy, the series are also checked for stationarity. This is done through the Panel Augmented Dickey Fuller and Phillip-Perron tests. The tests reveal that the leverage variables are all stationary at their respective levels. Profitability, Sales growth and Market Capitalisation and EPU are all stationary after one differencing and Tangibility achieves stationarity after twice being differenced. The normality test results as well as the stationarity results rule out least squares estimation, subsequently the likelihood method of GMM will serve as an alternative.

The following table shows the results of the test:

Table 4.33: The VIF check for multicollinearity in Chinese firms (2002-2017)

Variance Inflation Factors
Sample: 2002 2017
Included observations: 672

Variable	Coefficient Variance	Uncentered VIF	Centered VIF
C	0.000114	6.543846	NA
EPU	1.09E-09	1.004461	1.004177
FIRM_AGE	2.92E-21	1.352281	1.285027
MARKET_CAPITALISATION	2.55E-20	1.116182	1.116008
PROFITABILITY	1.03E-19	1.167950	1.145906
DSALES	7.39E-05	1.880243	1.046445
TOP_40	2.46E-22	1.043586	1.043556
TANGIBILITY	1.40E-08	2.230491	1.010187
LEVERAGE(1)	0.000234	5.637433	1.074511

Table 4.34 presents the OLS estimations without herding being present in Chinese firms. The results illustrate that tangibility and leverage variables are statistically significant at the 5% significance level, in determining the leverage that the firm will have at some given time. This implies that a firm having tangible assets will decrease leverage by a small amount and all else zero leverage still increases by 0.044798. The variable of interest in the analysis, changes in EPU, is found to be statistically insignificant in the determination of firm leverage. Similarly, Market Capitalisation is also found to be statistically insignificant pointing to the suspicion that firm size would not affect its ability to raise new debt, or repay it. There is a loss of observations due to the differencing required to attain stationary regressors, hence the panel period is shorter. The R-squared value of 0.851044 is significantly high, showing that the model better fits the data. The Durbin-Watson statistic is less than 2, implying that there is some positive autocorrelation in the data.

The China regression outputs for the least squares estimates are as follows:

Table 4.34: The effect of EPU on Leverage (2002-2017) without herding being present in Chinese firms

Dependent Variable: LEVERAGE
Method: Panel Least Squares
Sample (adjusted): 2004 2016
Periods included: 13
Cross-sections included: 72
Total panel (unbalanced) observations: 672

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.044798	0.010678	4.195328	0.0000**
D(EPU)	7.31E-06	3.31E-05	0.220978	0.8252
DSALES	7.89E-11	5.41E-11	1.459304	0.1450
D(MARKET_CAPITALISATION)	-1.08E-10	1.60E-10	-0.679371	0.4971
D(PROFITABILITY)	-2.66E-10	3.21E-10	-0.828927	0.4074
TOP_40	0.007692	0.008595	0.894909	0.3712
D(TANGIBILITY,2)	-3.10E-11	1.57E-11	-1.979064	0.0482**
FIRM_AGE	3.32E-05	0.000118	0.280573	0.7791
LEVERAGE(1)	0.903716	0.015289	59.11003	0.0000**

R-squared	0.851044	**Mean dependent var**	0.577654
Adjusted R-squared	0.849246	**S.D. dependent var**	0.278695
S.E. of regression	0.108209	**Akaike info criterion**	-1.596201
Sum squared resid	7.763198	**Schwarz criterion**	-1.535796
Log likelihood	545.3236	**Hannan-Quinn criter.**	-1.572807
F-statistic	473.4961	**Durbin-Watson stat**	1.897146
Prob(F-statistic)	0.000000		

Note: This table presents the OLS estimations without herding being present in Chinese firms. The effect of EPU on book leverage is analysed on the sample period from June 2002 to June 2017. * Significant at the 10% level, ** Significant at the 5% level, *** Significant at the 1% level.

The short-term leverage results are illustrated in Table 4.35 below, showing that the differenced EPU term is statistically insignificant in determining the level of leverage that a firm will have at some time t. This implies that the changes in EPU do not affect the short-term debt decisions of Chinese firms. Profitability and short-term leverage are statistically significant at a 5% significance level, which indicates that if a firm is profitable its short-term leverage decreases by a small amount. All else zero, the short-term leverage increases by 0.020290 as shown by the statistically significant constant. Similar with overall leverage, the R-squared value of 0.891978 is significantly high, showing that the model better fits the data. The model shows some positive autocorrelation in the data detected by the Durbin-Watson D-stat of 1.951997.

Table 4.35: The effect of EPU on Short-term Leverage (2002-2017) without herding being present in Chinese firms

Dependent Variable: SHORT_TERM_LEVERAGE
Method: Panel Least Squares
Sample (adjusted): 2004 2016
Periods included: 13
Cross-sections included: 72
Total panel (unbalanced) observations: 672

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.020290	0.006627	3.061839	0.0023**
D(EPU)	-2.46E-06	2.34E-05	-0.105001	0.9164
DSALES	4.46E-11	3.81E-11	1.172010	0.2416
D(MARKET_CAPITALISATION)	3.29E-11	1.13E-10	0.291279	0.7709
D(PROFITABILITY)	-5.05E-10	2.26E-10	-2.232757	0.0259**
TOP_40	0.004797	0.006037	0.794581	0.4271
D(TANGIBILITY,2)	-1.40E-11	1.11E-11	-1.261670	0.2075
FIRM_AGE	-9.75E-05	8.62E-05	-1.131306	0.2583
SHORT_TERM_LEVERAGE(1)	0.925506	0.013034	71.00766	0.0000**

R-squared	0.891978	**Mean dependent var**	0.269572
Adjusted R-squared	0.890675	**S.D. dependent var**	0.231957
S.E. of regression	0.076695	**Akaike info criterion**	-2.284658
Sum squared resid	3.899849	**Schwarz criterion**	-2.224253
Log likelihood	776.6450	**Hannan-Quinn criter.**	-2.261264
F-statistic	684.3306	**Durbin-Watson stat**	1.951997
Prob(F-statistic)	0.000000		

Note: This table presents the OLS estimations without herding being present in Chinese firms. The effect of EPU on short-term leverage is analysed on the sample period from June 2002 to June 2017. * Significant at the 10% level, ** Significant at the 5% level, *** Significant at the 1% level.

The long-term leverage results are illustrated in Table 4.36 below depicting that differenced EPU term is statistically insignificant in determining the level of long-term leverage. As with the short-term leverage, this points to the inference that the changes in EPU do not affect the long-term debt decisions of Chinese firms. All the variables are statistically insignificant at both the 5% and 10% significance level of significance except long-term leverage itself. Similar with overall leverage, the model has poor significance as illustrated by the statistically insignificant variables although the F-statistic statistically significant at a 5% significance level. The goodness of fit is good, with a high R-squared value of 0.901060. The model might suffer from a little negative autocorrelation detected by the Durbin-Watson D-stat of 2.279260.

Table 4.36: The effect of EPU on Long-term Leverage (2002-2017) without herding being present in Chinese firms

Dependent Variable: LONG_TERM_LEVERAGE
Method: Panel Least Squares
Sample (adjusted): 2004 2016
Periods included: 13
Cross-sections included: 72
Total panel (unbalanced) observations: 672

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.008886	0.006764	1.313684	0.1894
D(EPU)	9.57E-06	2.89E-05	0.331513	0.7404
DSALES	1.80E-11	4.69E-11	0.382840	0.7020
D(MARKET_CAPITALISATION)	-1.25E-10	1.39E-10	-0.898019	0.3695
D(PROFITABILITY)	1.47E-10	2.79E-10	0.527423	0.5981
TOP_40	-0.000234	0.007474	-0.031275	0.9751
D(TANGIBILITY,2)	-1.71E-11	1.37E-11	-1.247565	0.2126
FIRM_AGE	6.98E-05	0.000107	0.654724	0.5129
LONG_TERM_LEVERAGE(1)	0.948503	0.012895	73.55838	0.0000**

R-squared	0.901060	**Mean dependent var**	0.308082
Adjusted R-squared	0.899867	**S.D. dependent var**	0.298407
S.E. of regression	0.094427	**Akaike info criterion**	-1.868668
Sum squared resid	5.911667	**Schwarz criterion**	-1.808262
Log likelihood	636.8723	**Hannan-Quinn criter.**	-1.845274
F-statistic	754.7574	**Durbin-Watson stat**	2.279260
Prob(F-statistic)	0.000000		

Note: This table presents the OLS estimations without herding being present in Chinese firms. The effect of EPU on long-term leverage is analysed on the sample period from June 2002 to June 2017. * Significant at the 10% level, ** Significant at the 5% level, *** Significant at the 1% level.

In the analysis of the EPU variable in Table 4.37, the leverage variable is added as a regressor. This is to inspect if industry herding is significant in explaining leveraging behaviour by firms. In the extended model, the profitability, leverage and herding effect (HT) are found to be statistically significant in determining leverage at some time *t*. This implies that the more a firm is profitable, its leverage decreases by a slightly small amount in addition, if a firm herds towards other firms in the industry then the leverage increases by approximately 1 unit. Although not statistically significant, the differenced EPU term is not consistent with prior expectations of a negative relation to leverage. The R-squared value is at 0.997074, showing a better fit, while the Durbin-Watson d statistic is less than 2, implying that there is some positive autocorrelation in the data.

Table 4.37: The effect of EPU on Leverage (2002-2017) with herding being present in Chinese firms

Dependent Variable: LEVERAGE
Method: Panel Least Squares

Sample (adjusted): 2004 2016
Periods included: 13
Cross-sections included: 72
Total panel (unbalanced) observations: 672

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.583100	0.003319	175.7077	0.0000**
D(EPU)	3.30E-06	4.64E-06	0.711547	0.4770
DSALES	-3.44E-13	7.60E-12	-0.045228	0.9639
D(MARKET_CAPITALISATION)	-4.02E-12	2.24E-11	-0.179606	0.8575
D(PROFITABILITY)	-9.49E-11	4.50E-11	-2.111547	0.0351**
TOP_40	-0.000477	0.001206	-0.395475	0.6926
D(TANGIBILITY,2)	-1.25E-12	2.21E-12	-0.565253	0.5721
FIRM_AGE	1.28E-05	1.66E-05	0.774491	0.4389
LEVERAGE(1)	0.011104	0.005358	2.072178	0.0386**
HT	0.990808	0.005451	181.7721	0.0000**

R-squared	0.997074	**Mean dependent var**	0.577654
Adjusted R-squared	0.997034	**S.D. dependent var**	0.278695
S.E. of regression	0.015177	**Akaike info criterion**	-5.523305
Sum squared resid	0.152486	**Schwarz criterion**	-5.456188
Log likelihood	1865.830	**Hannan-Quinn criter.**	-5.497311
F-statistic	25066.63	**Durbin-Watson stat**	1.409638
Prob(F-statistic)	0.000000		

Note: This table presents the OLS estimations with herding being present in Chinese firms. The effect of EPU on leverage is analysed on the sample period from June 2002 to June 2017. * Significant at the 10% level, ** Significant at the 5% level, *** Significant at the 1% level.

Table 4.38 illustrates the regression results for the Methods of Moments; the results show that the coefficients are all statistically insignificant at a significance level of 5%. The EPU term does not meet prior expectation of having a negative sign. This is further illustrated by a negative R-squared value of -0.339703. The J-statistic is also very low, below the value of 10 which implies the failure to meet the GMM system's over identification criteria. The Durbin-Watson statistic is lower than two, pointing to the existence of some positive autocorrelation.

The China regression outputs for the GMM estimates are as follows:

Table 4.38: The GMM estimation on Leverage without herding being present in Chinese firms (2002-2017)

Dependent Variable: LEVERAGE
Method: Panel Generalized Method of Moments

Sample (adjusted): 2004 2016
Periods included: 13
Cross-sections included: 72
Total panel (unbalanced) observations: 666
2SLS instrument weighting matrix
Instrument specification: C LEVERAGE(-1) TANGIBILITY(-1) PROFITABILITY(-1) EPU(-1) SALES_GROWTH(-1) MARKET_CAPITALISATION(-1) FIRM_AGE(-1)
Constant added to instrument list

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-0.113694	0.819574	-0.138723	0.8897
D(EPU)	9.11E-05	0.000803	0.113414	0.9097
DSALES	-9.10E-10	8.66E-09	-0.105109	0.9163
D(MARKET_CAPITALISATION)	8.30E-09	8.44E-08	0.098337	0.9217
D(PROFITABILITY)	5.13E-09	5.83E-08	0.088088	0.9298
TOP_40	0.343312	3.448272	0.099560	0.9207
D(TANGIBILITY,2)	3.99E-10	5.17E-09	0.077082	0.9386
FIRM_AGE	-0.000135	0.000749	-0.179863	0.8573
LEVERAGE(1)	0.945660	1.083994	0.872386	0.3833

R-squared	-0.339703	**Mean dependent var**	0.577743
Adjusted R-squared	-0.356041	**S.D. dependent var**	0.278365
S.E. of regression	0.324154	**Sum squared resid**	68.92984
Durbin-Watson stat	1.493364	**J-statistic**	9.00E-25
Instrument rank	9		

Note: This table presents the GMM estimations without herding being present in Chinese firms. The effect of EPU on book leverage is analysed on the sample period from June 2002 to June 2017. * Significant at the 10% level, ** Significant at the 5% level, *** Significant at the 1% level.

Table 4.39 below contains the Method of Moments estimation results for the short-term leverage. In the table, the EPU term is statistically insignificant in determining the leverage behaviour of firms with an EPU coefficient of a positive signage. All the likelihood estimates are statistically insignificant in determining the short-term leverage. The GMM estimated model has some negative autocorrelation indicated by the Durbin-Watson statistic and proves to meet the over identification criterion of the J-statistic.

Table 4.39: The GMM estimation on Short-term Leverage without herding being present in Chinese firms (2002-2017)

Dependent Variable: SHORT_TERM_LEVERAGE
Method: Panel Generalized Method of Moments
Sample (adjusted): 2004 2016
Periods included: 13
Cross-sections included: 72
Total panel (unbalanced) observations: 666
2SLS instrument weighting matrix
Instrument specification: C LEVERAGE(-1) TANGIBILITY(-1) PROFITABILITY(-1) EPU(-1) SALES_GROWTH(-1) MARKET_CAPITALISATION(-1) FIRM_AGE(-1)
Constant added to instrument list

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-0.022740	0.023654	-0.961368	0.3367
D(EPU)	1.25E-05	3.79E-05	0.329541	0.7419
DSALES	-9.78E-11	2.48E-10	-0.393837	0.6938
D(MARKET_CAPITALISATION)	7.98E-10	3.09E-09	0.257991	0.7965
D(PROFITABILITY)	2.64E-11	9.63E-10	0.027395	0.9782
TOP_40	0.031217	0.068173	0.457906	0.6472
D(TANGIBILITY,2)	-9.38E-11	1.04E-10	-0.901438	0.3677
FIRM_AGE	2.64E-05	0.000109	0.242197	0.8087
SHORT_TERM_LEVERAGE(1)	1.025615	0.021369	47.99506	0.0000**
R-squared	0.863283	**Mean dependent var**		0.268868
Adjusted R-squared	0.861618	**S.D. dependent var**		0.231210
S.E. of regression	0.086009	**Sum squared resid**		4.860222
Durbin-Watson stat	2.060607	**J-statistic**		6.70E-26
Instrument rank	9			

Note: This table presents the GMM estimations without herding being present in Chinese firms. The effect of EPU on short-term leverage is analysed on the sample period from June 2002 to June 2017. * Significant at the 10% level, ** Significant at the 5% level, *** Significant at the 1% level.

Table 4.40 below illustrates the regression results of the GMM estimation, with the long-term leverage as the regressand. The table shows that the differenced EPU is found to be statistically insignificant at the 5% significance level, granting that the signage does not follow the theoretical expectations as well. All the variables are statistically insignificant at both the 5% and 10% significance level. The initial leverage levels are not significant in the determination of the path of the leverage of the firm. This removes the effect of current debt levels on the ability of the firm to raise new debt. The model does not meet the over identification criteria of the J-statistic as it is statistically insignificant at the 5% level and the model could also exhibit serial correlation and model specification error indicated by the Durbin-Watson test statistic.

Table 4.40: The GMM estimation on Long-term Leverage without herding being present in Chinese firms (2002-2017)

Dependent Variable: LONG_TERM_LEVERAGE
Method: Panel Generalized Method of Moments
Sample (adjusted): 2004 2016
Periods included: 13
Cross-sections included: 72
Total panel (unbalanced) observations: 666
2SLS instrument weighting matrix
Instrument specification: C LEVERAGE(-1) TANGIBILITY(-1) PROFITABILITY(-1) EPU(-1) SALES_GROWTH(-1) MARKET_CAPITALISATION(-1) FIRM_AGE(-1)
Constant added to instrument list

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-0.016984	0.029664	-0.572522	0.5672
D(EPU)	1.30E-05	4.26E-05	0.304985	0.7605
DSALES	-7.08E-11	2.66E-10	-0.266435	0.7900
D(MARKET_CAPITALISATION)	7.70E-10	2.91E-09	0.264949	0.7911
D(PROFITABILITY)	-1.69E-10	1.72E-09	-0.098316	0.9217
TOP_40	0.013234	0.080701	0.163985	0.8698
D(TANGIBILITY,2)	4.24E-11	1.51E-10	0.281293	0.7786
FIRM_AGE	-0.000141	0.000124	-1.138173	0.2555
LONG_TERM_LEVERAGE(1)	1.047647	0.025453	41.16024	0.0000**
R-squared	0.884768	**Mean dependent var**		0.308704
Adjusted R-squared	0.883365	**S.D. dependent var**		0.299159
S.E. of regression	0.102168	**Sum squared resid**		6.858011
Durbin-Watson stat	2.278648	**J-statistic**		2.47E-26
Instrument rank	9			

Note: This table presents the GMM estimations without herding being present in Chinese firms. The effect of EPU on long-term leverage is analysed on the sample period from June 2002 to June 2017. * Significant at the 10% level, ** Significant at the 5% level, *** Significant at the 1% level.

Table 4.41 depicts the GMM regression results for the leverage model inclusive of industry leverage behaviour, this being incorporated by the herding effects term. All the variables are statistically insignificant at both the 5% and 10% significance level. Leverage is statistically significant at a 5% significance level. The J-statistic on the other hand is also not statistically significant from zero, such that the over identification criteria is not satisfied. The model also has a DW statistic that is less than 2, pointing to the existence of positive autocorrelation.

Table 4.41: The GMM estimation on Leverage with herding being present in Chinese firms (2002-2017)

Dependent Variable: LEVERAGE
Method: Panel Generalized Method of Moments
Sample (adjusted): 2004 2016
Periods included: 13
Cross-sections included: 72
Total panel (unbalanced) observations: 666
2SLS instrument weighting matrix
Instrument specification: C LEVERAGE(-1) TANGIBILITY(-1) PROFITABILITY(-1) EPU(-1) SALES_GROWTH(-1) MARKET_CAPITALISATION(-1) FIRM_AGE(-1) HT(-1)
Constant added to instrument list

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-0.384192	18.62033	-0.020633	0.9835
D(EPU)	0.000120	0.002876	0.041645	0.9668
DSALES	-1.16E-09	2.74E-08	-0.042456	0.9661
D(MARKET_CAPITALISATION)	1.07E-08	2.63E-07	0.040713	0.9675
D(PROFITABILITY)	6.37E-09	1.55E-07	0.041230	0.9671
TOP_40	0.431458	10.10838	0.042683	0.9660
D(TANGIBILITY,2)	4.90E-10	1.25E-08	0.039214	0.9687
FIRM_AGE	-0.000185	0.004122	-0.044863	0.9642
LEVERAGE(1)	1.341108	24.36228	0.055049	0.9561
HT	-0.402216	26.15846	-0.015376	0.9877

R-squared	-1.218522	**Mean dependent var**	0.577743
Adjusted R-squared	-1.249005	**S.D. dependent var**	0.278365
S.E. of regression	0.417456	**Sum squared resid**	114.1465
Durbin-Watson stat	1.507717	**J-statistic**	2.10E-17
Instrument rank	10		

Note: This table presents the GMM estimations with herding being present in Chinese firms. The effect of EPU on leverage is analysed on the sample period from June 2002 to June 2017. * Significant at the 10% level, ** Significant at the 5% level, *** Significant at the 1% level.

4.3.5 South Africa OLS and GMM estimation results

The additional diagnostic checks for the analysis include the multicollinearity checks as well as the stationarity checks for the analysis. The VIF methodology was used to check for multicollinearity. The rule of thumb is that if the system shows VIF >10 then there exists excessive multicollinearity that should warrant remedial action. As with the other countries, Diagnostic tests were conducted, for the multicollinearity.

As with other countries, the VIF is used to check this phenomenon within the data. Table 4.42 below illustrates that the uncentered VIF values for all variables are less than 10, inferring that there does not exist any excessive multicollinearity among the various series. Along with the checks for Multicollineariy, the series are also checked for stationarity. The multiple leverage series are stationary at the 1% level of significance whilst the EPU, Market Capitalisation and Sales growth are

found to be stationary after the 1st difference and the remaining variables are found to be stationary after two differences.

Table 4.42 presents the following VIF results:

Table 4.42: The VIF check for multicollinearity in South African firms (2002-2017)

Variance Inflation Factors

Sample: 2002 2017
Included observations: 472

Variable	Coefficient Variance	Uncentered VIF	Centered VIF
C	0.000213	8.460338	NA
EPU	0.000602	1.059946	1.038303
FIRM_AGE	3.76E-08	2.821645	1.100507
MARKET_CAPITALISATION	7.10E-15	1.214279	1.183107
PROFITABILITY	8.83E-19	1.022453	1.022420
DSALES	1.16E-19	1.234618	1.174206
TOP_40	0.000111	2.049033	1.099481
TANGIBILITY	9.43E-21	1.026675	1.025520
LEVERAGE(1)	0.000453	7.865301	1.050487

Table 4.43 results illustrate that all the variables are statistically insignificant at both the 5% and 10% significance level except for the constant and leverage. All else zero, leverage increases by 0.040326 and 0.910867 units seen by the significant constant and leverage factors respectively. The variable of interest in the analysis, changes in EPU, is found to be statistically insignificant in the determination of firm leverage. Similarly Market Capitalisation to be statistically insignificant as well as, pointing to the suspicion that firm size would not affect its ability to raise new debt, or repay it. The R-squared value of 0.844434 shows a good model fit. The Durbin-Watson d statistic is larger than 2, implying that there is a little bit of negative autocorrelation in the data.

The South Africa regression outputs for the least squares estimates are as follows:

Table 4.43: The effect of EPU on Leverage (2002-2017) without herding being present in South African firms

Dependent Variable: LEVERAGE
Method: Panel Least Squares

Sample (adjusted): 2004 2011
Periods included: 8
Cross-sections included: 66
Total panel (unbalanced) observations: 369

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.040326	0.014599	2.762303	0.0060**
D(EPU)	-0.004328	0.024532	-0.176417	0.8601
FIRM_AGE	0.000301	0.000194	1.552096	0.1215
D(MARKET_CAPITALISATION)	-1.52E-08	8.43E-08	-0.180846	0.8566
D(PROFITABILITY,2)	8.17E-10	9.40E-10	0.869322	0.3852
DSALES	1.65E-10	3.41E-10	0.484947	0.6280
TOP_40	0.000501	0.010554	0.047516	0.9621
D(TANGIBILITY,2)	2.31E-11	9.71E-11	0.237534	0.8124
LEVERAGE(1)	0.910867	0.021291	42.78234	0.0000**

R-squared	0.844434	**Mean dependent var**	0.611643
Adjusted R-squared	0.840977	**S.D. dependent var**	0.241769
S.E. of regression	0.096412	**Akaike info criterion**	-1.816291
Sum squared resid	3.346275	**Schwarz criterion**	-1.720906
Log likelihood	344.1058	**Hannan-Quinn criter.**	-1.778400
F-statistic	244.2670	**Durbin-Watson stat**	2.103178
Prob(F-statistic)	0.000000		

Note: This table presents the OLS estimations without herding being present in South African firms. The effect of EPU on book leverage is analysed on the sample period from June 2002 to June 2017. * Significant at the 10% level, ** Significant at the 5% level, *** Significant at the 1% level.

The short-term leverage results are illustrated in Table 4.44 below, where the constant and firm age are statistically significant at the 10% significance level, whereas EPU, market capitalisation, sales and short-term leverage are statistically significant at the 5% significance level. A positive change in EPU would result in firms increasing their leverage by a value of 0.050943 units, and the EPU term does not meet prior theoretical expectations by having a positive sign. The older the firm gets, its short-term leverage will increase slightly by 0.000343 units. Positive changes in market capitalisation will slightly decrease the short-term leverage which shows that firm size does not affect the firm's ability to raise debt. The more firms increase their sales the more the short-term leverage increases as well. All else zero, short-term leverage increases by 0.020066 and 0.895468 units seen by the significant constant and short-term leverage factors respectively. Similar with overall leverage, the model has good significance as illustrated by the statistically significant F-statistic at the 5% level. The goodness of fit is great with a relatively high R-squared value of 0.791404. The model might suffer from a little negative autocorrelation detected by the Durbin-Watson D-stat of 2.397155.

Table 4.44: The effect of EPU on Short-term Leverage (2002-2017) without herding being present in South African firms

Dependent Variable: SHORT_TERM_LEVERAGE
Method: Panel Least Squares

Sample (adjusted): 2004 2011
Periods included: 8
Cross-sections included: 66
Total panel (unbalanced) observations: 371

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.020066	0.010601	1.892885	0.0592*
D(EPU)	0.050943	0.023126	2.202853	0.0282**
FIRM_AGE	0.000343	0.000181	1.890488	0.0595*
D(MARKET_CAPITALISATION)	-1.84E-07	7.94E-08	-2.318068	0.0210**
D(PROFITABILITY,2)	5.33E-10	8.86E-10	0.601490	0.5479
DSALES	8.08E-10	3.21E-10	2.515256	0.0123**
TOP_40	0.005984	0.009984	0.599386	0.5493
D(TANGIBILITY,2)	6.13E-12	9.20E-11	0.066562	0.9470
SHORT_TERM_LEVERAGE(1)	0.895468	0.024951	35.88897	0.0000**

R-squared	0.791404	**Mean dependent var**	0.283480
Adjusted R-squared	0.786794	**S.D. dependent var**	0.196819
S.E. of regression	0.090880	**Akaike info criterion**	-1.934600
Sum squared resid	2.989802	**Schwarz criterion**	-1.839598
Log likelihood	367.8684	**Hannan-Quinn criter.**	-1.896868
F-statistic	171.6768	**Durbin-Watson stat**	2.397155
Prob(F-statistic)	0.000000		

Note: This table presents the OLS estimations without herding being present in South African firms. The effect of EPU on Short-term leverage is analysed on the sample period from June 2002 to June 2017. * Significant at the 10% level, ** Significant at the 5% level, *** Significant at the 1% level.

The long-term leverage results are illustrated Table 4.45 below depicting that differenced EPU term is not statistically significant in determining the level of leverage but the coefficient follows prior and theoretical expectations of having a negative signage. As with the short-term leverage, this points to the inference that the change in EPU affects the long-term debt decisions of South African firms. The constant and long-term leverage are statistically significant, at the 5% level of significance. All other variables are statistically insignificant in determining long-term leverage. Similar with overall leverage, the model has good significance as illustrated by the statistically significant F-statistic at the 5% significance level. The goodness of fit for the model is upright, with an R-squared value 0.776658. The model might suffer from negative autocorrelation detected by the Durbin-Watson D-statistic of 2.323330.

Table 4.45: The effect of EPU on Long-term Leverage (2002-2017) without herding being present in South African firms

Dependent Variable: LONG_TERM_LEVERAGE
Method: Panel Least Squares

Sample (adjusted): 2004 2011
Periods included: 8
Cross-sections included: 66
Total panel (unbalanced) observations: 369

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.038455	0.013480	2.852803	0.0046**
D(EPU)	-0.046918	0.031840	-1.473571	0.1415
FIRM_AGE	-4.70E-05	0.000248	-0.189376	0.8499
D(MARKET_CAPITALISATION)	1.58E-07	1.09E-07	1.446285	0.1490
D(PROFITABILITY,2)	2.99E-10	1.22E-09	0.245179	0.8065
DSALES	-7.10E-10	4.43E-10	-1.603735	0.1096
TOP_40	-0.000689	0.013896	-0.049587	0.9605
D(TANGIBILITY,2)	1.59E-12	1.26E-10	0.012620	0.9899
LONG_TERM_LEVERAGE(1)	0.867693	0.025275	34.32971	0.0000**

R-squared	0.776658	**Mean dependent var**	0.330250
Adjusted R-squared	0.771694	**S.D. dependent var**	0.261895
S.E. of regression	0.125137	**Akaike info criterion**	-1.294727
Sum squared resid	5.637341	**Schwarz criterion**	-1.199341
Log likelihood	247.8771	**Hannan-Quinn criter.**	-1.256835
F-statistic	156.4843	**Durbin-Watson stat**	2.323330
Prob(F-statistic)	0.0000		

Note: This table presents the OLS estimations without herding being present in South African firms. The effect of EPU on long-term leverage is analysed on the sample period from June 2002 to June 2017. * Significant at the 10% level, ** Significant at the 5% level, *** Significant at the 1% level.

In the analysis of the EPU variable, the leverage variable was added as a regressor in Table 4.46. This is to inspect if industry herding is significant in explaining leveraging behaviour by firms. The results in Table 4.46 show that the constant, EPU, market capitalisation, tangibility, leverage and the herding factor are statistically significant at the 5% significance level, whereas firm age is statistically significant at the 10% significance level. A positive change in EPU would result in firms increasing their leverage by a value of 0.032541 units, and the EPU term does not meet prior theoretical expectations by having a positive sign. The older the firm gets, its short-term leverage will slightly increase. Positive changes in market capitalisation will slightly decrease the leverage which shows that firm size does not affect the firm's ability to raise debt in the presence of herding. The more firms have tangible assets in the presence of herding in the market, the more the leverage increases as well. All else zero, the constant, leverage and herding factor increase by 0.576268, 0.032772 and 0.965842 units respectively. Compared to the original least squares regression, the R-squared value is larger,

so it is a better fit. The Durbin-Watson d statistic is larger than 2, implying that there is negative autocorrelation in the data.

Table 4.46: The effect of EPU on Leverage (2002-2017) with herding being present in South African firms

Dependent Variable: LEVERAGE
Method: Panel Least Squares

Sample (adjusted): 2004 2011
Periods included: 8
Cross-sections included: 66
Total panel (unbalanced) observations: 369

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.576268	0.008431	68.35107	0.0000**
D(EPU)	0.032541	0.006351	5.123829	0.0000**
FIRM_AGE	4.40E-05	5.01E-05	0.876651	0.3813
D(MARKET_CAPITALISATION)	-6.57E-08	2.18E-08	-3.020295	0.0027**
D(PROFITABILITY,2)	-1.12E-10	2.43E-10	-0.461787	0.6445
DSALES	1.52E-10	8.79E-11	1.724164	0.0855*
TOP_40	-0.001215	0.002723	-0.446240	0.6557
D(TANGIBILITY,2)	-1.00E-10	2.51E-11	-3.981247	0.0001**
LEVERAGE(1)	0.032772	0.013524	2.423220	0.0159**
HT	0.965842	0.013593	71.05347	0.0000**

R-squared	0.989672	**Mean dependent var**	0.611643
Adjusted R-squared	0.989413	**S.D. dependent var**	0.241769
S.E. of regression	0.024876	**Akaike info criterion**	-4.523109
Sum squared resid	0.222153	**Schwarz criterion**	-4.417125
Log likelihood	844.5136	**Hannan-Quinn criter.**	-4.481007
F-statistic	3822.430	**Durbin-Watson stat**	2.083895
Prob(F-statistic)	0.0000		

Note: This table presents the OLS estimations with herding being present in South African firms. The effect of EPU on leverage is analysed on the sample period from June 2002 to June 2017. * Significant at the 10% level, ** Significant at the 5% level, *** Significant at the 1% level.

Table 4.47 below illustrates the regression results for the Methods of Moments; the inferences show that the coefficients are all statistically insignificant except the constant and the leverage factors. The EPU term does not meet prior expectation by having a positive sign. Similarly, the market capitalisation and Top 40 terms are also statistically insignificant in estimating leverage. Contrastingly, the R-squared value of 0.707104 shows that the model is a good fit. The J-statistic is also very low, below the value of 10 inferring to the failure to meet the GMM system's over identification criteria. The Durbin-Watson d statistic is greater than 2, pointing to the existence of some negative autocorrelation.

The South Africa regression outputs for the GMM estimates are as follows:

Table 4.47: The GMM estimation on Leverage without herding being present in South African firms (2002-2017)

Dependent Variable: LEVERAGE
Method: Panel Generalized Method of Moments

Sample (adjusted): 2004 2011
Periods included: 8
Cross-sections included: 66
Total panel (unbalanced) observations: 367
2SLS instrument weighting matrix
Instrument specification: C LEVERAGE(-1) FIRM_AGE(-1) EPU(-1) SALES_GROWTH PROFITABILITY(-1) TANGIBILITY(-1) MARKET_CAPITALISATION(-1)
Constant added to instrument list

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-0.054266	0.024110	-2.250766	0.0250**
D(EPU)	0.128377	0.198874	0.645517	0.5190
FIRM_AGE	0.000414	0.000477	0.867645	0.3862
D(MARKET_CAPITALISATION)	2.09E-07	4.49E-07	0.465882	0.6416
D(PROFITABILITY,2)	2.26E-09	3.51E-09	0.645232	0.5192
DSALES	1.99E-09	1.55E-09	1.279921	0.2014
TOP_40	-0.065237	0.073861	-0.883246	0.3777
D(TANGIBILITY,2)	-1.22E-09	2.30E-09	-0.529029	0.5971
LEVERAGE(1)	1.091148	0.040399	27.00959	0.0000**

R-squared	0.707104	**Mean dependent var**	0.611926
Adjusted R-squared	0.700522	**S.D. dependent var**	0.242625
S.E. of regression	0.132776	**Sum squared resid**	6.276073
Durbin-Watson stat	2.374282	**J-statistic**	1.67E-23
Instrument rank	9		

Note: This table presents the GMM estimations without herding being present in South African firms. The effect of EPU on book leverage is analysed on the sample period from June 2002 to June 2017. * Significant at the 10% level, ** Significant at the 5% level, *** Significant at the 1% level.

Table 4.48 contains the Method of Moments estimation results for the short-term leverage. The table shows that the EPU term is statistically insignificant in determining the short-term leverage behaviour of firms. The term does not meet prior expectations as the EPU coefficient has a positive signage. All the likelihood estimates are statistically insignificant in determining the short-term leverage except short-term leverage. The GMM estimated model has some negative autocorrelation indicated by the Durbin-Watson statistic and it fails to meet the over identification criterion of the J-statistic.

Table 4.48: The GMM estimation on Short-term Leverage without herding being present in South African firms (2002-2017)

Dependent Variable: SHORT_TERM_LEVERAGE
Method: Panel Generalized Method of Moments

Sample (adjusted): 2004 2011
/Periods included: 8
Cross-sections included: 66
Total panel (unbalanced) observations: 369
2SLS instrument weighting matrix
Instrument specification: C LEVERAGE(-1) FIRM_AGE(-1) EPU(-1) SALES_GROWTH PROFITABILITY(-1) TANGIBILITY(-1) MARKET_CAPITALISATION(-1)
Constant added to instrument list

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	4.77E-05	0.028356	0.001681	0.9987
D(EPU)	0.027928	0.131556	0.212290	0.8320
FIRM_AGE	0.000142	0.000364	0.389428	0.6972
D(MARKET_CAPITALISATION)	-3.72E-07	3.58E-07	-1.039017	0.2995
D(PROFITABILITY,2)	-7.77E-10	2.50E-09	-0.311148	0.7559
DSALES	-2.45E-10	1.05E-09	-0.233637	0.8154
TOP_40	0.035787	0.050634	0.706786	0.4802
D(TANGIBILITY,2)	-2.44E-10	1.54E-09	-0.158287	0.8743
SHORT_TERM_LEVERAGE(1)	0.969617	0.086460	11.21457	0.0000**

R-squared	0.764853	**Mean dependent var**	0.284179
Adjusted R-squared	0.759598	**S.D. dependent var**	0.197622
S.E. of regression	0.096896	**Sum squared resid**	3.361195
Durbin-Watson stat	2.577501	**J-statistic**	2.62E-24
Instrument rank	9		

Note: This table presents the GMM estimations without herding being present in South African firms. The effect of EPU on short-term leverage is analysed on the sample period from June 2002 to June 2017. * Significant at the 10% level, ** Significant at the 5% level, *** Significant at the 1% level.

Table 4.49 below illustrates the regression results of the GMM estimation, with the long-term leverage as the regressand. The table shows that the differenced EPU is found to be statistically insignificant at the 5% significance level, although the term does not meet prior expectations as the EPU coefficient has a positive signage. A positive change in EPU would result in firms increasing their leverage by a value of 0.206588 units. This is due to the prospect of higher debt servicing costs in the long-term. The initial leverage levels are insignificant in the determination of the path of the long-term leverage of the firm. This removes the effect of current debt levels on the ability of the firm to raise new debt. All other variables are statistically insignificant at both the 5% and 10% significance levels. The model does not meet the over identification criteria of the J-statistic as it is statistically insignificant at the 5% level, has a poor fit represented by a low R-squared value and the model could also exhibit serial correlation and model specification error indicated by the Durbin-Watson test statistic.

Table 4.49: The GMM estimation on Long-term Leverage without herding being present in South African firms (2002-2017)

Dependent Variable: LONG_TERM_LEVERAGE
Method: Panel Generalized Method of Moments

Sample (adjusted): 2004 2011
Periods included: 8
Cross-sections included: 66
Total panel (unbalanced) observations: 367
2SLS instrument weighting matrix
Instrument specification: C LEVERAGE(-1) FIRM_AGE(-1) EPU(-1) SALES_GROWTH PROFITABILITY(-1) TANGIBILITY(-1) MARKET_CAPITALISATION(-1)
Constant added to instrument list

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-0.024341	0.031461	-0.773693	0.4396
D(EPU)	0.206588	0.359805	0.574168	0.5662
FIRM_AGE	0.000718	0.000906	0.792710	0.4285
D(MARKET_CAPITALISATION)	1.04E-06	8.51E-07	1.219299	0.2235
D(PROFITABILITY,2)	3.90E-09	6.02E-09	0.648874	0.5168
DSALES	3.09E-09	2.82E-09	1.094705	0.2744
TOP_40	-0.190070	0.152557	-1.245899	0.2136
D(TANGIBILITY,2)	-2.14E-09	4.17E-09	-0.513211	0.6081
LONG_TERM_LEVERAGE(1)	1.155091	0.102714	11.24571	0.0000**

R-squared	0.290033	**Mean dependent var**	0.329853
Adjusted R-squared	0.274079	**S.D. dependent var**	0.262383
S.E. of regression	0.223553	**Sum squared resid**	17.79149
Durbin-Watson stat	2.369555	**J-statistic**	6.82E-25
Instrument rank	9		

Note: This table presents the GMM estimations without herding being present in South African firms. The effect of EPU on long-term leverage is analysed on the sample period from June 2002 to June 2017. * Significant at the 10% level, ** Significant at the 5% level, *** Significant at the 1% level.

Table 4.50 below depicts the GMM regression results for the leverage model inclusive of industry leverage behaviour, this being incorporated by the herding effects term. Unlike the least squares analysis, the constant, leverage and herding effect are statistically significant from zero at the 5% level of significance. Though biased, the differenced EPU term meets prior theoretical expectations as the EPU coefficient has a negative signage. In the presence of herding, all else zero, the constant and leverage variables will increase the leverage by 0.460933 and 0.222907 respectively. The model is a good fit as shown with a high R-squared value of 0.982230. The J-statistic is also statistically insignificant from zero, such that the over identification criteria is not satisfied. The Durbin-Watson d statistic is more than 2, pointing to the existence of some negative autocorrelation.

Table 4.50: The GMM estimation on Leverage with herding being present in South African firms (2002-2017)

Dependent Variable: LEVERAGE
Method: Panel Generalized Method of Moments

Sample (adjusted): 2004 2011
Periods included: 8
Cross-sections included: 66
Total panel (unbalanced) observations: 367
2SLS instrument weighting matrix
Instrument specification: C LEVERAGE(-1) FIRM_AGE(-1) EPU(-1) SALES_GROWTH PROFITABILITY(-1) TANGIBILITY(-1) MARKET_CAPITALISATION(-1) HT(-1)
Constant added to instrument list

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.460933	0.061720	7.468182	0.0000**
D(EPU)	-0.015026	0.046216	-0.325124	0.7453
FIRM_AGE	5.98E-05	0.000114	0.524076	0.6006
D(MARKET_CAPITALISATION)	1.08E-08	1.09E-07	0.099071	0.9211
D(PROFITABILITY,2)	9.16E-11	8.58E-10	0.106754	0.9150
DSALES	3.93E-10	3.62E-10	1.083397	0.2794
TOP_40	-0.001222	0.017374	-0.070309	0.9440
D(TANGIBILITY,2)	-3.26E-11	5.44E-10	-0.059922	0.9523
LEVERAGE(1)	0.222907	0.102815	2.168034	0.0308**
HT	0.790552	0.095723	8.258783	0.0000**

R-squared	0.982230	**Mean dependent var**	0.611926
Adjusted R-squared	0.981780	**S.D. dependent var**	0.242625
S.E. of regression	0.032750	**Sum squared resid**	0.380760
Durbin-Watson stat	2.327039	**J-statistic**	8.57E-19
Instrument rank	10		

Note: This table presents the GMM estimations with herding being present in South African firms. The effect of EPU on leverage is analysed on the sample period from June 2002 to June 2017. * Significant at the 10% level, ** Significant at the 5% level, *** Significant at the 1% level.

4.4 Discussion of results

A summary of results showing only significant variables are presented for each country and will be discussed in depth.

Brazil

There seems to be no excessive multicollinearity the Brazil data and all variables are at stationary levels except profitability, EPU and tangibility. This means that the statistical properties of profitability, EPU and tangibility vary with time and market events, which is a concern. Given that

EPU in Brazil is high mostly due to corruption[28], it is expected that firms will lower their leverage ratios.

Both OLS and GMM estimations show EPU to be statistically insignificant in explaining the overall leverage, short-term leverage and long-term leverage without the presence of herding as shown in Table 4.51. This implies that the change in EPU does not affect the debt decisions of Brazilian firms. Like Akey and Lewellen (2015) state, Brazilian firms can also hedge against EPU by vigorously trying to impact the policy-making process. This means that Brazilian firms have a more grounded incentive to take part in the political procedure than comparable, policy-neutral firms. Table 4.51 also shows that the age of a firm matters and affects the leverage decisions of a Brazilian firm during uncertainty periods. The herding effect is statistically significant and is positively related to the leverage ratio of firms using OLS estimations, while statistically insignificant and negatively related to the leverage ratio of firms using GMM estimations. This corresponds with Hwang and Salmon (2004) having found proof of herding towards the market portfolio both when the market is rising and when it is falling. EPU is statistically insignificant in the presence of herding. Although statistically insignificant, the differenced EPU term is consistent with prior expectations of a negative relation to leverage in both the OLS and GMM estimations.

Brazil firms rely more towards leverage financing as it may be cheaper than equity and more convenient to undertake. The banking system in Brazil is more reliable, although interest rates are high when one considers borrowing funds. Overall, this implies that firms will decrease their leverage ratio when there is policy uncertainty in the market and borrow more when the market is stable again. In the presence of herding however, whether leverage increases or decreases due to herding, EPU still remains negatively related to leverage. The results are as expected, as EPU has a negative relationship with leverage financing decisions (Zhang *et al*., 2015).

[28] Article "Brazil's political and economic future remain uncertain" with Dr Sabatini's commentary, retrieved from https://www.pacificcouncil.org/newsroom/brazil%E2%80%99s-political-and-economic-future-remain-uncertain

Table 4.51: Summary of Brazilian Results

	EPU	*Ht*	*ST Lev*	*LT Lev*
C				
D(EPU)				
FIRM_AGE	*-0.045281**		*0.045671***	*-0.099876***
D(MARKET_CAPITALISATION)		*1.50E-05***		
D(PROFITABILITY)				
DSALES				
TOP_40				
D(TANGIBILITY)				
LEVERAGE(1)				
HT		*0.999148***		

** Significant at the 10% level, ** Significant at the 5% level, *** Significant at the 1% level.*

Russia

There seems to be no excessive multicollinearity in the Russia data and the leverage variables are all at stationary levels, as well as Market Capitalisation. The remaining variables are found to be integrated of the first order, thus difference stationary. Those variables vary with time and market events.

Table 4.52 presents a summary of the OLS estimations that show changes in EPU are statistically insignificant in the determination of overall firm leverage as well as long-term leverage meeting prior theoretical expectations of negative signage. EPU is found to be statistically insignificant in the determination of firm short-term leverage but does not meet prior theoretical expectations because of a positive relationship as demonstrated in Table 4.52. In the presence of herding, EPU is statistically significant and has the expected sign and this makes it consistent with the findings of Zhang *et al.* (2015), which show that increased EPU will cause firms to deleverage. Herding is statistically significant and positively related to leverage.

The GMM estimations show that the EPU term is insignificant in the determination of leverage and short-term leverage. Although biased, the EPU term meets prior theoretical expectations by having a negative sign. The EPU term is insignificant for long-term leverage, but does not meet prior theoretical expectations. The EPU is insignificant and has a positive sign in the presence of herding. Herding is insignificant and negatively related to leverage. This follows findings by Seetharam and Britten (2013) where after conducting a few tests of herding behaviour, found that herding was

observed to be present relative to market conditions. In other words, herding was absent within the market in general and significantly present in bear markets.

Given that when the degree of EPU in Russia increases, it is expected that firms are likely to decrease their leverage ratios similar to Brazil. Banks constitute a large share of Russia's financial system but are poorly established. Nonetheless, capital from Russian banks is made available over short-term periods which prevent the possibility of long-term investments being funded from the banks. Overall, Table 4.52 shows that EPU is statistically insignificant in determining leverage and the relationship between the two variables varies given the market shocks, funding availability and restrictions within the Russian financial system. During times of economic policy uncertainty, Russian firms decrease their borrowings and herd their financing decisions towards the market.

Table 4.52: Summary of Russian Results

	EPU	***Ht***	***ST Lev***	***LT Lev***
C	*0.183491***	*0.504782***	*0.105134***	*0.194686***
D(EPU)		*-0.000188****		
FIRM_AGE		*0.000586***		
D(MARKET_CAPITALISATION)		*1.24E-08***		
D(PROFITABILITY)				
DSALES				
TOP_40			*-0.038834**	
D(TANGIBILITY)	*3.21E-11**		*2.94E-11***	
LEVERAGE(1)	*0.656368***	*0.059848***	*0.649719***	*0.233044***
HT	*0.964966***			

** Significant at the 10% level, ** Significant at the 5% level, *** Significant at the 1% level.*

India

Results show that there are satisfactory levels of multicollinearity amongst regressors except for the constant, which might be caused by cross-sectional fixed effects. The regressors in the model are all at stationary levels except EPU, tangibility, market capitalisation, sales growth as well as profitability, which is a concern. Sales growth, EPU and Market Capitalisation are integrated of order 1 whilst the others are integrated of order 2. Given that when the degree of EPU in India increases, it is expected that firms are likely to decrease their leverage ratios.

Table 4.53 shows that both OLS and GMM estimations are consistent with each other where EPU is statistically insignificant in explaining the overall leverage, short-term leverage and long-term

leverage without the presence of herding. In the presence of herding, EPU and herding variables are statistically significant. This corresponds with Hwang and Salmon (2004) having found proof of herding towards the market portfolio both when the market is rising and when it is falling. Although statistically insignificant, the differenced EPU term is inconsistent with prior expectations of a negative relation to leverage in both the OLS and GMM estimations.

Overall, a positive change in EPU would result in firms increasing their borrowing level and this is due to different financing sources that may be coming at a cheaper rate during a crisis. This is in contrast with the findings of Akey and Lewellen (2015) and Zhang *et al.* (2015). India's financial system is seen as a diversified system as sources of financing come from different streams in the country such as a growth in the participation of the private sector and nonbank intermediaries. This implies that firms will increase their leverage ratio when there is policy uncertainty in the market and borrow less when the market is stable again. In the presence of herding however, whether leverage increases or decreases due to herding, EPU still remains positively related to leverage. The results are not as expected based on the hypothesis stated in this research and are in contrast with what Zhang *et al*. (2015) found. During times of economic policy uncertainty, Indian firms find other cheaper alternative borrowing mechanisms to finance their firms operations.

Table 4.53: Summary of Indian Results

	EPU	***Ht***	***ST Lev***	***LT Lev***
C	*0.107342***	*0.624510***	*0.044716***	*0.063034***
D(EPU)	*3.35E-05****	*0.000240***		
FIRM_AGE				
D(MARKET_CAPITALISATION)	*2.03E-08***	*-2.10E-07***		
D(PROFITABILITY)		*-5.44E-10****		
DSALES				
TOP_40				
D(TANGIBILITY)				
LEVERAGE(1)	*0.824918***	*0.011803**	*0.844844***	*0.800702***
HT	*0.988839***	*1.016027***		

** Significant at the 10% level, ** Significant at the 5% level, *** Significant at the 1% level.*

China

There seems to be no excessive multicollinearity in the China data and the tests reveal that the leverage variables are all stationary at their respective levels. Profitability, Sales growth, Market

Capitalisation and EPU are stationary after one differencing and Tangibility achieves stationarity after twice being differenced.

In Table 4.54, both OLS and GMM estimations show EPU to be statistically insignificant in explaining the overall leverage, short-term leverage and long-term leverage without the presence of herding, but does not meet prior theoretical expectations because of a positive relationship. The differenced EPU term is consistent with prior expectations of a negative relation to short-term leverage in the OLS estimation. In the presence of herding, EPU is statistically insignificant yet does not meet prior theoretical expectations because of a positive relationship in the presence of herding. Herding is statistically significant but positive relationship in the OLS estimations while in the GMM estimations herding is statistically insignificant in the presence of herding but has a negative relationship. This corresponds with Hwang and Salmon (2004) having found proof of herding towards the market portfolio both when the market is rising and when it is falling.

China's financial system is bank-dominated and given the ratio of credit to GDP surpassing the benchmarks by wide margins, China appears to have the largest banking system in the world. Though there are private and publicly owned banks, there seems to be no significant competition among them. Given that when the degree of EPU in China increases, it is expected that firms are likely to decrease their leverage ratios. The overall results show a positive relationship on average which is in contrast with the expectations. This may be due to the diversity and flexibility of different finance sources available in both short-term and long-term periods.

This means that during times of economic policy uncertainty, Chinese firms are policy-neutral firms, which does not make them susceptible to hedge against EPU. Chinese firms increase their borrowing levels during times of economic policy uncertainty, which is in contrast with Zhang *et al.* (2015).

Table 4.54: Summary of Chinese Results

	EPU	*Ht*	*ST Lev*	*LT Lev*
C	*0.044798***	*0.583100***	*0.020290****	
D(EPU)				
FIRM_AGE				
D(MARKET_CAPITALISATION)				
D(PROFITABILITY)	*-9.49E-11***		*-5.05E-10***	
DSALES				
TOP_40				
D(TANGIBILITY)	*-3.10E-11***			
LEVERAGE(1)	*0.903716***	*0.011104***	*0.925506***	*0.948503***
HT	*0.990808***			

** Significant at the 10% level, ** Significant at the 5% level, *** Significant at the 1% level.*

South Africa

There seems to be no excessive multicollinearity in the South African data. The multiple leverage series are stationary at the 1% level of significance whilst the EPU, Market Capitalisation and Sales growth are found to be stationary after the 1st difference and the remaining variables are found to be stationary after two differences.

The OLS estimator shows that EPU is statistically insignificant in explaining the overall leverage and long-term leverage without the presence of herding, however, meets prior theoretical expectations of having a negative sign. Table 4.55 shows that EPU is statistically significant in explaining the short-term leverage but does not meet prior theoretical expectations. In the presence of herding, EPU and herding is statistically significant but does not meet prior theoretical expectations.

The GMM estimator shows that EPU is statistically insignificant in explaining the overall leverage, short-term leverage and long-term leverage without the presence of herding, but does not meet prior theoretical expectations. In the presence of herding, EPU is statistically insignificant and meets prior theoretical expectations of a negative signage, while herding is statistically significant but does not meet prior theoretical expectations.

Given that when the degree of EPU in South Africa increases, it is expected that firms are likely to decrease their leverage ratios. Looking at the overall results, though insignificant but they on average meet the prior theoretical expectations of a negative relationship with leverage. Corruption and a

sense of uncertainty in the country has had a big impact on the economy and causing a decline its economic growth. Corrupt individuals use state resources for their own personal use, which bankrupts the country to fulfil its cause. Although most banking assets and liabilities are domestic and expanding into Africa, foreign assets minimally exist and most bank liabilities are domestic, short-term, and wholesale. The largest source of funding comes from domestic credit while short-term credit from non-bank financial institutions and corporations form a minimal part of financial assets, which have been gradually growing in the country.

Overall, during times of economic policy uncertainty, firms decrease their borrowing levels, which is consistent with the findings of Akey and Lewellen (2015) and Zhang *et al.* (2015). Sum (2012) agrees with the above and further says that during periods with high policy uncertainty, credit availability may become limited because banks may have low confidence and fear in the markets, which is the case in South African results. Firms show that during times of economic policy uncertainty herding is present relative to market conditions. This corresponds with Hwang and Salmon (2004) having found proof of herding towards the market portfolio both when the market is rising and when it is falling. Seetharam and Britten (2013) concurs with the above as they additionally discovered that herding behaviour seems to rise before a market contraction. The caveat of this study is that Akey and Lewellen (2015) and Zhang *et al.* (2015) used Baker *et al.* (2012) to measure EPU while for South Africa, EPU was measured according to Brogaard and Detzel (2015) instead. Nevertheless, results were in accordance with developed economies, demonstrating the high level of advancement in South Africa's monetary related markets.

Table 4.55: Summary of South African Results

	EPU	***Ht***	***ST Lev***	***LT Lev***
C	*0.040326***	*0.576268***	*0.020066**	*0.038455****
D(EPU)		*0.006351***	*0.050943***	
FIRM_AGE			*0.000343**	
D(MARKET_CAPITALISATION)		*-6.57E-08****	*-1.84E-07***	
D(PROFITABILITY)				
DSALES		*1.52E-10**	*8.08E-10****	*-7.10E-10**
TOP_40				
D(TANGIBILITY)		*-1.00E-10***		
LEVERAGE(1)	*0.910867***	*0.032772***	*0.895468***	*0.867693***
HT	*0.790552***	*0.965842***		

** Significant at the 10% level, ** Significant at the 5% level, *** Significant at the 1% level.*

Table 4.56 below is a summary of the BRICS countries' statistically significant regressors from the four regressions on both the OLS and GMM estimations section 4.3. The regressions are: the effect of EPU on Leverage (A), the effect of EPU on Short-Term Leverage (B), the effect of EPU on Long-Term Leverage (C) and the effect of EPU and Herding on Leverage (D).

Brazil shows firm age to be significant in A, B and C but insignificant in the presence of the herding factor in D of the OLS estimations. This implies that in Brazil, the age of a firm matters and affects the leverage decisions during uncertainty periods. In contrast, all the Brazilian variables are insignificant in A, B, C and D of the GMM estimations.

Russia shows that all else zero, the dependent variables of A, B, C, and D and their initial values are significant in both the OLS and GMM regressions. In D (OLS Estimations), Russia considers a firms market capitalisation, a firms age and the degree of uncertainty to herd a leverage decision from specific firms.

India shows that all else zero, the dependent variables of A, B and C, and their initial values are significant in the OLS regressions while all the Indian variables are insignificant in A, B and C of the GMM estimations. Regression D of both the OLS and GMM seems to consider a firm's market capitalisation, how profitable a firm is and the degree of uncertainty to herd a leverage decision from specific firms.

China presents the dependent variables of A, B, C, and D and their initial values to be significant in the OLS regressions while the dependent variables of B and C of the GMM Regressions are the only variables that are significant. In order for a Chinese firm to imitate another firm's leverage decision making in the market, how profitable a firm is stands a very important question to answer so as to make that decision as shown in D of the OLS regressions.

South Africa shows that all else zero, the dependent variables of A, B, C, and D and their initial values are significant in both the OLS and GMM regressions. In order to make a short-term leverage decision, B of the OLS estimations, a South African firm considers a firms age, market capitalisation, sales level, the degree of uncertainty and the firms' initial level of short-term leverage. Regression D of the OLS seems to consider a firms market capitalisation, sales level, how profitable a firm is, how tangible the assets of the firm are and the degree of uncertainty to herd a leverage decision from specific firms in the market.

The Top 40 variable is insignificant in both the OLS and GMM estimations for all the countries. This implies that being in the Top 40 does not affect the determination of leverage during policy uncertainty.

Overall, in Table 4.56, the OLS model is a better and clearer estimate model than the GMM model. All the countries (except china) consider market capitalisation (profitability) before making the decision to herd in the market during policy uncertainty. South Africa and Russia considers a most of the variables before making the decision to herd in the market during policy uncertainty. In conclusion, during times of economic policy uncertainty, firms make leverage financing decisions on their own not considering other factors but in the short-term and in the presence of herding, other factors are considered before making the leverage financing decisions.

Considering the primary and secondary hypothesis:

Primary Hypothesis

H_0: There is no significant relation with economic policy uncertainty being a factor in determining firm leverage financing decisions.

H_1: There is a significant relation with economic policy uncertainty being a factor in determining firm leverage financing decisions.

Russian, Indian and South African results reject the null hypothesis and conclude that there is a significant relation with EPU being a factor in determining firm leverage financing decisions. Brazilian and Chinese results fail to reject the null hypothesis and conclude that there is no significant relation with EPU being a factor in determining firm leverage financing decisions.

Secondary Hypothesis

H_0: There is no significant relation with less economic policy uncertainty leading to little or no herding towards firm leverage financing decisions.

H_1: There is a significant relation with more economic policy uncertainty leading to herding towards firm leverage financing decisions.

Russian, Indian and South African results reject the null hypothesis and conclude that there is a significant relation with more EPU leading to herding towards firm leverage financing decisions. Brazilian and Chinese results fail to reject the null hypothesis and conclude that there is no significant relation with less EPU leading to little or no herding towards firm leverage financing decisions.

Table 4.56: Summary of overall BRICS Results – OLS and GMM Estimations

	OLS Estimations			
	EPU on Leverage (A)	**EPU on ST Leverage (B)**	**EPU on LT Leverage (C)**	**EPU and Ht on Leverage (D)**
Brazil	Firm age	Firm age	Firm age	D(Market_Capitalisation) Ht
Russia	C Leverage (1)	C D(Tangibility) Short Term Leverage (1)	C Long Term Leverage (1)	C D(EPU) Firm age Leverage (1) D(Market_Capitalisation) Ht
India	C Leverage (1)	C D(Sales) Short Term Leverage (1)	C Long Term Leverage (1)	C D(EPU) D(Market_Capitalisation) Ht
China	C D(Tangibility) Leverage (1)	C D(Profitability) Short Term Leverage (1)	Long Term Leverage (1)	C Leverage (1) D(Profitability) Ht
South Africa	C Leverage (1)	C Short Term Leverage (1) D(EPU) Firm age D(Sales) D(Market_Capitalisation	C Long Term Leverage (1)	C D(EPU) D(Sales) D(Tangibility) Leverage (1) D(Market_Capitalisation) Ht
	GMM Estimations			
	EPU on Leverage (A)	**EPU on ST Leverage (B)**	**EPU on LT Leverage (C)**	**EPU and Ht on Leverage (D)**
Brazil	-	-	-	-
Russia	Leverage (1)	Short Term Leverage (1)	Long Term Leverage (1)	Leverage (1)
India	-	-	-	C D(EPU) D(Profitability) D(Market_Capitalisation) Ht
China	-	Short Term Leverage (1)	Long Term Leverage (1)	-
South Africa	C Leverage (1)	Short Term Leverage (1)	Long Term Leverage (1)	C Leverage (1) Ht

** Significant at the 10% level, ** Significant at the 5% level, *** Significant at the 1% level.*

4.4.1 Political regime groups

Authoritarian countries

China and Russia are authoritarian countries and practice variations of state capitalism. The results from both these countries show that they are similar in showing no excessive multicollinearity and the tests reveal that the leverage variables are all stationary at their respective levels.

However, these two countries show differences in herding and EPU results. In the presence of herding, EPU in Russia is statistically significant which shows that increased EPU will cause firms to deleverage which is contrary to China. During times of economic policy uncertainty, Russian firms decrease their borrowings and herd their financing decisions towards the market. In contrast, Chinese firms are policy-neutral firms, which does not make them susceptible to hedge against EPU. Chinese firms increase their borrowing levels during times of economic policy uncertainty. The contrast in these results show that each of these two countries have their own way of making decisions according to the policies and resources available.

Democratic countries

Brazil, India, and South Africa are grouped as democratic countries and their overall results are somewhat similar. All the three countries' results show that there are satisfactory levels of multicollinearity amongst regressors and that in the presence of herding; the EPU variable is statistically significant.

EPU seems to affect the three countries differently. When the degree of EPU increases, it is expected that firms in South Africa are likely to decrease their leverage ratios, while firms in India increase their leverage ratios and firm leverage decisions in Brazil does not get affected by EPU changes. The similarities and differences in these three countries show that the policies are aligned in a similar direction though they have different resources and country specific advantages that support them in moving towards the leverage and herding decisions.

4.4.2 Robustness

The effect of herding on returns will be tested to determine how it impacts the outcome of making leverage finance decisions in the leverage equation. Therefore, the herding measure is not assumed to be affected by market-wide mispricing (like bubbles), but is designed to capture cross-sectional herding behaviour only within the market. These checks examine how the leverage and herding

factors behave when the regression specification is modified. If the coefficients are plausible and robust, this is commonly interpreted as evidence of structural validity. Two robustness checks will be performed below, market-to-book leverage analysis and the CAPM herding analysis.

4.4.2.1 Market-to-Book leverage analysis

The data used here as a robustness check are based on the market values of leverage. Descriptive statistics of both book and market leverage and a comparison of both are presented below. The regressions that demonstrate the effect of EPU on the change in market leverage and market-to-book leverage in the presence of herding are presented below as well.

4.4.2.1.1 Descriptive Statistics

Brazil

Table 4.57 shows that Brazil's book and market leverage data lacks symmetry as seen by the majority of variables being negatively skewed while only change in market leverage and market-to-book leverage are positively skewed. Brazil's kurtosis distribution is platykurtic although change in market leverage and market-to-book leverage are leaning more towards being mesokurtic, taking the sample size into consideration. The Jacques-Bera statistic in Table 4.57 fails to reject the null hypothesis that the errors are normally distributed.

Russia

Table 4.58 shows that Russia's book and market leverage data lacks symmetry as seen by the majority of variables being positively skewed while only the average market leverage and book-to-market leverage are negatively skewed. Russia's kurtosis distribution is leptokurtic except for change in both book and market leverage as well as market-to-book leverage. The Jacques-Bera statistic in Table 4.58 fails to reject the null hypothesis that the errors are normally distributed.

India

Table 4.59 shows that India's book and market leverage data lacks symmetry as seen by the majority of variables being positively skewed while only market-to-book leverage are negatively skewed. Brazil's kurtosis distribution is platykurtic except for change in market leverage leaning more towards being mesokurtic while change in book leverage and market-to-book leverage are leptokurtic. The

Jacques-Bera statistic in Table 4.59 fails to reject the null hypothesis that the errors are normally distributed but rejects the null hypothesis for change in book leverage and book-to-market leverage.

China

Table 4.60 shows that China's book and market leverage data lacks symmetry as seen by the majority of variables being positively skewed while only average market leverage and change in book leverage are negatively skewed. Brazil's kurtosis distribution is platykurtic although change in book leverage leptokurtic. The Jacques-Bera statistic in Table 4.60 fails to reject the null hypothesis that the errors are normally distributed while the null hypothesis is rejected for change in book leverage.

South Africa

Table 4.61 shows that South Africa's book and market leverage data lacks symmetry as seen by all the variables being positively skewed and the kurtosis distribution being platykurtic while change in book leverage and book-to-market leverage are leptokurtic. The Jacques-Bera statistic in Table 4.61 fails to reject the null hypothesis that the errors are normally distributed.

Table 4.57: Brazil's Book and Market Leverage Descriptive statistics (2002-2017)

	AVE_BOOK_LEV	AVE_MKT	CHANGE_IN_BOOK_LEV	CHANGE_IN_MKT_LEV	BOOK_TO_MKT	MKT_TO_BOOK
Mean	1.19E+10	1.90E+10	0.137515	0.212771	0.619674	1.731546
Median	1.31E+10	2.17E+10	0.178322	0.111203	0.628447	1.601298
Maximum	1.90E+10	3.41E+10	0.296390	0.991700	0.877984	2.923425
Minimum	2.56E+09	3.03E+09	-0.019494	-0.398669	0.342064	1.138973
Std. Dev.	6.44E+09	8.73E+09	0.115594	0.362471	0.160784	0.501464
Skewness	-0.218432	-0.321229	-0.129685	0.577192	-0.047924	0.846525
Kurtosis	1.362611	2.125939	1.302880	2.790032	1.863890	2.963487
Jarque-Bera	1.914595	0.784490	1.964993	0.917793	0.866622	1.911836
Probability	0.383929	0.675539	0.374375	0.631981	0.648359	0.384459
Sum	1.90E+11	3.03E+11	2.200238	3.404339	9.914776	27.70473
Sum Sq. Dev.	6.23E+20	1.14E+21	0.200430	1.970783	0.387772	3.771995
Observations	725	725	725	725	725	725

This table provides the descriptive statistics for the Book and Market variables used in this study at 90% and 95% confidence level. Source: eViews output

Table 4.58: Russia's Book and Market Leverage Descriptive statistics (2002-2017)

	AVE_BOOK_LEV	AVE_MKT	CHANGE_IN_BOOK_LEV	CHANGE_IN_MKT_LEV	BOOK_TO_MKT	MKT_TO_BOOK
Mean	3.95E+11	3.75E+11	0.241814	0.320420	1.086148	1.011762
Median	3.93E+11	4.50E+11	0.162906	0.157517	1.106484	0.904249
Maximum	8.51E+11	7.51E+11	0.896233	1.647673	1.573941	1.898552
Minimum	2.40E+10	2.28E+10	-0.519973	-0.364816	0.526717	0.635348
Std. Dev.	2.71E+11	2.30E+11	0.332852	0.507862	0.300982	0.369221
Skewness	0.161983	-0.194549	0.036008	1.162459	-0.385659	1.399427
Kurtosis	1.834394	2.079325	3.595943	3.929483	2.415695	3.866371
Jarque-Bera	0.975727	0.666027	0.240223	4.179456	0.624230	5.722790
Probability	0.613937	0.716761	0.886821	0.123721	0.731897	0.057189
Sum	6.31E+12	6.00E+12	3.869023	5.126725	17.37837	16.18819
Sum Sq. Dev.	1.10E+24	7.97E+23	1.661859	3.868858	1.358854	2.044863
Observations	389	389	389	389	389	389

This table provides the descriptive statistics for the Book and Market variables used in this study at 90% and 95% confidence level. Source: eViews output

Table 4.59: India's Book and Market Leverage Descriptive statistics (2002-2017)

	AVE_BOOK_LEV	AVE_MKT	CHANGE_IN_BOOK_LEV	CHANGE_IN_MKT_LEV	BOOK_TO_MKT	MKT_TO_BOOK
Mean	1.59E+11	3.93E+11	0.280870	0.259056	0.422343	2.601700
Median	1.35E+11	3.47E+11	0.195122	0.227644	0.373218	2.684636
Maximum	3.70E+11	9.71E+11	2.306786	0.947807	0.950950	3.683133
Minimum	2.10E+10	3.77E+10	-0.575042	-0.260500	0.271508	1.051580
Std. Dev.	1.22E+11	2.91E+11	0.583243	0.307971	0.166252	0.687322
Skewness	0.427064	0.527348	2.652892	0.669334	2.156908	-0.569887
Kurtosis	1.778498	2.171297	10.68872	3.078724	7.465973	2.888379
Jarque-Bera	1.481068	1.199421	58.17846	1.198818	25.70262	0.874364
Probability	0.476859	0.548970	0.000000	0.549136	0.000003	0.645854
Sum	2.54E+12	6.29E+12	4.493915	4.144900	6.757496	41.62720
Sum Sq. Dev.	2.22E+23	1.27E+24	5.102584	1.422688	0.414594	7.086183
Observations	771	771	771	771	771	771

This table provides the descriptive statistics for the Book and Market variables used in this study at 90% and 95% confidence level. Source: eViews output

Table 4.60: China's Book and Market Leverage Descriptive statistics (2002-2017)

	AVE_BOOK_LEV	AVE_MKT	CHANGE_IN_BOOK_LEV	CHANGE_IN_MKT_LEV	BOOK_TO_MKT	MKT_TO_BOOK
Mean	1.45E+11	1.54E+11	0.160571	0.149760	0.873530	1.396830
Median	1.36E+11	1.59E+11	0.175262	0.108720	0.871658	1.149973
Maximum	2.99E+11	2.43E+11	0.492419	0.721534	1.762155	2.600424
Minimum	2.09E+10	3.64E+10	-0.436570	-0.295572	0.384553	0.567487
Std. Dev.	9.52E+10	6.19E+10	0.200636	0.295628	0.409977	0.632983
Skewness	0.285540	-0.367765	-1.454263	0.236746	0.810976	0.536638
Kurtosis	1.795855	2.169096	6.257264	2.353686	2.888575	2.088165
Jarque-Bera	1.184064	0.820938	12.71286	0.427944	1.762097	1.322242
Probability	0.553202	0.663339	0.001736	0.807371	0.414348	0.516272
Sum	2.32E+12	2.46E+12	2.569131	2.396153	13.97648	22.34928
Sum Sq. Dev.	1.36E+23	5.74E+22	0.603819	1.310938	2.521217	6.010021
Observations	775	775	775	775	775	775

This table provides the descriptive statistics for the Book and Market variables used in this study at 90% and 95% confidence level. Source: eViews output

Table 4.61: South Africa's Book and Market Leverage Descriptive statistics (2002-2017)

	AVE_BOOK_LEV	AVE_MKT	CHANGE_IN_BOOK_LEV	CHANGE_IN_MKT_LEV	BOOK_TO_MKT	MKT_TO_BOOK
Mean	1.66E+08	3.60E+08	0.165827	1.298929	1.300018	2.033651
Median	1.36E+08	2.29E+08	0.175728	0.405579	0.588543	1.705591
Maximum	3.51E+08	9.68E+08	0.692406	6.520689	5.297363	5.300752
Minimum	32445395	12039898	-0.236601	-0.838442	0.188652	0.188773
Std. Dev.	1.08E+08	3.38E+08	0.193976	2.323295	1.406887	1.692191
Skewness	0.422518	0.491359	0.747085	1.040241	1.557354	0.583847
Kurtosis	1.731265	1.751017	5.298309	2.897120	4.955567	2.053875
Jarque-Bera	1.549182	1.683795	5.009847	2.892659	9.017103	1.505776
Probability	0.460892	0.430892	0.081682	0.235433	0.011014	0.471004
Sum	2.66E+09	5.76E+09	2.653238	20.78286	20.80029	32.53841
Sum Sq. Dev.	1.76E+17	1.71E+18	0.564403	80.96552	29.68995	42.95264
Observations	399	399	399	399	399	399

This table provides the descriptive statistics for the Book and Market variables used in this study at 90% and 95% confidence level. Source: eViews output

4.4.2.1.2 Comparison of Book and Market leverage

Brazil

The market leverage of Brazilian firms show an inconsistent pattern in Figure 4.6 expressing two troughs in 2008 and 2015. Whereas the book leverage indicate a consistent gradual increase and expressing an approximate static level from 2015 to 2017. This graph meets the expectation of market leverage performing higher than the book leverage but gradually increasing though not in a similar pattern. This shows that Brazilian firms decreased their leverage every time there is a dip in the market, this is shown by the small dips on the book leverage graph every time there is a trough in the market leverage graph. Overall, this implies that firms will decrease their leverage ratio when there is policy uncertainty in the market and borrow more when the market is stable again.

Russia

Russian firms were in sync with the market until the market leverage outperformed the book leverage in 2005 and Russian firms outperformed the market level from 2011 to 2016. Russian firms significantly decreased their leverage between 2016 and 2017 as shown in Figure 4.7. This shows that Russian firms were not susceptible to how the market performed which is in contrast with the regression results above.

India

Figure 4.8 shows the market leverage growing exponentially above the book leverage with an interesting disturbance in the pattern. The decrease in market leverage from 2008 to 2009 cause an increase in book leverage from 2009 to 2010 then decreased back to the normal patter from 2011 onwards. During times of economic policy uncertainty, Indian firms find other cheaper alternative borrowing mechanisms to finance their firms operations.

China

Figure 4.9 shows a similar yet unique pattern as to Russia. Regardless of how the market was performing, Chinese book leverage exponentially increased though it took a huge dip in 2016.This means that during times of economic policy uncertainty, Chinese firms are policy-neutral firms, which does not make them susceptible to hedge against EPU. Chinese firms increase their borrowing levels during times of economic policy uncertainty, which is in contrast with Zhang et al. (2015) and the results found in the regressions above.

South Africa

South African market leverage has a thorough fluctuating pattern which the book leverage pattern does not follow at all shown in Figure 4.10. The book leverage takes a gradually increasing pattern showing a slight increase in 2012 and decreasing back to the norm in 2014. This indicates that South African firms are not shaken by market conditions, which is in contrast with what was found in the regression results above.

Overall, the graphs show the inconsistency of BRICS countries following the market leverage in sync. This may also indicate that some book leverages may not be recorded and perhaps borrowing on informal platforms. These countries also show that firms gradually increase their leverage as the years go by regardless of the market leverage conditions. This is in contrast with the expectations that they move in sync with the market leverage. This implies that for firms to decide on the target leverage, market-to-book ratio is not one of the variables which need to be taken into account, contrasting the expectations above.

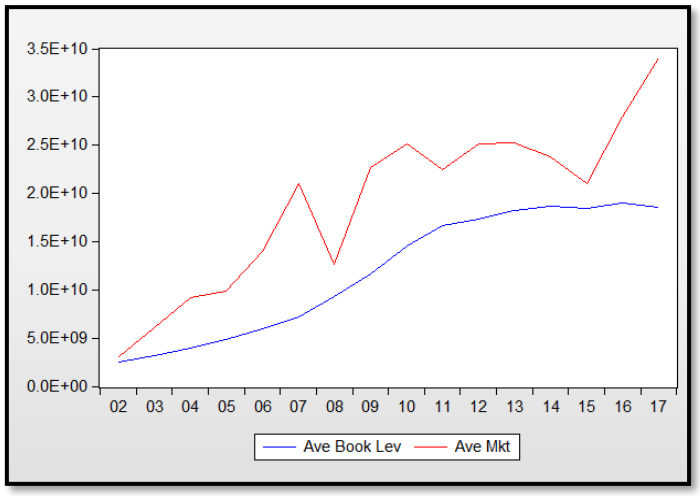


Figure 4.8: Brazil Book and Market Leverage comparison.

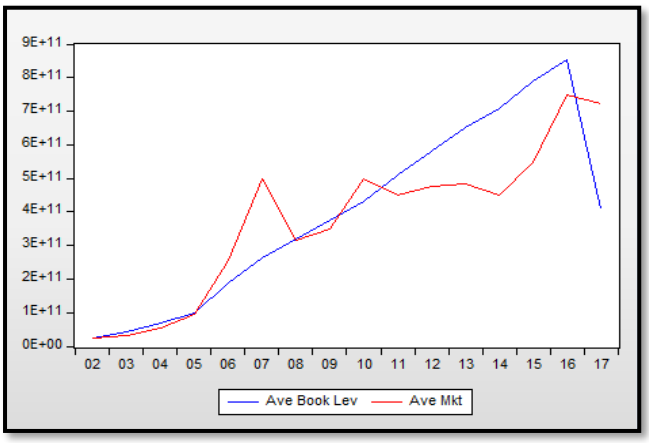


Figure 4.6: Russia Book and Market Leverage comparison.

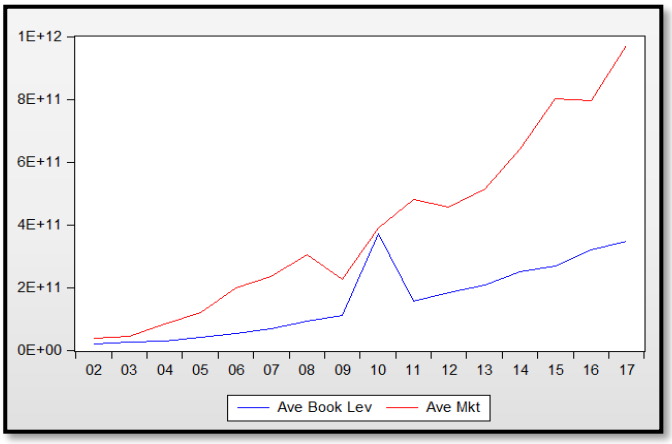


Figure 4.7: India Book and Market Leverage comparison.

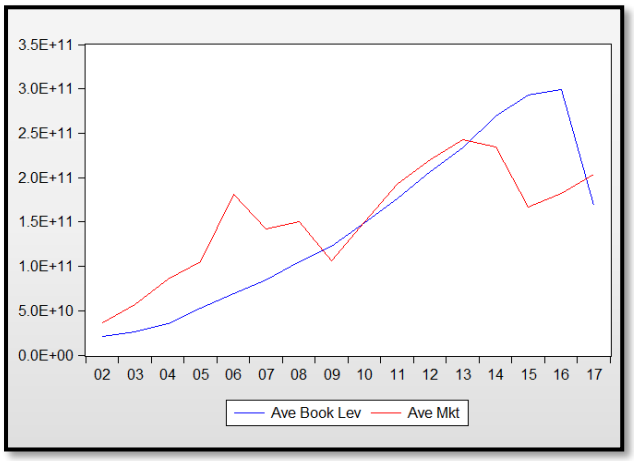


Figure 4.9: China Book and Market Leverage comparison.

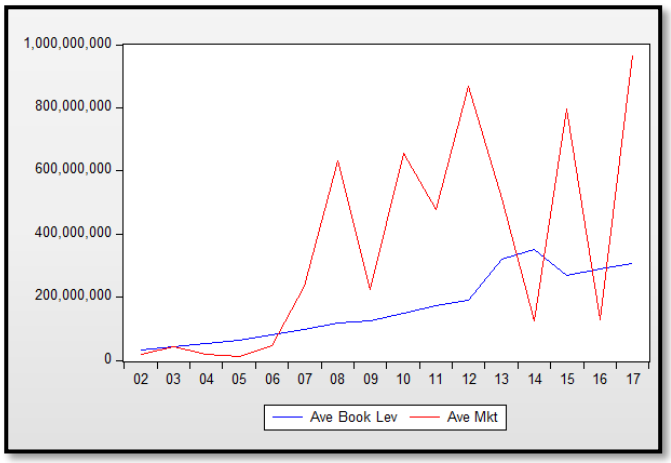


Figure 4.10: SA Book and Market Leverage comparison

4.4.2.1.3 Market Leverage Regression analysis

Brazil

Table 4.62 and 4.63 presents the OLS and GMM estimations, respectively, of the effect of EPU on the change in market leverage in the presence of herding in Brazil. The effect of EPU on the change in market leverage is analysed as a robust measure on the sample period from June 2002 to June 2017. The models are estimated using *Change in Market Leverage* as the dependent variable and independent variables being EPU, sales, age, market capitalisation, profitability, tangibility, initial leverage and the herding effect. The OLS estimation results presented in Table 4.62 illustrate that all else zero, change in market leverage is statistically significant at a 5% significance level. The difference EPU and market capitalisation are also significant at a 5% significant level, in determining the change in market leverage that the firm will have at some given time. The differenced EPU and market capitalisation are positively related to the change in market leverage. The herding effect is also positively related to the change in market leverage but is found to be statistically insignificant in the determination of the change in market leverage. There is a loss of observations due to the (log) differencing required to attain stationary regressors, hence the panel period is shorter. The R-squared value of 0.096420 is significantly low, showing that the model poorly fits the data. The Durbin-Watson *d* statistic is larger than 2, implying that there is a slight amount of negative autocorrelation in the data.

The GMM estimation results presented in Table 4.63 below illustrate that differenced EPU is found to be statistically insignificant at the 10% significance level. A positive change in EPU and herding

would result in firms influencing the change in market leverage in a positive way by values of 0.004860 and 0.641863 units respectively. This model is not a good fit seeing the R-squared having a high negative value of -384.68.

The Brazil OLS and GMM regression outputs for the effect of EPU on the Change in Market Leverage are as follows:

Table 4.62: The effect of EPU on the Change in Market Leverage (2002-2017) with herding being present in Brazilian firms

Dependent Variable: CHANGE_IN_MARKET_LEVERAGE
Method: Panel Least Squares

Sample (adjusted): 2003 2016
Periods included: 14
Cross-sections included: 78
Total panel (unbalanced) observations: 691

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.167167	0.034537	4.840200	0.0000**
D(EPU)	0.002035	0.000289	7.038156	0.0000**
FIRM_AGE	-0.000797	0.000979	-0.814421	0.4157
D(MARKET_CAPITALISATION)	3.34E-06	1.15E-06	2.890827	0.0040**
D(PROFITABILITY)	4.53E-09	6.09E-09	0.743461	0.4575
DSALES	-4.74E-09	3.90E-09	-1.214848	0.2248
TOP_40	-0.015314	0.044645	-0.343028	0.7317
D(TANGIBILITY)	-2.80E-10	6.91E-10	-0.404934	0.6857
LEVERAGE(1)	-1.27E-05	0.001599	-0.007966	0.9936
HT	0.000417	0.001607	0.259385	0.7954

R-squared	0.096420	**Mean dependent var**	0.173456
Adjusted R-squared	0.084478	**S.D. dependent var**	0.582434
S.E. of regression	0.557290	**Akaike info criterion**	1.682905
Sum squared resid	211.4997	**Schwarz criterion**	1.748579
Log likelihood	-571.4435	**Hannan-Quinn criter.**	1.708307
F-statistic	8.074297	**Durbin-Watson stat**	2.127675
Prob(F-statistic)	0.000000		

Note: This table presents the OLS estimations without herding being present in Brazilian firms. The effect of EPU on the change in market leverage is analysed on the sample period from June 2002 to June 2017. * Significant at the 10% level, ** Significant at the 5% level, *** Significant at the 1% level.

Table 4.63: The GMM estimation on the Change in Market Leverage with herding being present in Brazilian firms (2002-2017)

Dependent Variable: CHANGE_IN_MARKET_LEVERAGE
Method: Panel Generalized Method of Moments

Sample (adjusted): 2004 2016
Periods included: 13
Cross-sections included: 78
Total panel (unbalanced) observations: 672
2SLS instrument weighting matrix
Instrument specification: C CHANGE_IN_MKT_LEVERAGE(-1) FIRM_AGE(-1) D(EPU) (-1) SALES_GROWTH D(PROFITABILITY) (-1) D(TANGIBILITY) (-1) D(MARKET_CAPITALZATION) (-1) DSALES(-1) HT(-1)
Constant added to instrument list

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.891796	5.045220	0.176761	0.8598
D(EPU)	0.004860	0.021900	0.221927	0.8244
FIRM_AGE	0.011265	0.135119	0.083373	0.9336
D(MARKET_CAPITALISATION)	2.48E-05	0.000141	0.176265	0.8601
D(PROFITABILITY)	-5.05E-08	3.85E-07	-0.131304	0.8956
DSALES	1.31E-07	8.85E-07	0.147776	0.8826
TOP_40	-2.488972	16.79768	-0.148174	0.8823
D(TANGIBILITY)	-7.58E-09	5.13E-08	-0.147829	0.8825
LEVERAGE(1)	-0.552244	4.289618	-0.128740	0.8976
HT	0.641863	5.368187	0.119568	0.9049

R-squared	-384.683236	**Mean dependent var**	0.170274
Adjusted R-squared	-389.926664	**S.D. dependent var**	0.584418
S.E. of regression	11.55502	**Sum squared resid**	88389.31
Durbin-Watson stat	2.870032	**J-statistic**	7.56E-28
Instrument rank	10		

Note: This table presents the GMM estimations with herding being present in Brazilian firms. The effect of EPU on the change in market leverage is analysed on the sample period from June 2002 to June 2017. * Significant at the 10% level, ** Significant at the 5% level, *** Significant at the 1% level.

Table 4.64 and 4.65 presents the OLS and GMM estimations, respectively, of the effect of EPU on the market-to-book leverage in the presence of herding in Brazil. The effect of EPU on the market-to-book leverage is analysed as a robust measure on the sample period from June 2002 to June 2017. The models are estimated using Market-to-Book Leverage as the dependent variable and independent variables being EPU, sales, age, market capitalisation, profitability, tangibility, initial leverage and the herding effect. The OLS estimation results presented in Table 4.64 illustrate that all else zero, change in market leverage is statistically significant at a 5% significance level. The differenced EPU and the herding effect are statistically insignificant at a 5% significant level, in determining the market-to-book leverage that the firm will have at some given time. The differenced EPU is

negatively related to the market-to-book leverage while the herding effect is positively related to the market-to-book leverage. This is in line with the expectations of this study although both variables are insignificant. The R-squared value of 0.002804 is significantly low, showing that the model poorly fits the data. The Durbin-Watson d statistic is larger than 2, implying that there is a slight amount of negative autocorrelation in the data.

The GMM estimation results presented in Table 4.65 below illustrate that differenced EPU is found to be statistically insignificant at the 10% significance level. A positive change in EPU and herding would result in firms influencing the market-to-book leverage in a positive way. This model is not a good fit seeing the R-squared having a high negative value of -8.49.

The Brazil OLS and GMM regression outputs for the effect of EPU on the Market-to-Book Leverage are as follows:

Table 4.64: The effect of EPU on the Market-to-Book Leverage (2002-2017) with herding being present in Brazilian firms

Dependent Variable: MARKET_TO_BOOK_LEVERAGE
Method: Panel Least Squares

Sample (adjusted): 2003 2016
Periods included: 14
Cross-sections included: 78
Total panel (unbalanced) observations: 691

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.012476	0.006157	2.026437	0.0431**
D(EPU)	-4.51E-05	5.16E-05	-0.874449	0.3822
FIRM_AGE	-7.00E-05	0.000175	-0.400798	0.6887
D(MARKET_CAPITALISATION)	6.50E-09	2.06E-07	0.031606	0.9748
D(PROFITABILITY)	5.53E-11	1.09E-09	0.050928	0.9594
DSALES	-1.03E-10	6.96E-10	-0.148150	0.8823
TOP_40	-0.006608	0.007959	-0.830284	0.4067
D(TANGIBILITY)	9.15E-12	1.23E-10	0.074202	0.9409
LEVERAGE(1)	2.54E-05	0.000285	0.088960	0.9291
HT	4.72E-06	0.000286	0.016471	0.9869
R-squared	0.002804	**Mean dependent var**		0.006673
Adjusted R-squared	-0.010375	**S.D. dependent var**		0.098834
S.E. of regression	0.099345	**Akaike info criterion**		-1.766063
Sum squared resid	6.721128	**Schwarz criterion**		-1.700388
Log likelihood	620.1748	**Hannan-Quinn criter.**		-1.740661
F-statistic	0.212783	**Durbin-Watson stat**		2.273715
Prob(F-statistic)	0.992639			

Note: This table presents the OLS estimations without herding being present in Brazilian firms. The effect of EPU on the market-to-book leverage is analysed on the sample period from June 2002 to June 2017. * Significant at the 10% level, ** Significant at the 5% level, *** Significant at the 1% level.

Table 4.65: The GMM estimation on the Market-to-Book Leverage with herding being present in Brazilian firms (2002-2017)

Dependent Variable: MARKET_TO_BOOK_LEVERAGE
Method: Panel Generalized Method of Moments

Sample (adjusted): 2004 2016
Periods included: 13
Cross-sections included: 78
Total panel (unbalanced) observations: 672
2SLS instrument weighting matrix
Instrument specification: C MKT_TO_BOOK_RATIO(-1) FIRM_AGE(-1) D(EPU) (-1) SALES_GROWTH D(PROFITABILITY) (-1) D(TANGIBILITY) (-1) D(MARKET_CAPITALZATION) (-1) DSALES(-1) HT(-1)
Constant added to instrument list

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.020915	0.476354	0.043906	0.9650
D(EPU)	6.89E-05	0.005459	0.012619	0.9899
FIRM_AGE	-0.000259	0.008325	-0.031128	0.9752
D(MARKET_CAPITALISATION)	4.21E-07	2.13E-05	0.019817	0.9842
D(PROFITABILITY)	-1.40E-09	7.45E-08	-0.018817	0.9850
DSALES	3.15E-09	1.69E-07	0.018702	0.9851
TOP_40	-0.028779	1.354187	-0.021252	0.9831
D(TANGIBILITY)	-1.25E-10	7.02E-09	-0.017761	0.9858
LEVERAGE(1)	-0.017854	0.840604	-0.021239	0.9831
HT	0.012158	0.593019	0.020501	0.9836

R-squared	-8.494117	**Mean dependent var**	0.006812
Adjusted R-squared	-8.623191	**S.D. dependent var**	0.100220
S.E. of regression	0.310894	**Sum squared resid**	63.98562
Durbin-Watson stat	2.513535	**J-statistic**	6.15E-28
Instrument rank	10		

Note: This table presents the GMM estimations with herding being present in Brazilian firms. The effect of EPU on the market-to-book leverage is analysed on the sample period from June 2002 to June 2017. * Significant at the 10% level, ** Significant at the 5% level, *** Significant at the 1% level.

Russia

Table 4.66 and 4.67 presents the OLS and GMM estimations, respectively, of the effect of EPU on the change in market leverage in the presence of herding in Russia. The effect of EPU on the change in market leverage is analysed as a robust measure on the sample period from June 2002 to June 2017. The models are estimated using Change in Market Leverage as the dependent variable and independent variables being EPU, sales, age, market capitalisation, profitability, tangibility, initial leverage and the herding effect. The OLS estimation results presented in Table 4.66 illustrate that the market capitalisation is statistically significant at a 5% significant level, in determining the change in market leverage that the firm will have at some given time. A positive change in EPU and herding would result in firms influencing the change in market leverage in a negative and positive way

respectively. This is in line with the expectations of this study although both variables are insignificant. The R-squared value of 4% is significantly low, showing that the model poorly fits the data. The Durbin-Watson d statistic is less than 2, implying that there is a slight amount of positive autocorrelation in the data.

The GMM estimation results presented in Table 4.67 below illustrate that differenced EPU is found to be statistically insignificant at the 5% significance level. A positive change in EPU and herding would result in firms influencing the change in market leverage in a positive way. This model is not a good fit seeing the R-squared having a very high negative value of -508.6.

The Russian OLS and GMM regression outputs for the effect of EPU on the Change in Market Leverage are as follows:

Table 4.66: The effect of EPU on the Change in Market Leverage (2002-2017) with herding being present in Russian firms

Dependent Variable: CHANGE_IN_MARKET_LEVERAGE
Method: Panel Least Squares

Sample (adjusted): 2004 2016
Periods included: 13
Cross-sections included: 46
Total panel (unbalanced) observations: 361

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.371109	1.971793	0.188209	0.8508
D(EPU)	-0.006988	0.014975	-0.466647	0.6410
FIRM_AGE	0.011172	0.061616	0.181321	0.8562
D(MARKET_CAPITALISATION)	7.08E-06	2.06E-06	3.437301	0.0007**
D(PROFITABILITY)	-6.78E-11	8.34E-09	-0.008129	0.9935
DSALES	-1.63E-10	4.74E-09	-0.034370	0.9726
TOP_40	0.409104	1.443571	0.283397	0.7770
D(TANGIBILITY)	8.34E-10	9.95E-10	0.838397	0.4024
LEVERAGE(1)	-0.069023	2.906380	-0.023749	0.9811
HT	2.965001	3.063412	0.967875	0.3338

R-squared	0.042888	**Mean dependent var**	0.999081
Adjusted R-squared	0.018346	**S.D. dependent var**	12.85269
S.E. of regression	12.73425	**Akaike info criterion**	7.953777
Sum squared resid	56918.52	**Schwarz criterion**	8.061502
Log likelihood	-1425.657	**Hannan-Quinn criter.**	7.996606
F-statistic	1.747561	**Durbin-Watson stat**	1.233137
Prob(F-statistic)	0.077171		

Note: This table presents the OLS estimations with herding being present in Russian firms. The effect of EPU on the change in market leverage is analysed on the sample period from June 2002 to June 2017. * Significant at the 10% level, ** Significant at the 5% level, *** Significant at the 1% level.

Table 4.67: The GMM estimation on the Change in Market Leverage with herding being present in Russian firms (2002-2017)

Dependent Variable: CHANGE_IN_MARKET_LEVERAGE
Method: Panel Generalized Method of Moments

Sample (adjusted): 2004 2016
Periods included: 13
Cross-sections included: 46
Total panel (unbalanced) observations: 358
2SLS instrument weighting matrix
Instrument specification: C CHANGE_IN_MKT_LEVERAGE(-1) FIRM_AGE(-1) D(EPU) (-1) SALES_GROWTH D(PROFITABILITY) (-1) D(TANGIBILITY) (-1) D(MARKET_CAPITALZATION) (-1) DSALES(-1) HT(-1)
Constant added to instrument list

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	44.59521	441.7458	0.100952	0.9196
D(EPU)	0.038906	0.387650	0.100364	0.9201
FIRM_AGE	-0.016890	0.153455	-0.110064	0.9124
D(MARKET_CAPITALISATION)	1.00E-05	8.78E-05	0.114361	0.9090
D(PROFITABILITY)	-4.39E-09	4.43E-08	-0.098956	0.9212
DSALES	4.95E-08	4.99E-07	0.099256	0.9210
TOP_40	-29.14574	284.7783	-0.102345	0.9185
D(TANGIBILITY)	2.22E-09	2.11E-08	0.105122	0.9163
LEVERAGE(1)	-63.54055	643.4495	-0.098750	0.9214
HT	60.15097	608.4583	0.098858	0.9213

R-squared	-508.620566	**Mean dependent var**	0.323350
Adjusted R-squared	-521.800408	**S.D. dependent var**	0.929890
S.E. of regression	21.26177	**Sum squared resid**	157317.9
Durbin-Watson stat	1.875295	**J-statistic**	1.33E-25
Instrument rank	10		

Note: This table presents the GMM estimations with herding being present in Russian firms. The effect of EPU on the change in market leverage is analysed on the sample period from June 2002 to June 2017. * Significant at the 10% level, ** Significant at the 5% level, *** Significant at the 1% level.

Table 4.68 and 4.69 presents the OLS and GMM estimations, respectively, of the effect of EPU on the market-to-book leverage in the presence of herding in Russia. The effect of EPU on the market-to-book leverage is analysed as a robust measure on the sample period from June 2002 to June 2017. The OLS estimation results presented in Table 4.68 illustrate that all variables in this model are statistically insignificant at a 5% significance level. The differenced EPU is negatively related to the market-to-book leverage while the herding effect is positively related to the market-to-book leverage. This is in line with the expectations of this study although both variables are insignificant. The R-squared value of 2.6% is significantly low, showing that the model poorly fits the data. The Durbin-

Watson d statistic is smaller than 2, implying that there is a slight amount of positive autocorrelation in the data.

The GMM estimation results presented in Table 4.69 below illustrate that all the variables are statistically insignificant at the 5% significance level. A positive change in EPU and herding would result in firms influencing the market-to-book leverage in a negative way. This model is not a good fit seeing the R-squared having a high negative value of -100.38.

The Russian OLS and GMM regression outputs for the effect of EPU on the Market-to-Book Leverage are as follows:

Table 4.68: The effect of EPU on the Market-to-Book Leverage (2002-2017) with herding being present in Russian firms

Dependent Variable: MARKET_TO_BOOK_LEVERAGE
Method: Panel Least Squares

Sample (adjusted): 2004 2016
Periods included: 13
Cross-sections included: 46
Total panel (unbalanced) observations: 361

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	20.22971	14.59867	1.385723	0.1667
D(EPU)	-0.025166	0.110870	-0.226985	0.8206
FIRM_AGE	-0.742192	0.456193	-1.626927	0.1046
D(MARKET_CAPITALISATION)	1.42E-05	1.53E-05	0.931827	0.3521
D(PROFITABILITY)	-2.26E-08	6.18E-08	-0.365585	0.7149
DSALES	-2.54E-08	3.51E-08	-0.722427	0.4705
TOP_40	14.84169	10.68784	1.388651	0.1658
D(TANGIBILITY)	-5.46E-09	7.37E-09	-0.740908	0.4592
LEVERAGE(1)	14.40116	21.51812	0.669258	0.5038
HT	8.756388	22.68075	0.386071	0.6997

R-squared	0.026451	**Mean dependent var**	24.33239
Adjusted R-squared	0.001489	**S.D. dependent var**	94.35148
S.E. of regression	94.28122	**Akaike info criterion**	11.95775
Sum squared resid	3120021.	**Schwarz criterion**	12.06548
Log likelihood	-2148.374	**Hannan-Quinn criter.**	12.00058
F-statistic	1.059637	**Durbin-Watson stat**	0.907259
Prob(F-statistic)	0.392208		

Note: This table presents the OLS estimations with herding being present in Russian firms. The effect of EPU on the market-to-book leverage is analysed on the sample period from June 2002 to June 2017. * Significant at the 10% level, ** Significant at the 5% level, *** Significant at the 1% level.

Table 4.69: The GMM estimation on the Market-to-Book Leverage with herding being present in Russian firms (2002-2017)

Dependent Variable: MARKET_TO_BOOK_LEVERAGE
Method: Panel Generalized Method of Moments

Sample (adjusted): 2004 2016
Periods included: 13
Cross-sections included: 46
Total panel (unbalanced) observations: 358
2SLS instrument weighting matrix
Instrument specification: C MKT_TO_BOOK_RATIO(-1) FIRM_AGE(-1) D(EPU) (-1) SALES_GROWTH D(PROFITABILITY) (-1) D(TANGIBILITY) (-1) D(MARKET_CAPITALZATION) (-1) DSALES(-1) HT(-1)
Constant added to instrument list

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-1862.072	4827.114	-0.385753	0.6999
D(EPU)	-1.694447	3.646182	-0.464718	0.6424
FIRM_AGE	-0.280779	4.610228	-0.060904	0.9515
D(MARKET_CAPITALISATION)	-0.000386	0.000505	-0.764884	0.4449
D(PROFITABILITY)	1.59E-07	9.04E-07	0.175639	0.8607
DSALES	-2.28E-06	2.82E-06	-0.809019	0.4191
TOP_40	1268.558	1533.004	0.827498	0.4085
D(TANGIBILITY)	-9.62E-08	1.40E-07	-0.689162	0.4912
LEVERAGE(1)	2720.019	8446.486	0.322030	0.7476
HT	-2538.470	8230.069	-0.308438	0.7579

R-squared	-100.389453	**Mean dependent var**	22.93300
Adjusted R-squared	-103.011594	**S.D. dependent var**	90.25048
S.E. of regression	920.4292	**Sum squared resid**	2.95E+08
Durbin-Watson stat	1.840243	**J-statistic**	1.13E-24
Instrument rank	10		

Note: This table presents the GMM estimations with herding being present in Russian firms. The effect of EPU on the market-to-book leverage is analysed on the sample period from June 2002 to June 2017. * Significant at the 10% level, ** Significant at the 5% level, *** Significant at the 1% level.

India

Table 4.70 and 4.71 presents the OLS and GMM estimations, respectively, of the effect of EPU on the change in market leverage in the presence of herding in India. The effect of EPU on the change in market leverage is analysed as a robust measure on the sample period from June 2002 to June 2017. The models are estimated using Change in Market Leverage as the dependent variable. The OLS estimation results presented in Table 4.70 illustrate that the differenced market capitalisation, differenced tangibility and the initial leverage are statistically significant at a 5% significant level, in determining the change in market leverage that the firm will have at some given time. A positive change in EPU and herding would result in firms influencing the change in market leverage in a positive and negative way respectively. This is in contrast with the expectations of this study granting that both variables are insignificant. The R-squared value of 16.5% is significantly low, showing that

the model poorly fits the data. The Durbin-Watson d statistic is less than 2, implying that there is a slight amount of positive autocorrelation in the data.

The GMM estimation results presented in Table 4.71 below illustrate that all the variables are statistically insignificant at the 5% significance level. A positive change in EPU and herding would result in firms influencing the change in market leverage in a negative and positive way. This model is not a good fit seeing the R-squared having a very high negative value of -72.

The Indian OLS and GMM regression outputs for the effect of EPU on the Change in Market Leverage are as follows:

Table 4.70: The effect of EPU on the Change in Market Leverage (2002-2017) with herding being present in Indian firms

Dependent Variable: CHANGE_IN_MARKET_LEVERAGE
Method: Panel Least Squares

Sample (adjusted): 2004 2016
Periods included: 13
Cross-sections included: 73
Total panel (unbalanced) observations: 724

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.150993	0.115362	1.308867	0.1910
D(EPU)	0.000373	0.000313	1.191668	0.2338
FIRM_AGE	-0.000291	0.001125	-0.258792	0.7959
D(MARKET_CAPITALISATION)	1.57E-06	1.43E-07	10.98021	0.0000**
D(PROFITABILITY)	7.82E-10	1.50E-09	0.521352	0.6023
DSALES	-2.48E-10	2.16E-10	-1.151662	0.2498
TOP_40	-0.046200	0.058614	-0.788218	0.4308
D(TANGIBILITY)	-2.18E-10	9.18E-11	-2.377955	0.0177**
LEVERAGE(1)	0.361562	0.178297	2.027864	0.0429**
HT	-0.057831	0.173527	-0.333271	0.7390

R-squared	0.161994	**Mean dependent var**	0.393156
Adjusted R-squared	0.151430	**S.D. dependent var**	0.805620
S.E. of regression	0.742120	**Akaike info criterion**	2.255104
Sum squared resid	393.2297	**Schwarz criterion**	2.318430
Log likelihood	-806.3476	**Hannan-Quinn criter.**	2.279545
F-statistic	15.33579	**Durbin-Watson stat**	1.556705
Prob(F-statistic)	0.000000		

Note: This table presents the OLS estimations with herding being present in Indian firms. The effect of EPU on the change in market leverage is analysed on the sample period from June 2002 to June 2017. * Significant at the 10% level, ** Significant at the 5% level, *** Significant at the 1% level.

Table 4.71: The GMM estimation on the Change in Market Leverage with herding being present in Indian firms (2002-2017)

Dependent Variable: CHANGE_IN_MARKET_LEVERAGE
Method: Panel Generalized Method of Moments

Sample (adjusted): 2004 2016
Periods included: 13
Cross-sections included: 72
Total panel (unbalanced) observations: 702
2SLS instrument weighting matrix
Instrument specification: C CHANGE_IN_MKT_LEVERAGE(-1) FIRM_AGE(-1) D(EPU) (-1) SALES_GROWTH D(PROFITABILITY) (-1) D(TANGIBILITY) (-1) D(MARKET_CAPITALZATION) (-1) DSALES(-1) HT(-1)
Constant added to instrument list

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	24.67178	160.5509	0.153670	0.8779
D(EPU)	-0.001337	0.012053	-0.110910	0.9117
FIRM_AGE	0.001117	0.030669	0.036431	0.9709
D(MARKET_CAPITALISATION)	1.02E-06	7.35E-06	0.138552	0.8898
D(PROFITABILITY)	-2.02E-08	1.55E-07	-0.130205	0.8964
DSALES	6.50E-09	3.75E-08	0.173631	0.8622
TOP_40	-0.943062	4.932141	-0.191207	0.8484
D(TANGIBILITY)	1.56E-09	9.50E-09	0.164358	0.8695
LEVERAGE(1)	-42.82115	291.1976	-0.147052	0.8831
HT	34.68470	235.2832	0.147417	0.8828

R-squared	-72.474241	**Mean dependent var**	0.388077
Adjusted R-squared	-73.429831	**S.D. dependent var**	0.795475
S.E. of regression	6.862783	**Sum squared resid**	32591.67
Durbin-Watson stat	2.126256	**J-statistic**	1.73E-22
Instrument rank	10		

Note: This table presents the GMM estimations with herding being present in Indian firms. The effect of EPU on the change in market leverage is analysed on the sample period from June 2002 to June 2017. * Significant at the 10% level, ** Significant at the 5% level, *** Significant at the 1% level.

Table 4.72 and 4.73 presents the OLS and GMM estimations, respectively, of the effect of EPU on the market-to-book leverage in the presence of herding in India. The effect of EPU on the market-to-book leverage is analysed as a robust measure on the sample period from June 2002 to June 2017. The OLS estimation results presented in Table 4.72 illustrate that all else zero, market-to-book leverage is statistically significant at a 5% significance level, while all other variables in this model are statistically insignificant at the same significance level. The differenced EPU and the herding effect are both positively related to the market-to-book leverage. The R-squared value of 1% is significantly low, showing that the model poorly fits the data. The Durbin-Watson d statistic is less than 2, implying that there is a slight amount of positive autocorrelation in the data.

The GMM estimation results presented in Table 4.73 below illustrate that all else zero, the market-to-book leverage is statistically significant at the 10% significance level as well as the initial leverage and the herding effect. A positive change in EPU and herding would result in firms influencing the market-to-book leverage in a negative and positive way respectively. This model is not a good fit seeing the R-squared having a high negative value of -24.

The Indian OLS and GMM regression outputs for the effect of EPU on the Market-to-Book Leverage are as follows:

Table 4.72: The effect of EPU on the Market-to-Book Leverage (2002-2017) with herding being present in Indian firms

Dependent Variable: MARKET_TO_BOOK_LEVERAGE
Method: Panel Least Squares

Sample (adjusted): 2004 2016
Periods included: 13
Cross-sections included: 73
Total panel (unbalanced) observations: 724

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	11.64789	2.800262	4.159570	0.0000**
D(EPU)	0.007766	0.007588	1.023502	0.3064
FIRM_AGE	-0.032765	0.027303	-1.200052	0.2305
D(MARKET_CAPITALISATION)	-9.10E-07	3.48E-06	-0.261415	0.7938
D(PROFITABILITY)	1.99E-08	3.64E-08	0.547447	0.5842
DSALES	-1.45E-09	5.23E-09	-0.277021	0.7818
TOP_40	-0.209361	1.422777	-0.147150	0.8831
D(TANGIBILITY)	-3.52E-09	2.23E-09	-1.578730	0.1148
LEVERAGE(1)	-5.954171	4.327946	-1.375750	0.1693
HT	4.686844	4.212150	1.112696	0.2662

R-squared	0.012599	**Mean dependent var**	6.625125
Adjusted R-squared	0.000153	**S.D. dependent var**	18.01544
S.E. of regression	18.01406	**Akaike info criterion**	8.633898
Sum squared resid	231697.4	**Schwarz criterion**	8.697223
Log likelihood	-3115.471	**Hannan-Quinn criter.**	8.658339
F-statistic	1.012314	**Durbin-Watson stat**	1.508216
Prob(F-statistic)	0.428327		

Note: This table presents the OLS estimations with herding being present in Indian firms. The effect of EPU on the market-to-book leverage is analysed on the sample period from June 2002 to June 2017. * Significant at the 10% level, ** Significant at the 5% level, *** Significant at the 1% level.

Table 4.73: The GMM estimation on the Market-to-Book Leverage with herding being present in Indian firms (2002-2017)

Dependent Variable: MARKET_TO_BOOK_LEVERAGE
Method: Panel Generalized Method of Moments

Sample (adjusted): 2004 2016
Periods included: 13
Cross-sections included: 72
Total panel (unbalanced) observations: 702
2SLS instrument weighting matrix
Instrument specification: C MKT_TO_BOOK_RATIO(-1) FIRM_AGE(-1) D(EPU) (-1) SALES_GROWTH D(PROFITABILITY) (-1) D(TANGIBILITY) (-1) D(MARKET_CAPITALZATION) (-1) DSALES(-1) HT(-1)
Constant added to instrument list

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	342.5651	182.7257	1.874751	0.0612*
D(EPU)	-0.013625	0.041906	-0.325136	0.7452
FIRM_AGE	-0.024262	0.179181	-0.135405	0.8923
D(MARKET_CAPITALISATION)	-6.94E-06	2.63E-05	-0.264202	0.7917
D(PROFITABILITY)	-2.57E-07	2.62E-07	-0.978374	0.3282
DSALES	9.48E-08	1.03E-07	0.922975	0.3563
TOP_40	-15.58501	50.14756	-0.310783	0.7561
D(TANGIBILITY)	2.08E-08	2.07E-08	1.005054	0.3152
LEVERAGE(1)	-585.4154	325.6040	-1.797937	0.0726*
HT	471.3251	263.6737	1.787532	0.0743*

R-squared	-24.898960	**Mean dependent var**	6.680146
Adjusted R-squared	-25.235796	**S.D. dependent var**	18.26908
S.E. of regression	93.57583	**Sum squared resid**	6059454.
Durbin-Watson stat	2.145431	**J-statistic**	1.68E-23
Instrument rank	10		

Note: This table presents the GMM estimations with herding being present Indian firms. The effect of EPU on the market-to-book leverage is analysed on the sample period from June 2002 to June 2017. * Significant at the 10% level, ** Significant at the 5% level, *** Significant at the 1% level.

China

Table 4.74 and 4.75 presents the OLS and GMM estimations, respectively, of the effect of EPU on the change in market leverage in the presence of herding in China. The effect of EPU on the change in market leverage is analysed as a robust measure on the sample period from June 2002 to June 2017. The models are estimated using Change in Market Leverage as the dependent variable. The OLS estimation results presented in Table 4.74 illustrate that all the variables are statistically insignificant at a 5% significant level, in determining the change in market leverage that the firm will have at some given time. A positive change in EPU and herding would result in firms influencing the change in market leverage in a negative way. This is in contrast with the expectations of this study granting that both variables are insignificant. The R-squared value of 1% is significantly low, showing that the

model poorly fits the data. The Durbin-Watson d statistic is less than 2, implying that there is a slight amount of positive autocorrelation in the data.

The GMM estimation results presented in Table 4.75 below illustrate that all the variables are statistically insignificant at the 5% significance level. A positive change in EPU and herding would result in firms influencing the change in market leverage in a negative way. This model is not a good fit seeing the R-squared having a very high negative value of -16%.

The Chinese OLS and GMM regression outputs for the effect of EPU on the Change in Market Leverage are as follows:

Table 4.74: The effect of EPU on the Change in Market Leverage (2002-2017) with herding being present in Chinese firms

Dependent Variable: CHANGE_IN_MARKET_LEVERAGE
Method: Panel Least Squares

Sample (adjusted): 2003 2016
Periods included: 14
Cross-sections included: 73
Total panel (unbalanced) observations: 709

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	1.004280	0.641103	1.566488	0.1177
D(EPU)	-0.000161	0.001030	-0.155938	0.8761
FIRM_AGE	-0.005863	0.003591	-1.632680	0.1030
D(MARKET_CAPITALISATION)	1.43E-09	4.65E-09	0.307141	0.7588
D(PROFITABILITY)	5.81E-09	1.03E-08	0.563617	0.5732
DSALES	-5.44E-10	1.73E-09	-0.314229	0.7534
TOP_40	-0.235604	0.261697	-0.900292	0.3683
D(TANGIBILITY)	-6.44E-11	3.12E-10	-0.206382	0.8366
LEVERAGE(1)	-0.350882	1.025451	-0.342173	0.7323
HT	-0.336389	1.037149	-0.324340	0.7458

R-squared	0.010385	**Mean dependent var**	0.464551
Adjusted R-squared	-0.002357	**S.D. dependent var**	3.379762
S.E. of regression	3.383742	**Akaike info criterion**	5.289846
Sum squared resid	8003.349	**Schwarz criterion**	5.354216
Log likelihood	-1865.250	**Hannan-Quinn criter.**	5.314714
F-statistic	0.815052	**Durbin-Watson stat**	1.348004
Prob(F-statistic)	0.602419		

Note: This table presents the OLS estimations with herding being present in Chinese firms. The effect of EPU on the change in market leverage is analysed on the sample period from June 2002 to June 2017. * Significant at the 10% level, ** Significant at the 5% level, *** Significant at the 1% level.

Table 4.75: The GMM estimation on the Change in Market Leverage with herding being present in Chinese firms (2002-2017)

Dependent Variable: CHANGE_IN_MARKET_LEVERAGE
Method: Panel Generalized Method of Moments

Sample (adjusted): 2004 2016
Periods included: 13
Cross-sections included: 72
Total panel (unbalanced) observations: 681
2SLS instrument weighting matrix
Instrument specification: C CHANGE_IN_MKT_LEVERAGE(-1) FIRM_AGE(-1) D(EPU) (-1) SALES_GROWTH D(PROFITABILITY) (-1) D(TANGIBILITY) (-1) D(MARKET_CAPITALZATION) (-1) DSALES(-1) HT(-1)
Constant added to instrument list

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-6.341539	15.10603	-0.419802	0.6748
D(EPU)	-0.000123	0.001153	-0.106478	0.9152
FIRM_AGE	-0.007069	0.004444	-1.590851	0.1121
D(MARKET_CAPITALISATION)	1.24E-09	7.03E-09	0.176385	0.8600
D(PROFITABILITY)	-4.07E-09	2.25E-08	-0.181069	0.8564
DSALES	-1.89E-11	5.75E-09	-0.003284	0.9974
TOP_40	-0.955707	1.434548	-0.666208	0.5055
D(TANGIBILITY)	-2.03E-10	4.50E-10	-0.452113	0.6513
LEVERAGE(1)	12.68980	25.55454	0.496577	0.6196
HT	-11.52707	24.48385	-0.470803	0.6379

R-squared	-0.164033	**Mean dependent var**	0.462204
Adjusted R-squared	-0.179646	**S.D. dependent var**	3.446931
S.E. of regression	3.743764	**Sum squared resid**	9404.582
Durbin-Watson stat	1.364266	**J-statistic**	1.61E-23
Instrument rank	10		

Note: This table presents the GMM estimations with herding being present in Chinese firms. The effect of EPU on the change in market leverage is analysed on the sample period from June 2002 to June 2017. * Significant at the 10% level, ** Significant at the 5% level, *** Significant at the 1% level.

Table 4.76 and 4.77 presents the OLS and GMM estimations, respectively, of the effect of EPU on the market-to-book leverage in the presence of herding in China. The effect of EPU on the market-to-book leverage is analysed as a robust measure on the sample period from June 2002 to June 2017. The OLS estimation results presented in Table 4.76 illustrate that all the variables are statistically insignificant at a 5% significance level. The differenced EPU and the herding effect are both positively related to the market-to-book leverage. The R-squared value of 13% is significantly low, showing that the model poorly fits the data. The Durbin-Watson d statistic is less than 2, implying that there is excessive positive autocorrelation in the data.

The GMM estimation results presented in Table 4.77 below illustrate that all variables are statistically insignificant. A positive change in EPU and herding would result in firms influencing the market-to-book leverage in a positive and negative way respectively. This model is not a good fit seeing the R-squared having a very high positive value of 6418.

The Chinese OLS and GMM regression outputs for the effect of EPU on the Market-to-Book Leverage are as follows:

Table 4.76: The effect of EPU on the Market-to-Book Leverage (2002-2017) with herding being present in Chinese firms

Dependent Variable: MARKET_TO_BOOK_LEVERAGE
Method: Panel Least Squares

Sample (adjusted): 2003 2016
Periods included: 14
Cross-sections included: 73
Total panel (unbalanced) observations: 709

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	28.12928	91.41943	0.307695	0.7584
D(EPU)	0.045571	0.146927	0.310159	0.7565
FIRM_AGE	-0.260906	0.512099	-0.509484	0.6106
D(MARKET_CAPITALISATION)	6.33E-06	6.63E-07	9.543324	0.0000
D(PROFITABILITY)	-9.23E-07	1.47E-06	-0.628086	0.5302
DSALES	-1.84E-07	2.47E-07	-0.747349	0.4551
TOP_40	81.40570	37.31725	2.181450	0.0295
D(TANGIBILITY)	-4.10E-08	4.45E-08	-0.921078	0.3573
LEVERAGE(1)	32.30082	146.2263	0.220896	0.8252
HT	73.84005	147.8943	0.499276	0.6177

R-squared	0.133137	**Mean dependent var**	64.05096
Adjusted R-squared	0.121976	**S.D. dependent var**	514.9375
S.E. of regression	482.5116	**Akaike info criterion**	15.20989
Sum squared resid	1.63E+08	**Schwarz criterion**	15.27426
Log likelihood	-5381.906	**Hannan-Quinn criter.**	15.23476
F-statistic	11.92845	**Durbin-Watson stat**	0.190606
Prob(F-statistic)	0.000000		

Note: This table presents the OLS estimations with herding being present in Chinese firms. The effect of EPU on the market-to-book leverage is analysed on the sample period from June 2002 to June 2017. * Significant at the 10% level, ** Significant at the 5% level, *** Significant at the 1% level.

Table 4.77: The GMM estimation on the Market-to-Book Leverage with herding being present in Chinese firms (2002-2017)

Dependent Variable: MARKET_TO_BOOK_LEVERAGE
Method: Panel Generalized Method of Moments

Sample (adjusted): 2004 2016
Periods included: 13
Cross-sections included: 72
Total panel (unbalanced) observations: 681
2SLS instrument weighting matrix
Instrument specification: C MKT_TO_BOOK_RATIO(-1) FIRM_AGE(-1) D(EPU) (-1) SALES_GROWTH D(PROFITABILITY) (-1) D(TANGIBILITY) (-1) D(MARKET_CAPITALZATION) (-1) DSALES(-1) HT(-1)
Constant added to instrument list

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-229630.6	872716.0	-0.263122	0.7925
D(EPU)	2.181542	15.07925	0.144672	0.8850
FIRM_AGE	-22.96371	94.54052	-0.242898	0.8082
D(MARKET_CAPITALISATION)	1.57E-05	8.09E-05	0.193834	0.8464
D(PROFITABILITY)	-0.000247	0.000985	-0.251366	0.8016
DSALES	-4.04E-06	6.45E-05	-0.062693	0.9500
TOP_40	2777.678	16564.91	0.167684	0.8669
D(TANGIBILITY)	3.34E-06	1.31E-05	0.254786	0.7990
LEVERAGE(1)	385396.4	1468985.	0.262356	0.7931
HT	-370116.1	1409657.	-0.262558	0.7930

R-squared	-6418.433248	**Mean dependent var**	66.60517
Adjusted R-squared	-6504.535929	**S.D. dependent var**	525.2747
S.E. of regression	42367.03	**Sum squared resid**	1.20E+12
Durbin-Watson stat	1.956248	**J-statistic**	1.91E-21
Instrument rank	10		

Note: This table presents the GMM estimations with herding being present in Chinese firms. The effect of EPU on the market-to-book leverage is analysed on the sample period from June 2002 to June 2017. * Significant at the 10% level, ** Significant at the 5% level, *** Significant at the 1% level.

South Africa

Table 4.78 and 4.79 presents the OLS and GMM estimations, respectively, of the effect of EPU on the change in market leverage in the presence of herding in South Africa. The effect of EPU on the change in market leverage is analysed as a robust measure on the sample period from June 2002 to June 2017. The models are estimated using Change in Market Leverage as the dependent variable. The OLS estimation results presented in Table 4.78 illustrate that all else zero, the change in market leverage statistically significant at the 5% significance level as well as the difference EPU, initial leverage and the herding effect, in determining the change in market leverage that the firm will have at some given time. A positive change in EPU and herding would result in firms influencing the change in market leverage in a negative and positive way respectively. This is in line with the expectations of this study. The R-squared value of 13% is significantly low, showing that the model

poorly fits the data. The Durbin-Watson d statistic is less than 2, implying that there is a slight amount of positive autocorrelation in the data.

The GMM estimation results presented in Table 4.79 below illustrate that all the variables are statistically insignificant at the 5% significance level. A positive change in EPU and herding would result in firms influencing the change in market leverage in a negative way. This model is not a good fit seeing the R-squared having a very high negative value of -56.

The South African OLS and GMM regression outputs for the effect of EPU on the Change in Market Leverage are as follows:

Table 4.78: The effect of EPU on the Change in Market Leverage (2002-2017) with herding being present in South African firms

Dependent Variable: CHANGE_IN_MARKET_LEVERAGE
Method: Panel Least Squares

Sample (adjusted): 2003 2011
Periods included: 9
Cross-sections included: 69
Total panel (unbalanced) observations: 434

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.646479	0.109628	5.897046	0.0000**
D(EPU)	-0.315817	0.098425	-3.208726	0.0014**
FIRM_AGE	-0.000499	0.000760	-0.655803	0.5123
D(MARKET_CAPITALISATION)	2.16E-06	3.46E-07	6.226560	0.0000**
D(PROFITABILITY)	-5.93E-09	6.22E-09	-0.952857	0.3412
DSALES	-3.21E-10	1.05E-09	-0.305830	0.7599
TOP_40	0.011576	0.041836	0.276706	0.7821
D(TANGIBILITY)	-3.79E-10	5.18E-10	-0.732452	0.4643
LEVERAGE(1)	-0.639362	0.175987	-3.633015	0.0003**
HT	0.533504	0.178405	2.990413	0.0029**

R-squared	0.135349	**Mean dependent var**	0.250989
Adjusted R-squared	0.116996	**S.D. dependent var**	0.435012
S.E. of regression	0.408773	**Akaike info criterion**	1.071459
Sum squared resid	70.84848	**Schwarz criterion**	1.165308
Log likelihood	-222.5066	**Hannan-Quinn criter.**	1.108503
F-statistic	7.374582	**Durbin-Watson stat**	1.751252
Prob(F-statistic)	0.000000		

Note: This table presents the OLS estimations with herding being present in South African firms. The effect of EPU on the change in market leverage is analysed on the sample period from June 2002 to June 2017. * Significant at the 10% level, ** Significant at the 5% level, *** Significant at the 1% level.

Table 4.79: The GMM estimation on the Change in Market Leverage with herding being present in South African firms (2002-2017)

Dependent Variable: CHANGE_IN_MARKET_LEVERAGE
Method: Panel Generalized Method of Moments

Sample (adjusted): 2004 2011
Periods included: 8
Cross-sections included: 66
Total panel (unbalanced) observations: 393
2SLS instrument weighting matrix
Instrument specification: C CHANGE_IN_MKT_LEVERAGE(-1) FIRM_AGE(-1) D(EPU) (-1) SALES_GROWTH D(PROFITABILITY) (-1) D(TANGIBILITY) (-1) D(MARKET_CAPITALZATION) (-1) DSALES(-1) HT(-1)
Constant added to instrument list

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-19.72219	49.96788	-0.394697	0.6933
D(EPU)	-1.204868	2.323517	-0.518553	0.6044
FIRM_AGE	0.000679	0.007913	0.085750	0.9317
D(MARKET_CAPITALISATION)	5.43E-06	8.10E-06	0.671011	0.5026
D(PROFITABILITY)	4.70E-08	1.26E-07	0.371787	0.7103
DSALES	-6.70E-09	2.73E-08	-0.245614	0.8061
TOP_40	-0.540347	1.327082	-0.407169	0.6841
D(TANGIBILITY)	4.77E-10	4.96E-09	0.096292	0.9233
LEVERAGE(1)	33.62679	83.32491	0.403562	0.6868
HT	-31.54663	78.20109	-0.403404	0.6869

R-squared	-56.823001	**Mean dependent var**	0.261057
Adjusted R-squared	-58.181766	**S.D. dependent var**	0.435218
S.E. of regression	3.348122	**Sum squared resid**	4293.399
Durbin-Watson stat	2.181051	**J-statistic**	9.72E-24
Instrument rank	10		

Note: This table presents the GMM estimations with herding being present in South African firms. The effect of EPU on the change in market leverage is analysed on the sample period from June 2002 to June 2017. * Significant at the 10% level, ** Significant at the 5% level, *** Significant at the 1% level.

Table 4.80 and 4.81 below present the OLS and GMM estimations, respectively, of the effect of EPU on the market-to-book leverage in the presence of herding in South Africa. The effect of EPU on the market-to-book leverage is analysed as a robust measure on the sample period from June 2002 to June 2017. The OLS estimation results presented in Table 4.80 illustrate that all else zero, the market-to-book leverage statistically significant at a 5% significance level as well as the difference market capitalisation and the Top 40 variables. The differenced profitability is statistically significant at a 10% significant level. The differenced EPU and the herding effect are negatively and positively related to the market-to-book leverage, respectively. The R-squared value of 15% is significantly low, showing that the model poorly fits the data. The Durbin-Watson d statistic is less than 2, implying that there is excessive positive autocorrelation in the data.

The GMM estimation results presented in Table 4.81 below illustrate that all variables are statistically insignificant. A positive change in EPU and herding would result in firms influencing the market-to-book leverage in a negative and positive way respectively. This model is not a good fit seeing the R-squared having a very high positive value of 3820.

The South African OLS and GMM regression outputs for the effect of EPU on the Market-to-Book Leverage are as follows:

Table 4.80: The effect of EPU on the Market-to-Book Leverage (2002-2017) with herding being present in South African firms

Dependent Variable: MARKET_TO_BOOK_LEVERAGE
Method: Panel Least Squares

Sample (adjusted): 2003 2011
Periods included: 9
Cross-sections included: 69
Total panel (unbalanced) observations: 434

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.634032	0.241754	2.622632	0.0090**
D(EPU)	-0.038882	0.217049	-0.179138	0.8579
FIRM_AGE	-0.001565	0.001677	-0.933028	0.3513
D(MARKET_CAPITALISATION)	4.79E-06	7.63E-07	6.274536	0.0000**
D(PROFITABILITY)	-2.34E-08	1.37E-08	-1.707790	0.0884*
DSALES	1.69E-09	2.31E-09	0.731223	0.4650
TOP_40	0.391902	0.092257	4.247923	0.0000**
D(TANGIBILITY)	5.90E-10	1.14E-09	0.516589	0.6057
LEVERAGE(1)	-0.194218	0.388091	-0.500445	0.6170
HT	0.127253	0.393423	0.323450	0.7465

R-squared	0.150222	**Mean dependent var**	0.694743
Adjusted R-squared	0.132185	**S.D. dependent var**	0.967659
S.E. of regression	0.901438	**Akaike info criterion**	2.653121
Sum squared resid	344.5383	**Schwarz criterion**	2.746970
Log likelihood	-565.7272	**Hannan-Quinn criter.**	2.690165
F-statistic	8.328237	**Durbin-Watson stat**	0.266886
Prob(F-statistic)	0.000000		

Note: This table presents the OLS estimations with herding being present in South African firms. The effect of EPU on the market-to-book leverage is analysed on the sample period from June 2002 to June 2017. * Significant at the 10% level, ** Significant at the 5% level, *** Significant at the 1% level.

Table 4.81: The GMM estimation on the Market-to-Book Leverage with herding being present in South African firms (2002-2017)

Dependent Variable: MARKET_TO_BOOK_RATIO
Method: Panel Generalized Method of Moments

Sample (adjusted): 2004 2011
Periods included: 8
Cross-sections included: 66
Total panel (unbalanced) observations: 393
2SLS instrument weighting matrix
Instrument specification: C MKT_TO_BOOK_RATIO(-1) FIRM_AGE(-1) D(EPU) (-1) SALES_GROWTH D(PROFITABILITY) (-1) D(TANGIBILITY) (-1) D(MARKET_CAPITALZATION) (-1) DSALES(-1) HT(-1)
Constant added to instrument list

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	387.7042	1863.199	0.208085	0.8353
D(EPU)	16.78451	80.54445	0.208388	0.8350
FIRM_AGE	-0.009745	0.143141	-0.068081	0.9458
D(MARKET_CAPITALISATION)	-5.28E-05	0.000273	-0.193444	0.8467
D(PROFITABILITY)	-9.07E-07	4.22E-06	-0.215189	0.8297
DSALES	1.58E-07	9.09E-07	0.173656	0.8622
TOP_40	1.418896	26.40724	0.053731	0.9572
D(TANGIBILITY)	6.21E-10	9.71E-08	0.006398	0.9949
LEVERAGE(1)	-645.4102	3096.998	-0.208399	0.8350
HT	606.1365	2910.063	0.208290	0.8351

R-squared	-3820.094645	**Mean dependent var**	0.715465
Adjusted R-squared	-3909.885381	**S.D. dependent var**	0.986705
S.E. of regression	61.70566	**Sum squared resid**	1458306.
Durbin-Watson stat	2.213201	**J-statistic**	6.13E-24
Instrument rank	10		

Note: This table presents the GMM estimations with herding being present in South African firms. The effect of EPU on the market-to-book leverage is analysed on the sample period from June 2002 to June 2017. * Significant at the 10% level, ** Significant at the 5% level, *** Significant at the 1% level.

Overall, Russia, India and China robustness outcomes show no significant results in determining change in market leverage and market-to-book leverage. In other words, leader firms' financial policies appear insensitive to the return shocks of follower firms. Brazil robustness outcomes show EPU being significant in determining change in market leverage and insignificant in determining market-to-book leverage. South African robustness outcomes shows EPU and the Herding effect being significant in determining change in market leverage and insignificant in determining market-to-book. This implies that for firms to decide on the target leverage, change in market leverage matters for Brazil and South Africa even though market-to-book ratio is not one of the variables which need to be taken into account for all the BRICS countries.

4.4.2.2 CAPM herding effect

The data used here as a robustness check are based on the new herding effect variable determined from the CAPM formula. The CAPM betas that determine the herding effect are shown below as well as the descriptive statistics of the herding effect of the BRICS countries. The regressions that demonstrate the effect of EPU on leverage in the presence of the CAPM herding effect are presented below as well.

4.4.2.2.1 CAPM betas

Table 4.82 below shows the fluctuation of firm beta, market beta and the herding factor over the 15-year period. Brazil's overall firm beta has been varying between -0.08 and 0.06 which is not in line with the market beta varying between positive values of 0.09 and 0.10. This shows that Brazilian firms were not taking as much risk as what the market was levelled at and confirms the research results of a negative relationship between leverage financing decisions and EPU. Brazilian firms show that herding exists and beyond the year 2008, there exists excess herding.

Russia's overall firm beta has been varying between -0.08 and 0.14, which is not in line with the market beta varying between positive values of 0.29 and 0.39. This shows that Russian firms were not taking as much risk as what the market was levelled at and confirms the research results of a negative relationship between leverage financing decisions and EPU. Russian firms show that positive and negative herding which shows excess herding on both ends. This confirms the research results above that herding was absent within the market in general and significantly present in bear markets.

India's overall firm beta has been varying between -0.62 and 0.83, which is not in line with the market beta varying between positive values of 0.46 and 0.73. This shows that Indian firms were not taking as much risk as what the market was levelled at and confirms the research results of a negative relationship between leverage financing decisions and EPU. Indian firms show that positive and negative herding which shows excess herding on both ends. This confirms the research results above proof of herding towards the market portfolio both when the market is rising and when it is falling.

China's overall firm beta has been varying between -0.17 and 0.04, which is not in line with the market beta varying between positive values of 0.10 and 0.16. This shows that Chinese firms were not taking as much risk as what the market was levelled at and confirms the research results of a

negative relationship between leverage financing decisions and EPU. Chinese firms show that herding exits but slightly excessive and negative in the year 2017. This confirms the research results above that herding exists towards the market portfolio both when the market is rising and when it is falling.

South Africa's overall firm beta has been varying between -0.05 and 0.06, which is not in line with the market beta varying between positive values of 0.09 and 0.11. This shows that South African firms were not taking as much risk as what the market was levelled at and confirms the research results of a negative relationship between leverage financing decisions and EPU. South African firms show that positive and negative herding which shows excess herding on both ends. This confirms the research results above that during times of economic policy uncertainty, herding is present relative to market conditions.

Overall, firm betas for the BRICS countries are not in line with the country specific market betas. Firms show that herding exists and in some instances there exists excess herding. This confirms the research results above that during times of economic policy uncertainty, herding is present relative to market conditions.

Table 4.82: Firm Beta's, Market Beta's and Herding Factors of the BRICS firms (2002-2017)

	Brazil			Russia			India			China			South Africa		
Year	**β**	**β_m**	**H_m**	**β**	**β_m**	**H_m**	**β**	**β_m**	**H_m**	**β**	**β_m**	**H_m**	**β**	**β_m**	**H_m**
2002	0,00	0,10	0,33	-0,06	0,30	2,79	0,10	0,46	1,00	-	0,10	0,86	-0,05	0,11	2,09
2003	-0,01	0,10	0,45	-0,01	0,31	-0,98	0,12	0,53	4,65	-0,02	0,11	1,07	0,00	0,10	2,19
2004	-0,00	0,10	0,61	-0,00	0,33	7,41	0,17	0,54	-8,30	-0,04	0,12	1,21	-0,04	0,10	2,08
2005	0,01	0,10	0,70	0,00	0,35	-55,11	0,11	0,56	4,15	0,00	0,12	1,44	-0,01	0,10	2,86
2006	0,00	0,10	0,98	0,03	0,34	3,62	-0,11	0,58	-0,24	0,00	0,13	2,47	0,05	0,10	-1,97
2007	-0,00	0,09	1,20	0,05	0,33	4,85	-0,04	0,59	6,22	-0,01	0,14	2,30	-0,02	0,10	-0,96
2008	0,02	0,10	0,84	0,14	0,29	1,93	0,83	0,57	-3,02	-0,00	0,12	0,06	0,06	0,10	8,97
2009	-0,03	0,09	1,32	-0,08	0,31	-2,94	-0,04	0,61	9,19	-0,01	0,13	1,92	-0,01	0,10	-1,82
2010	0,02	0,09	1,84	-0,02	0,33	176,24	-0,03	0,62	-3,02	-0,02	0,14	3,20	0,01	0,10	17,96
2011	-0,08	0,09	1,32	-0,02	0,34	-18,63	0,05	0,63	5,72	0,01	0,14	3,08	0,04	0,10	59,27
2012	0,01	0,09	1,92	-0,01	0,35	-6,19	0,10	0,65	-0,86	0,03	0,14	3,53	0,01	0,10	3,12
2013	0,01	0,10	1,66	0,11	0,36	-1,13	-0,05	0,66	1,00	0,03	0,15	3,24	-0,01	0,10	-7,18
2014	-0,01	0,10	2,31	-0,06	0,38	-2,10	0,24	0,69	56,92	-0,01	0,15	2,08	0,05	0,10	3,05
2015	0,06	0,10	1,49	-0,08	0,39	5,94	-0,62	0,71	2,15	-0,01	0,15	3,54	-0,03	0,10	-41,55
2016	-0,02	0,09	1,66	0,04	0,38	-41,20	-0,03	0,72	1,00	-0,17	0,15	1,39	0,01	0,10	-2,07
2017	-0,01	0,09	1,78	-0,06	0,38	8,86	0,40	0,73	2,50	0,04	0,16	-2,99	0,02	0,09	-7,40

This table provides the statistics for the key variables Firm Beta, Market Beta and Herding Factor of the BRICS firms. *Source: eViews output*

4.4.2.2.2 Descriptive statistics of the CAPM herding effect

Table 4.83 below shows a robustness check using the CAPM mechanism in equilibrium where it is meant to reflect a different way of the effect of herding using firm betas and the market beta. There are 16 observations for all five countries in total. Herding factors for Brazil and China are negatively skewed whereas the other three countries are positively skewed. This shows that the data lacks symmetry but not that far off from being normally distributed. Brazil's kurtosis distribution is platykurtic leaning more towards being mesokurtic whereas all other four countries are leptokurtic taking the sample size into consideration. The Jacques-Bera statistic illustrates that the skewness and kurtosis series are not normally distributed as the null hypothesis is rejected seeing that there is no skewness or excessive kurtosis.

The herding probability values in Table 4.83 are significant at a 5% significance level for Russia, India, China and South Africa, which implies non-normality. However, the Brazil herding factor has a large probability value of 0.7 indicating a weak evidence against the null hypothesis, which confirms that the herding factor shows normality. Similar to Leary and Roberts (2014), there are little changes in the results, suggesting that functional form misspecification in the control variables is unlikely to be behind this study's results.

Table 4.83: Descriptive Statistics of the BRICS firms (2002-2017)

	Hm__BRAZIL_	Hm__RUSSIA_	Hm__INDIA_	Hm__CHINA_	Hm__SA_
Mean	1.275	5.210	4.940	1.775	2.416
Median	1.322	0.476	1.577	2.003	2.087
Maximum	2.307	176.235	56.917	3.536	59.270
Minimum	0.328	-55.109	-8.303	-2.994	-41.550
Std. Dev.	0.580	48.974	14.481	1.644	19.508
Skewness	-0.072	2.735	3.097	-1.475	0.934
Kurtosis	1.977	10.801	11.869	5.433	7.004
Jarque-Bera	0.712	60.529	78.022	9.747	13.012
Probability	0.700000	0.000000**	0.000000**	0.007647**	0.001494**
Sum	20.401	83.361	79.044	28.398	38.654
Sum Sq. Dev.	5.043	35976.48	3145.653	40.530	5708.426
Observations	16	16	16	16	16

This table provides the descriptive statistics for the BRICS herding factors used in this study at 90%, 95% and 99% confidence level. * Significant at the 10% level, ** Significant at the 5% level, *** Significant at the 1% level.

Source: eViews output

4.4.2.2.3 CAPM herding effect regressions

Table 4.84 below presents the OLS estimations in the presence of CAPM *herding* in Brazilian firms. The effect of EPU on book leverage is analysed on the sample period from June 2002 to June 2017. This is to inspect if the CAPM determined herding is significant in explaining leveraging behaviour by firms. The least squares estimation of the equation, that is inclusive of the herding variable illustrates that the herding effect is statistically significant at a 5% significance level and is positively related to the leverage ratio of firms. The differenced EPU is statistically insignificant and not consistent with prior expectations of a negative relation to leverage. Compared to the original least squares regression, the R-squared value is approximately 1% which indicates that this model is not a better fit.

Table 4.84: The effect of EPU on Leverage (2002-2017) with CAPM herding being present in Brazilian firms

Dependent Variable: LEVERAGE
Method: Panel Least Squares

Sample (adjusted): 2003 2016
Periods included: 14
Cross-sections included: 78
Total panel (unbalanced) observations: 691

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-3.486823	2.092955	-1.665981	0.0962*
D(EPU)	0.002229	0.006945	0.320999	0.7483
FIRM_AGE	-0.047733	0.023466	-2.034137	0.0423**
D(MARKET_CAPITALISATION)	7.58E-07	2.77E-05	0.027339	0.9782
D(PROFITABILITY)	1.52E-09	1.46E-07	0.010368	0.9917
DSALES	1.89E-08	9.37E-08	0.201594	0.8403
TOP_40	1.603329	1.073008	1.494237	0.1356
D(TANGIBILITY)	7.73E-09	1.66E-08	0.465962	0.6414
LEVERAGE(1)	-0.011392	0.038405	-0.296622	0.7668
HM__BRAZIL_	2.316705	1.226279	1.889215	0.0593*

R-squared	0.012482	**Mean dependent var**	0.066533
Adjusted R-squared	-0.000569	**S.D. dependent var**	13.32823
S.E. of regression	13.33202	**Sum squared resid**	121042.9
F-statistic	0.956415	**Durbin-Watson stat**	2.271310
Prob(F-statistic)	0.475212		

Note: This table presents the OLS estimations with CAPM herding being present in Brazilian firms. The effect of EPU on leverage is analysed on the sample period from June 2002 to June 2017. * Significant at the 10% level, ** Significant at the 5% level, *** Significant at the 1% level.

Table 4.85 below presents the OLS estimations in the presence of CAPM *herding* in Russian firms. The effect of EPU on book leverage is analysed on the sample period from June 2002 to June 2017. The least squares estimation of the equation, that is inclusive of the herding variable illustrates that the differenced EPU as well as the herding effect are statistically insignificant at a 5% significance

level and are both negatively related to the leverage ratio of firms. Compared to the original least squares regression, the R-squared value is approximately 50% which indicates that this model is not a better fit.

Table 4.85: The effect of EPU on Leverage (2002-2017) with CAPM herding being present in Russian firms

Dependent Variable: LEVERAGE
Method: Panel Least Squares

Sample (adjusted): 2004 2016
Periods included: 13
Cross-sections included: 49
Total panel (unbalanced) observations: 393

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.186257	0.027457	6.783593	0.0000**
D(EPU)	-0.000405	0.000253	-1.604667	0.1094
FIRM_AGE	-0.001189	0.001005	-1.182952	0.2376
MARKET_CAPITALISATION	1.61E-08	2.02E-08	0.796066	0.4265
D(PROFITABILITY)	1.15E-10	1.41E-10	0.819469	0.4130
DSALES	-6.73E-11	8.24E-11	-0.817499	0.4142
TOP_40	-0.020057	0.026998	-0.742898	0.4580
D(TANGIBILITY)	3.20E-11	1.66E-11	1.926593	0.0548*
LEVERAGE(1)	0.656011	0.036780	17.83628	0.0000**
HM__RUSSIA_	-0.000186	0.000204	-0.911697	0.3625

R-squared	0.497548	Mean dependent var	0.522523
Adjusted R-squared	0.485741	S.D. dependent var	0.299837
S.E. of regression	0.215019	Akaike info criterion	-0.211067
Sum squared resid	17.70727	Schwarz criterion	-0.109952
Log likelihood	51.47460	Hannan-Quinn criter.	-0.170996
F-statistic	42.14027	Durbin-Watson stat	2.758146
Prob(F-statistic)	0.000000		

Note: This table presents the OLS estimations with CAPM herding being present in Russian firms. The effect of EPU on leverage is analysed on the sample period from June 2002 to June 2017. * Significant at the 10% level, ** Significant at the 5% level, *** Significant at the 1% level.

Table 4.86 below presents the OLS estimations in the presence of CAPM *herding* in Indian firms. The effect of EPU on book leverage is analysed on the sample period from June 2002 to June 2017. The least squares estimation of the equation, that is inclusive of the herding variable illustrates that the differenced EPU as well as the herding effect are statistically insignificant at a 5% significance level and respectively, are positively and negatively related to the leverage ratio of firms. Compared to the original least squares regression, the R-squared value is approximately 65% which indicates that this model is not a better fit.

Table 4.86: The effect of EPU on Leverage (2002-2017) with CAPM herding being present in Indian firms

Dependent Variable: LEVERAGE
Method: Panel Least Squares

Sample (adjusted): 2004 2016
Periods included: 13
Cross-sections included: 72
Total panel (unbalanced) observations: 680

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.110900	0.018395	6.028813	0.0000**
D(EPU)	4.17E-05	7.08E-05	0.588623	0.5563
FIRM_AGE	8.35E-05	0.000248	0.337098	0.7361
D(MARKET_CAPITALISATION)	2.57E-08	3.05E-08	0.841585	0.4003
D(PROFITABILITY,2)	2.48E-10	2.12E-10	1.170431	0.2422
DSALES	4.59E-11	4.60E-11	0.998436	0.3184
TOP_40	-0.008616	0.012469	-0.691003	0.4898
D(TANGIBILITY,2)	2.68E-11	3.95E-11	0.677836	0.4981
LEVERAGE(1)	0.824731	0.023574	34.98521	0.0000**
HM__INDIA_	-0.000457	0.000379	-1.206172	0.2282

R-squared	0.654328	**Mean dependent var**	0.577787
Adjusted R-squared	0.649685	**S.D. dependent var**	0.265293
S.E. of regression	0.157020	**Akaike info criterion**	-0.850291
Sum squared resid	16.51903	**Schwarz criterion**	-0.783790
Log likelihood	299.0989	**Hannan-Quinn criter.**	-0.824550
F-statistic	140.9173	**Durbin-Watson stat**	2.159993
Prob(F-statistic)	0.000000		

Note: This table presents the OLS estimations with CAPM herding being present in Indian firms. The effect of EPU on leverage is analysed on the sample period from June 2002 to June 2017. * Significant at the 10% level, ** Significant at the 5% level, *** Significant at the 1% level.

Table 4.87 below presents the OLS estimations in the presence of CAPM *herding* in Chinese firms. The effect of EPU on book leverage is analysed on the sample period from June 2002 to June 2017. This is to inspect if the CAPM determined herding is significant in explaining leveraging behaviour by firms. The least squares estimation of the equation, that is inclusive of the herding variable illustrates that the differenced EPU as well as the herding effect are statistically insignificant at a 5% significance level and are both positively related to the leverage ratio of firms. The differenced EPU is statistically insignificant and not consistent with prior expectations of a negative relation to leverage. Compared to the original least squares regression, the R-squared value is approximately 85% which indicates that this model is not a better fit.

Table 4.87: The effect of EPU on Leverage (2002-2017) with CAPM herding being present in Chinese firms

Dependent Variable: LEVERAGE
Method: Panel Least Squares

Sample (adjusted): 2004 2016
Periods included: 13
Cross-sections included: 72
Total panel (unbalanced) observations: 672

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.038412	0.014490	2.650923	0.0082**
D(EPU)	8.44E-06	3.31E-05	0.254746	0.7990
DSALES	7.86E-11	5.41E-11	1.453169	0.1467
D(MARKET_CAPITALISATION)	-1.08E-10	1.60E-10	-0.675920	0.4993
D(PROFITABILITY)	-2.74E-10	3.21E-10	-0.854837	0.3930
TOP_40	0.007943	0.008608	0.922782	0.3565
D(TANGIBILITY,2)	-3.09E-11	1.57E-11	-1.969290	0.0493**
FIRM_AGE	3.35E-05	0.000118	0.283227	0.7771
LEVERAGE(1)	0.902915	0.015345	58.84229	0.0000**
HM__CHINA_	0.002762	0.004235	0.652282	0.5144

R-squared	0.851139	**Mean dependent var**	0.577654
Adjusted R-squared	0.849116	**S.D. dependent var**	0.278695
S.E. of regression	0.108256	**Akaike info criterion**	-1.593868
Sum squared resid	7.758212	**Schwarz criterion**	-1.526751
Log likelihood	545.5395	**Hannan-Quinn criter.**	-1.567874
F-statistic	420.5680	**Durbin-Watson stat**	1.898136
Prob(F-statistic)	0.000000		

Note: This table presents the OLS estimations with CAPM herding being present in Chinese firms. The effect of EPU on leverage is analysed on the sample period from June 2002 to June 2017. * Significant at the 10% level, ** Significant at the 5% level, *** Significant at the 1% level.

Table 4.88 below presents the OLS estimations in the presence of CAPM *herding* in South African firms. The effect of EPU on book leverage is analysed on the sample period from June 2002 to June 2017. This is to inspect if the CAPM determined herding is significant in explaining leveraging behaviour by firms. The least squares estimation of the equation, that is inclusive of the herding variable illustrates that both the differenced EPU and the herding effect are statistically insignificant at a 5% significance level and are respectively, negatively and positively related to the leverage ratio of firms. Compared to the original least squares regression, the R-squared value is approximately 84% which indicates that this model is not a better fit.

Table 4.88: The effect of EPU on Leverage (2002-2017) with CAPM herding being present in South African firms

Dependent Variable: LEVERAGE
Method: Panel Least Squares

Sample (adjusted): 2004 2011
Periods included: 8
Cross-sections included: 66
Total panel (unbalanced) observations: 369

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.039229	0.015088	2.599998	0.0097**
D(EPU)	-0.009265	0.029775	-0.311159	0.7559
FIRM_AGE	0.000298	0.000194	1.534232	0.1259
D(MARKET_CAPITALISATION)	-1.62E-08	8.45E-08	-0.191694	0.8481
D(PROFITABILITY,2)	8.13E-10	9.41E-10	0.863592	0.3884
DSALES	1.78E-10	3.44E-10	0.517851	0.6049
TOP_40	0.000494	0.010567	0.046725	0.9628
D(TANGIBILITY,2)	2.12E-11	9.74E-11	0.217129	0.8282
LEVERAGE(1)	0.911088	0.021331	42.71154	0.0000**
HM__SA_	8.34E-05	0.000284	0.293364	0.7694

R-squared	0.844472	**Mean dependent var**	0.611643
Adjusted R-squared	0.840573	**S.D. dependent var**	0.241769
S.E. of regression	0.096534	**Akaike info criterion**	-1.811111
Sum squared resid	3.345473	**Schwarz criterion**	-1.705127
Log likelihood	344.1500	**Hannan-Quinn criter.**	-1.769009
F-statistic	216.5846	**Durbin-Watson stat**	2.107277
Prob(F-statistic)	0.000000		

Note: This table presents the OLS estimations with CAPM herding being present in South African firms. The effect of EPU on leverage is analysed on the sample period from June 2002 to June 2017. * Significant at the 10% level, ** Significant at the 5% level, *** Significant at the 1% level.

The summary in Table 4.89 below shows both significant and insignificant herding effect results from the OLS estimations and the CAPM estimations. The CAPM herding effects are less than the OLS herding estimates except for Brazil. The OLS shows that all the BRICS countries' herding effects are statistically significant at a 5% significance level whereas the CAPM results shows only Brazil as having a significant herding effect. The comparison between the two models shows that the OLS estimation expresses a true reflection of the countries' herding effects as well as being aligned to the expectations drawn from the literature review.

Table 4.89: Comparison of the herding effects

Leverage in BRICS	*Ht (OLS)*	*Hm (CAPM)*
BRAZIL	*0.999148***	*2.316705***
	(+)	*(+)*
RUSSIA	*0.964966***	*-0.000186*
	(+)	*(-)*
INDIA	*0.988839***	*-0.000457*
	(+)	*(-)*
CHINA	*0.990808***	*0.002762*
	(+)	*(+)*
SOUTH AFRICA	*0.965842***	*8.34E-05*
	(+)	*(+)*

* Significant at the 10% level, ** Significant at the 5% level, *** Significant at the 1% level.

4.4.2.2.4 Robustness summary

The market-to-book leverage analysis and the CAPM herding analysis, as the two robustness checks were implemented to determine how the EPU and CAPM herding impacts the outcome of making leverage finance decisions in the leverage equation when the regression is modified. The robust checks have shown that firstly, for firms to decide on the target leverage, market-to-book ratio is not one of the variables which need to be taken into account for all the BRICS countries. Secondly, even though a CAPM analysis is an important and widely used model for evaluating the risk of a portfolio of assets obtained through leverage with respect to market risk, the robust check has shown to yield insignificant CAPM herding effects. In conclusion, the results from the two robust checks are not plausible and robust, and this is understood as evidence of structural invalidity.

5 CONCLUSION

This study examines the role of economic policy uncertainty (EPU) in influencing firm performance and leverage as a form of financing decisions, in the presence of herding in the emerging markets of Brazil, Russia, India, China and South Africa (BRICS). The increase or decrease EPU is determined by the way policymakers or investors act and the consequences of their decisions. This study tries to answer the questions of: During times of economic policy uncertainty, how do firms rationalise making leverage financing decisions; and do they herd their leverage financing decisions towards what the market or other firms have decided? The sample firms are selected based on the Top 80 listed firms by market capitalisation in their respective country stock exchanges; however, the Top 50 in Russia was used. These firms will be split into two sub-groups of the first 40 (25) listed firms and the next 40 (25) listed firms. This has provided some insight into how the first group performs as to the second group at the beginning and end of the sample period. This research employs monthly data sampled over a period of 15 years from the beginning of June 2002 to the end of June 2017.

Using a recently available Economic Policy Uncertainty (EPU) measure for the BRICS countries, the relationship between *EPU* and BRICS firms' capital structure choices is explored from June 2002 to 2017. The change in EPU in Brazil, Russia and South Africa yield a negative relationship to the firms' leverage ratios, as expected, which means that during times of economic policy uncertainty, the firms in those countries decrease their borrowing levels. However, in India and China, the change in EPU is found to be statistically significant though the sign is not what is expected by the theory. This implies that the change in EPU does not affect the debt decisions of the firms in these two countries. Both countries have several alternative sources of leverage financing available. The negative relationship is vast for firms that borrow on a short-term basis mainly from local banks in Brazil, Russia and South Africa. This means that firms in these countries are more prone to react when there is uncertainty and more so it is evident that they tend to mimic other firms in the presence of uncertainty. Firms in India and China on the other hand take the opportunity of cheaper debt when there is uncertainty in the market. Firms in both countries have a variety and flexible sources of finance, which means they are able to increase leverage in times of uncertainty. This implies that the countries are not intimidated by EPU but rather use it to their advantage in growing their businesses knowing that EPU is only temporary in the market.

In developed countries, firms are likely to delay their debt issuance during times of high policy uncertainty as they value financial flexibility. Cao *et al.* (2013) confirm this with the results found in

their study, that suggest policy uncertainty has a first-order effect on firms' financing decisions by increasing financial conflicts. They also show that firms that have lower political risk exposure and access to public debt markets are less sensitive to changes in policy uncertainty when determining capital structures and show that firms hold more cash during periods of high policy uncertainty (Cao *et al.*, 2013). This is evidence that emerging countries react to EPU but some react more than others.

The outcomes of this study contribute to the body of knowledge in a number of ways. Firstly, like Zhang *et al*. (2015), this study gives an "out-of-sample" investigation on the role of policy uncertainty and the presence of herding in determining financing decisions in the BRICS countries as the future leading emerging group of the world. Secondly, this study shows that firms in these countries have a tendency of changing their financing structure as a reaction to policy uncertainty in the presence of herding or not. This shows that emerging markets still require financial support in order to be stable in times of uncertainty. Thirdly, this study likewise adds to the growing literature that considers the impact of uncertainty and herding on corporate financing decisions in emerging countries.

Robustness checks suggest that peer effects play a significant role in determining variation in leverage ratios and firm financing decisions. When making these choices, firms respond to their competitors. These checks showed how the leverage and herding factors behaved when the regression specification is modified. It is confirmed that the coefficients are plausible and robust; and show evidence of structural validity. The market-to-book leverage analysis and the CAPM herding analysis, as the two robustness checks were implemented to determine how the EPU and CAPM herding impacts the outcome of making leverage finance decisions in the leverage equation when the regression is modified. The robust checks have shown that firstly, for firms to decide on the target leverage, market-to-book ratio is not one of the variables which need to be taken into account for all the BRICS countries. Secondly, even though a CAPM analysis is an important and widely used model for evaluating the risk of a portfolio of assets obtained through leverage with respect to market risk, the robust check has shown to yield insignificant CAPM herding effects. In conclusion, the results from the two robust checks are not plausible and robust, and this is understood as evidence of structural invalidity.

In essence this study tried to answer the questions through the primary and secondary hypotheses: *During times of economic policy uncertainty, how do firms rationalise making leverage financing decisions; and do they herd their leverage financing decisions towards what the market or other firms have decided?* Russian, Indian and South African results reject the primary and secondary null

hypotheses and conclude that there is a significant relation with EPU being a factor in determining firm leverage financing decisions and that there is a significant relation with more EPU leading to herding towards firm leverage financing decisions, respectively. Brazilian and Chinese results fail to reject the primary and secondary null hypotheses and conclude that there is no significant relation with EPU being a factor in determining firm leverage financing decisions and that there is no significant relation with less EPU leading to little or no herding towards firm leverage financing decisions, respectively.

In summary, EPU has an impact on business. It affects the profit for many companies and this is the reason of investment delays or less consumption, which together may lead to economic activity slowdown. EPU leads to financial and economic problems that could harm countries and their citizens that could contribute, otherwise, to sustainable growth. EPU is, in fact, a market characteristic that brings changes at the prices and returns levels. Investors and policymakers should be aware of it to prevent EPU consequences. By this way, financial markets could find more stability.

5.1 Limitations

The outcomes of this study are interpreted subject to some limitations. First, there is a total sample size of 369 firms and 80 firms for each country (50 for Russia) which is a small sample size considering the period of 15 years as some firms might have been listed or delisted at a later stage than others, shown in Figures 3.1, 3.2, 3.3, 3.4 and 3.5 in Chapter 3. This may also result in industries being unfairly represented among the Top 80 firms indicated in each country, which will in turn show a biasness in large industries that are doing better than the small industries. A larger sample size would be able to diversify the firm concentration of industries.

Figures below represent firm concentration of industries in the sample of this study verses firm concentration of industries in the specific market. Figure 5.1 shows that 20 percent of firms in both the Telecommunications and Basic Material industries of Brazil were represented in this study, whereas the Technology industry was least represented. Figure 5.2 and Figure 5.3 show that the Oil and Gas industry was the most represented in this study with 50 percent and 30 percent firm representation in Russia and India, respectively. Figure 5.3 also shows that there is no firm representation in this study from the Miscellaneous, Conglomerates and Consumer Durable industries of India. Figure 5.4 shows that 10 percent of firms in the Conglomerates industry of China was represented in this study while most of the industries were less than 5 percent represented. Figure 5.5

shows no representation from the Technology industry and 36 percent of firms in the Healthcare industry being represented in this study.

Moreover, the small sample size limits to a certain extent the validity, generalisability and reliability of the outcomes of this study. Second, the mean of returns that is calculated across the entire sample period brings a limitation of look-ahead bias as the future mean is not known until relevant data is obtained. Third, firms that operate internationally may influence the results by either overstating or understating the true reflection of the results. Lastly, the complexity of policy uncertainty may not be adequately captured by herding behaviour.

5.2 Areas of future research

A steady and predictable economic policy is critical to economic growth. A few further research questions can be raised with regard to the potential indirect impact of EPU translated through other variables; the endogeneity of public policies with respect to growth or the diverse impacts of endogenous and exogenous shocks related to crisis periods.

In addition, basic financial education should also be promoted and become a prerequisite for politicians, public employees, public managers and the community. Personal financial education for the public would generate important benefits at societal level and contribute to a more predictable economic and financial evolution. An updated EPU index from Baker *et al.* (2016) that measures macroeconomic factors can be used in this regard. Furthermore, for future investigations in matters of EPU and its effect on financial assets returns, we suggest the focus on the post, during and pre-crises periods as uncertainty levels varies during those three periods. For example, do research for Brazil's Economic crisis (2014-2016) as a case study looking at how EPU affected asset returns of Brazilian firms before 2014, during the crisis from 2014 to 2016 and after the crisis until date. This could not be done now as there is not enough data for all three periods in all five countries.

BRICS countries have diverse political systems, varied economies and different views on significant policy issues but can be grouped according to political systems. For instance, China and Russia are authoritarian and practice variants of state capitalism, while India, Brazil and South Africa are democracies. This phenomenon was briefly reviewed in this study and suggest that further detailed study be done, focusing on political systems of the BRICS countries and find out why the countries financial behaviour differs according to their political system.

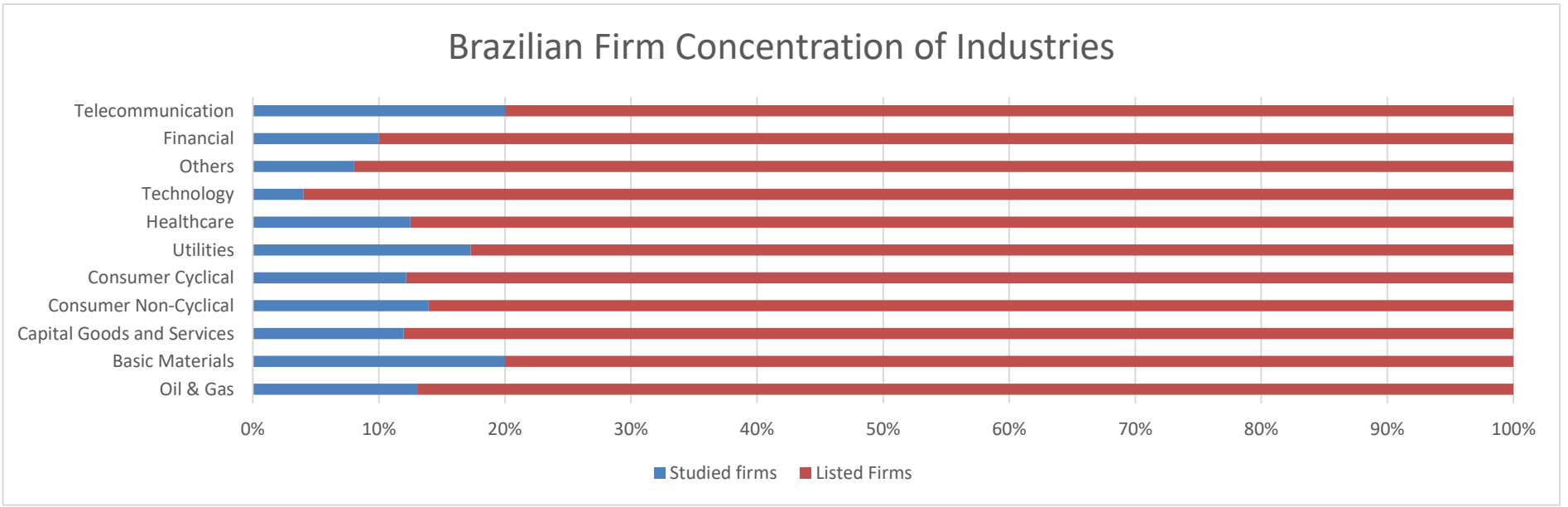


Figure 5.1: Brazilian firm concentration of industries.

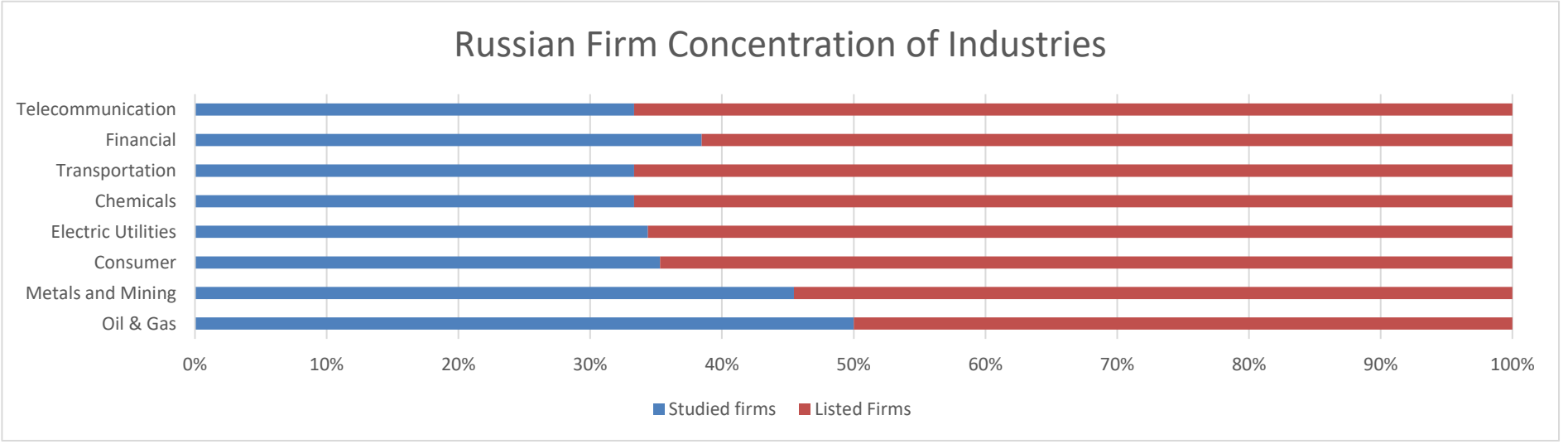


Figure 5.2: Russian firm concentration of industries.

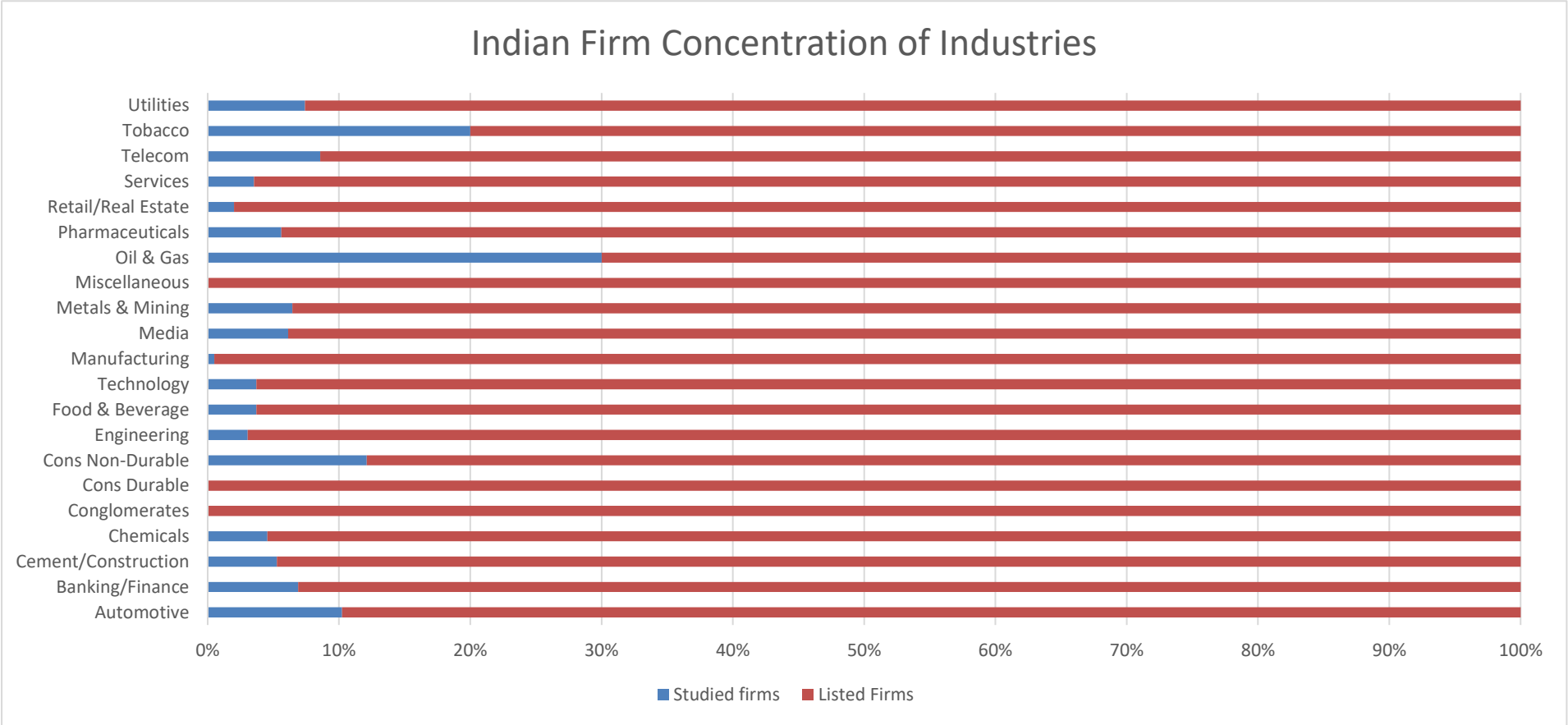


Figure 5.3: Indian firm concentration of industries.

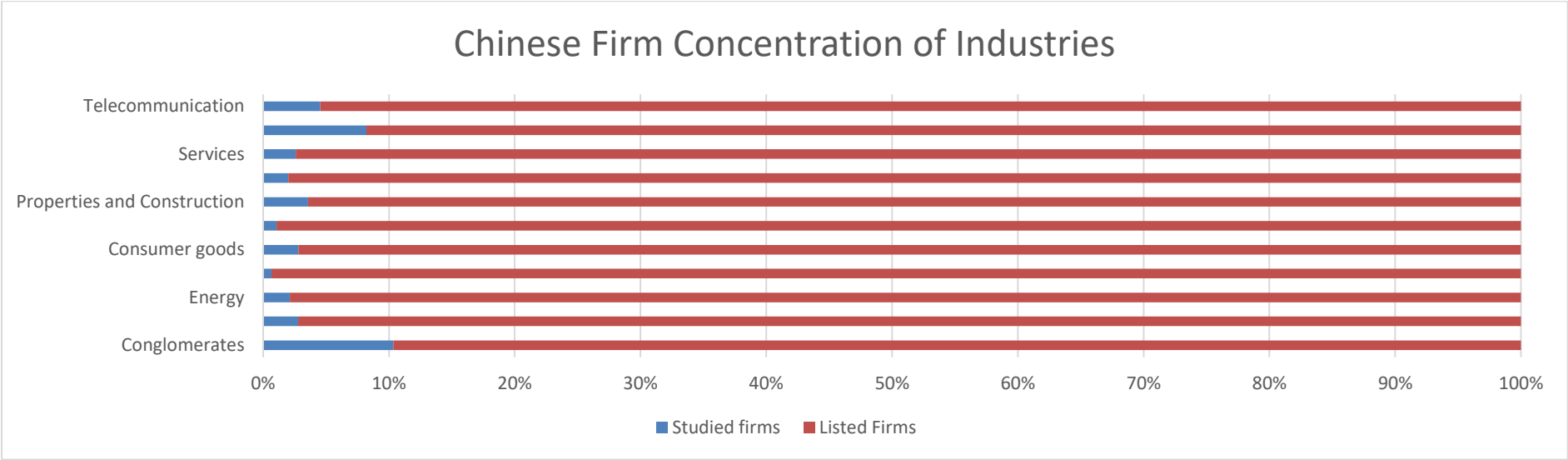


Figure 5.4: Chinese firm concentration of industries.

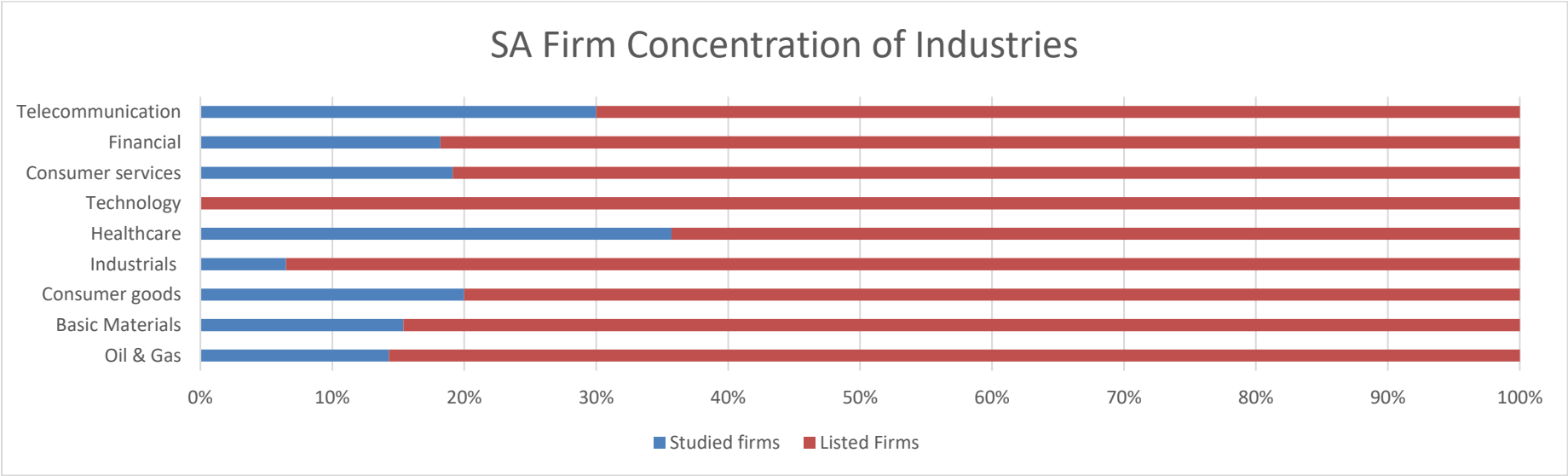


Figure 5.5: South African firm concentration of industries

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A. Appendix A: BRICS countries Top 80 listed firms by Market Capitalisation

Table A.1: Brazil Top 80 firms listed on the B3 Stock Exchange

	Short Name	Full Name	Market Capital (Brazilian Real)	Market Capital (USD)
1	ABEV3	Ambev S/A	R$ 330 698 628 420,00	$ 106 333 964 122,19
2	ITUB4	Itau Unibanco	R$ 268 751 898 110,00	$ 86 415 401 321,54
3	BBDC4	Bradesco	R$ 209 079 220 940,00	$ 67 228 045 318,33
4	PETR3	Petrobras	R$ 203 376 454 640,00	$ 65 394 358 405,14
5	VALE5	Vale	R$ 168 344 661 780,00	$ 54 130 116 327,97
6	SANB11	Santander BR	R$ 103 660 245 220,00	$ 33 331 268 559,49
7	BBAS3	Brasil	R$ 100 003 054 000,00	$ 32 155 322 829,58
8	VIVT4	Telef Brasil	R$ 81 142 424 070,00	$ 26 090 811 598,07
9	ITSA4	Itau SA	R$ 80 909 456 290,00	$ 26 015 902 344,05
10	CIEL3	Cielo	R$ 59 715 595 040,00	$ 19 201 155 961,41
11	BBSE3	Bb Seguridade	R$ 57 260 000 000,00	$ 18 411 575 562,70
12	BVMF3	Bmfbovespa	R$ 49 316 366 840,00	$ 15 857 352 681,67
13	UGPA3	Ultrapar	R$ 41 902 867 780,00	$ 13 473 590 926,05
14	BRFS3	BRF SA	R$ 37 105 653 140,00	$ 11 931 078 180,06
15	CCRO3	CCR SA	R$ 35 774 200 000,00	$ 11 502 958 199,36
16	WEGE3	Weg	R$ 34 547 155 830,00	$ 11 108 410 234,73
17	BRKM5	Braskem	R$ 33 999 557 750,00	$ 10 932 333 681,67
18	KROT3	Kroton	R$ 32 830 985 060,00	$ 10 556 586 836,01
19	LAME4	Lojas America	R$ 28 800 729 520,00	$ 9 260 684 733,12
20	TIMP3	Tim Part S/A	R$ 27 962 925 130,00	$ 8 991 294 254,02
21	CPFE3	CPFL Energia	R$ 27 707 639 390,00	$ 8 909 208 807,07
22	ELET3	Eletrobras	R$ 27 506 395 480,00	$ 8 844 500 154,34
23	LREN3	Lojas Renner	R$ 25 710 274 940,00	$ 8 266 969 434,08
24	RADL3	Raiadrogasil	R$ 24 778 950 000,00	$ 7 967 508 038,59
25	FIBR3	Fibria	R$ 23 736 099 580,00	$ 7 632 186 360,13
26	EGIE3	Engie Brasil	R$ 23 661 904 460,00	$ 7 608 329 408,36
27	JBSS3	JBS	R$ 23 194 353 000,00	$ 7 457 991 318,33
28	SBSP3	Sabesp	R$ 22 747 208 440,00	$ 7 314 214 932,48
29	PCAR4	P.Acucar-Cbd	R$ 20 979 673 060,00	$ 6 745 875 581,99
30	HYPE3	Hypermarcas	R$ 20 358 065 530,00	$ 6 546 001 778,14
31	SUZB3	Suzano Papel	R$ 20 247 676 710,00	$ 6 510 506 980,71
32	KLBN11	Klabin S/A	R$ 19 248 468 170,00	$ 6 189 218 061,09
33	BPAC3	BTGP Banco	R$ 19 144 408 130,00	$ 6 155 758 241,16
34	GGBR4	Gerdau	R$ 18 979 296 080,00	$ 6 102 667 549,84
35	MDIA3	M.Diasbranco	R$ 16 848 300 000,00	$ 5 417 459 807,07
36	RAIL3	Rumo S.A.	R$ 16 188 702 210,00	$ 5 205 370 485,53
37	CSAN3	Cosan	R$ 14 766 137 580,00	$ 4 747 954 205,79
38	MGLU3	Magaz Luiza	R$ 14 143 792 540,00	$ 4 547 843 260,45

39	MULT3	Multiplan	R$	13 815 025 740,00	$	4 442 130 463,02
40	NATU3	Natura	R$	13 454 665 040,00	$	4 326 258 855,31
41	CSNA3	Sid Nacional	R$	13 334 106 090,00	$	4 287 493 919,61
42	EMBR3	Embraer	R$	13 246 919 640,00	$	4 259 459 691,32
43	RENT3	Localiza	R$	12 833 726 970,00	$	4 126 600 311,90
44	BRML3	BR Malls Par	R$	12 276 534 430,00	$	3 947 438 723,47
45	PSSA3	Porto Seguro	R$	12 178 448 440,00	$	3 915 899 819,94
46	EQTL3	Equatorial	R$	12 173 037 350,00	$	3 914 159 919,61
47	USIM5	Usiminas	R$	11 349 951 650,00	$	3 649 502 138,26
48	QUAL3	Qualicorp	R$	10 927 805 090,00	$	3 513 763 694,53
49	TRPL4	Tran Paulist	R$	10 717 216 350,00	$	3 446 050 273,31
50	CMIG4	Cemig	R$	10 053 971 690,00	$	3 232 788 324,76
51	VVAR11	Viavarejo	R$	9 994 102 700,00	$	3 213 537 845,66
52	SMLS3	Smiles	R$	9 968 007 500,00	$	3 205 147 106,11
53	ENGI3	Energisa	R$	9 894 439 280,00	$	3 181 491 729,90
54	ESTC3	Estacio Part	R$	9 851 609 990,00	$	3 167 720 254,02
55	BTOW3	B2W Digital	R$	9 565 079 620,00	$	3 075 588 302,25
56	FLRY3	Fleury	R$	9 276 906 620,00	$	2 982 928 173,63
57	ENBR3	Energias BR	R$	9 187 714 970,00	$	2 954 249 186,50
58	ODPV3	OdontoPrev	R$	8 197 878 640,00	$	2 635 973 839,23
59	GRND3	Grendene	R$	8 038 245 600,00	$	2 584 644 887,46
60	BRAP4	Bradespar	R$	8 018 554 180,00	$	2 578 313 241,16
61	TAEE11	Taesa	R$	7 665 100 720,00	$	2 464 662 610,93
62	BRSR6	Banrisul	R$	7 628 732 580,00	$	2 452 968 675,24
63	SULA11	SulAmerica	R$	7 051 414 440,00	$	2 267 335 832,80
64	CPLE6	Copel	R$	7 010 288 010,00	$	2 254 111 900,32
65	IGTA3	Iguatemi	R$	6 933 770 550,00	$	2 229 508 215,43
66	DTEX3	Duratex	R$	6 551 199 220,00	$	2 106 494 926,05
67	SMTO3	Sao Martinho	R$	6 475 761 540,00	$	2 082 238 437,30
68	ECOR3	Ecorodovias	R$	6 374 756 500,00	$	2 049 760 932,48
69	MPLU3	Multiplus	R$	6 343 841 000,00	$	2 039 820 257,23
70	MRVE3	Mrv	R$	6 111 362 050,00	$	1 965 068 183,28
71	TIET4	Aes Tiete E	R$	5 677 401 680,00	$	1 825 531 086,82
72	CVCB3	CVC Brasil	R$	5 548 114 970,00	$	1 783 959 797,43
73	GOLL4	Gol	R$	5 522 089 030,00	$	1 775 591 327,97
74	CYRE3	Cyrela Realt	R$	5 516 450 630,00	$	1 773 778 337,62
75	ALUP11	Alupar	R$	5 503 236 540,00	$	1 769 529 434,08
76	CSMG3	Copasa	R$	5 424 943 780,00	$	1 744 354 913,18
77	TOTS3	TOTVS	R$	5 184 460 860,00	$	1 667 029 215,43
78	GOAU4	Gerdau Met	R$	5 065 111 770,00	$	1 628 653 302,25
79	SAPR4	Sanepar	R$	5 060 859 370,00	$	1 627 285 971,06
80	HGTX3	Cia Hering	R$	4 604 451 390,00	$	1 480 530 993,57

Source: www.bmfbovespa.com (15 September 2017)

Table A.2: Russia Top 50 firms listed on the Moscow Exchange

	Short Name	Full Name	Market Capital (Russian Ruble)	Market Capital (USD)
1	SBER	Sberbank of Russia	RUB 4 074 536 435 000,00	$ 70 750 762 892,86
2	ROSN	Rosneft	RUB 3 388 237 448 094,90	$ 58 833 781 005,29
3	GAZP	Gazprom	RUB 2 900 005 330 250,00	$ 50 356 057 132,31
4	LKOH	LUKOIL	RUB 2 533 402 655 017,50	$ 43 990 322 191,66
5	NVTK	Novatek	RUB 1 852 146 660 000,00	$ 32 160 907 449,21
6	GMKN	MMC Norilsk Nickel	RUB 1 508 870 613 660,00	$ 26 200 219 025,18
7	SNGS	Surgutneftegas	RUB 1 005 686 750 945,75	$ 17 462 871 174,61
8	MGNT	Magnit	RUB 983 154 407 935,00	$ 17 071 616 737,89
9	TATN	Tatneft	RUB 864 068 731 620,00	$ 15 003 798 083,35
10	VTBR	Jsc Vtb Bank	RUB 798 369 346 380,02	$ 13 862 985 698,56
11	NLMK	Novolipetsk Steel	RUB 784 093 919 809,20	$ 13 615 105 396,93
12	CHMF	Severstal	RUB 764 166 961 652,00	$ 13 269 091 190,35
13	RUAL	United Company RUSAL Plc	RUB 631 421 697 664,72	$ 10 964 085 738,23
14	ALRS	Ak Alrosa	RUB 597 666 960 874,50	$ 10 377 964 245,09
15	PLZL	Polus	RUB 586 581 427 971,00	$ 10 185 473 658,12
16	MTSS	Mobilnye Telesi	RUB 575 533 893 600,00	$ 9 993 642 882,44
17	YNDX	Yandex N.V	RUB 540 302 436 005,00	$ 9 381 879 423,60
18	MAGN	Magnitogorsk Iron	RUB 470 327 549 700,00	$ 8 166 826 700,82
19	URKA	Uralkali	RUB 425 722 304 195,00	$ 7 392 295 610,26
20	IRAO	Inter Rao Yees	RUB 411 336 000 000,00	$ 7 142 490 015,63
21	MFON	MegaFon	RUB 368 900 000 000,00	$ 6 405 625 976,73
22	HYDR	Federal Hydro	RUB 311 321 904 701,34	$ 5 405 832 691,46
23	PHOR	Phosagro Ag Zao	RUB 304 713 500 000,00	$ 5 291 083 521,44
24	POLY	Polymetal International plc	RUB 279 960 331 044,90	$ 4 861 266 383,83
25	TRNFP	Transneft	RUB 278 633 600 000,00	$ 4 838 228 859,18
26	MOEX	Moscow Exchange	RUB 259 627 842 012,42	$ 4 508 210 488,15
27	SNGSP	Surgutneftegas	RUB 230 058 687 279,45	$ 3 994 767 968,04
28	FEES	Federal Grid	RUB 221 536 833 148,35	$ 3 846 793 421,57

29	AFLT	Aeroflot	RUB 216 014 870 155,50	$	3 750 909 361,96
30	RSTI	Rosseti	RUB 215 399 142 097,99	$	3 740 217 782,57
31	PIKK	Gruppa Kompaniy	RUB 208 717 160 704,00	$	3 624 191 017,61
32	RTKM	Mimes Rostelekom	RUB 171 746 827 431,80	$	2 982 233 502,90
33	SBERP	Sberbank P	RUB 160 100 000 000,00	$	2 779 996 527,17
34	UPRO	Unipro	RUB 157 495 667 950,21	$	2 734 774 578,06
35	NMTP	Jsc Novorossiysk	RUB 152 537 737 968,00	$	2 648 684 458,55
36	AKRN	Akron	RUB 148 273 372 000,00	$	2 574 637 471,78
37	AFKS	Sistema Joint	RUB 135 582 500 000,00	$	2 354 271 574,93
38	MSNG	Mosenergo	RUB 117 121 488 356,05	$	2 033 712 247,89
39	CBOM	Credit Bank of Moscow	RUB 106 240 829 193,83	$	1 844 779 114,32
40	AGRO	Ros Agro plc	RUB 96 486 665 490,00	$	1 675 406 589,51
41	UWGN	UnitedWagon Company	RUB 85 083 571 381,50	$	1 477 401 829,86
42	LSRG	Gruppa Lsr	RUB 84 124 170 547,50	$	1 460 742 673,16
43	EPLN	SafmarFinancialinvestment	RUB 83 002 697 608,50	$	1 441 269 276,06
44	MVID	M Video	RUB 76 761 032 929,00	$	1 332 888 225,89
45	DSKY	Detsky mir	RUB 72 311 150 000,00	$	1 255 619 899,29
46	TRMK	TMK Group	RUB 69 189 075 461,02	$	1 201 407 804,50
47	MTLR	Mechel	RUB 64 397 084 251,50	$	1 118 199 066,70
48	TATNP	Tatneft	RUB 40 712 346 000,00	$	706 934 294,15
49	DIXY	Dixy Group	RUB 39 221 400 000,00	$	681 045 320,37
50	BANEP	Bashneft P	RUB 38 783 991 624,00	$	673 450 106,34

Source: http://www.moex.com/en/index/MICEXINDEXCF/constituents/ (18 September 2017)

Table A.3: India Top 80 firms listed on the National Stock Exchange

	Short Name	**Full Name**	**Market Capital (Indian Rupee)**	**Market Capital (USD)**
1	Reliance	Reliance	₹ 5 466 651 700 000,00	$85 309 795 568,04
2	TCS	TCS	₹ 4 786 580 400 000,00	$74 696 947 565,54
3	HDFC Bank	HDFC Bank	₹ 4 760 912 000 000,00	$74 296 379 525,59
4	ITC	ITC	₹ 3 287 160 700 000,00	$51 297 763 732,83
5	HDFC	HDFC	₹ 2 816 485 700 000,00	$43 952 648 252,18

6	HUVR	HUL	₹ 2 696 489 900 000,00	$42 080 054 619,23
7	Maruti Suzuki	Maruti Suzuki	₹ 2 440 353 800 000,00	$38 082 924 469,41
8	SBI	SBI	₹ 2 351 370 500 000,00	$36 694 296 192,26
9	ONGC	ONGC	₹ 2 122 617 100 000,00	$33 124 486 579,28
10	Infosys	Infosys	₹ 2 071 844 100 000,00	$32 332 148 876,40
11	IOC	IOC	₹ 2 012 529 800 000,00	$31 406 519 975,03
12	Kotak Mahindra	Kotak Mahindra	₹ 1 915 778 500 000,00	$29 896 668 227,22
13	ICICI Bank	ICICI Bank	₹ 1 869 660 600 000,00	$29 176 975 655,43
14	Larsen	Larsen	₹ 1 688 900 400 000,00	$26 356 123 595,51
15	Coal India	Coal India	₹ 1 613 926 400 000,00	$25 186 117 353,31
16	Bharti Airtel	Bharti Airtel	₹ 1 593 563 600 000,00	$24 868 345 817,73
17	Wipro	Wipro	₹ 1 386 852 400 000,00	$21 642 515 605,49
18	NTPC	NTPC	₹ 1 384 154 800 000,00	$21 600 418 227,22
19	Tata Motors	Tata Motors	₹ 1 369 546 600 000,00	$21 372 450 062,42
20	Hind Zinc	Hind Zinc	₹ 1 275 835 100 000,00	$19 910 035 892,63
21	Sun Pharma	Sun Pharma	₹ 1 241 640 900 000,00	$19 376 418 539,33
22	Axis Bank	Axis Bank	₹ 1 234 581 800 000,00	$19 266 257 802,75
23	HCL Tech	HCL Tech	₹ 1 227 942 100 000,00	$19 162 642 009,99
24	Asian Paints	Asian Paints	₹ 1 191 083 900 000,00	$18 587 451 622,97
25	Vedanta	Vedanta	₹ 1 167 013 100 000,00	$18 211 814 918,85
26	UltraTechCement	UltraTechCement	₹ 1 151 239 000 000,00	$17 965 652 309,61
27	Power Grid Corp	Power Grid Corp	₹ 1 103 080 700 000,00	$17 214 118 289,64
28	BPCL	BPCL	₹ 1 080 396 300 000,00	$16 860 117 041,20
29	Bajaj Finance	Bajaj Finance	₹ 1 043 691 400 000,00	$16 287 318 976,28
30	IndusInd Bank	IndusInd Bank	₹ 1 026 936 000 000,00	$16 025 842 696,63
31	Bajaj Finserv	Bajaj Finserv	₹ 901 234 900 000,00	$14 064 215 043,70
32	Eicher Motors	Eicher Motors	₹ 863 761 100 000,00	$13 479 417 915,11
33	Bajaj Auto	Bajaj Auto	₹ 857 466 800 000,00	$13 381 192 259,68
34	Adani Ports	Adani Ports	₹ 843 809 300 000,00	$13 168 060 237,20
35	Yes Bank	Yes Bank	₹ 840 371 600 000,00	$13 114 413 233,46
36	M&M	Mahindra & Mahindra	₹ 804 214 300 000,00	$12 550 160 736,58

37	Hero Motocorp	Hero Motocorp	₹ 774 743 900 000,00	$12 090 260 611,74
38	Nestle	Nestle	₹ 702 099 200 000,00	$10 956 604 244,69
39	Motherson Sumi	Motherson Sumi	₹ 698 015 300 000,00	$10 892 872 971,29
40	Bharti Infratel	Bharti Infratel	₹ 695 175 300 000,00	$10 848 553 370,79
41	HPCL	HPCL	₹ 688 539 300 000,00	$10 744 995 318,35
42	Avenue Supermar	Avenue Supermar	₹ 685 057 500 000,00	$10 690 660 112,36
43	GAIL	GAIL	₹ 676 859 500 000,00	$10 562 726 279,65
44	Bosch	Bosch	₹ 665 352 100 000,00	$10 383 147 627,97
45	Tata Steel	Tata Steel	₹ 657 367 500 000,00	$10 258 544 007,49
46	Shree Cements	Shree Cements	₹ 642 398 400 000,00	$10 024 943 820,22
47	Godrej Consumer	Godrej Consumer	₹ 639 205 600 000,00	$9 975 118 601,75
48	JSW Steel	JSW Steel	₹ 638 025 300 000,00	$9 956 699 438,20
49	ICICI Prudentia	ICICI Prudentia	₹ 607 517 100 000,00	$9 480 603 932,58
50	Grasim	Grasim	₹ 582 581 200 000,00	$9 091 466 916,35
51	Ambuja Cements	Ambuja Cements	₹ 559 554 800 000,00	$8 732 128 589,26
52	Titan Company	Titan Company	₹ 555 842 900 000,00	$8 674 202 559,30
53	Dabur India	Dabur India	₹ 546 423 700 000,00	$8 527 211 298,38
54	Hindalco	Hindalco	₹ 546 174 500 000,00	$8 523 322 409,49
55	Indiabulls Hsg	Indiabulls Hsg	₹ 538 200 100 000,00	$8 398 877 965,04
56	Britannia	Britannia	₹ 522 689 500 000,00	$8 156 827 403,25
57	Zee Entertain	Zee Entertain	₹ 508 605 600 000,00	$7 937 041 198,50
58	Piramal Enter	Piramal Enter	₹ 496 800 500 000,00	$7 752 816 791,51
59	Siemens	Siemens	₹ 489 968 100 000,00	$7 646 193 820,22
60	Cadila Health	Cadila Health	₹ 484 281 400 000,00	$7 557 450 062,42
61	Lupin	Lupin	₹ 454 547 200 000,00	$7 093 433 208,49
62	Aditya Birla	Aditya Birla	₹ 450 855 800 000,00	$7 035 827 091,14
63	Cipla	Cipla	₹ 450 310 900 000,00	$7 027 323 657,93
64	Aurobindo Pharm	Aurobindo Pharm	₹ 444 977 700 000,00	$6 944 096 441,95
65	Tech Mahindra	Tech Mahindra	₹ 433 685 500 000,00	$6 767 876 092,38
66	Pidilite Ind	Pidilite Ind	₹ 430 832 900 000,00	$6 723 359 862,67
67	Interglobe Avi	Interglobe Avi	₹ 426 687 200 000,00	$6 658 664 169,79

68	Marico	Marico	₹ 421 338 800 000,00	$6 575 199 750,31
69	UPL	UPL	₹ 420 956 400 000,00	$6 569 232 209,74
70	Bharat Elec	Bharat Elec	₹ 420 033 700 000,00	$6 554 833 021,22
71	NMDC	NMDC	₹ 416 526 200 000,00	$6 500 096 754,06
72	United Spirits	United Spirits	₹ 383 803 300 000,00	$5 989 439 762,80
73	L&T Finance	L&T Finance	₹ 380 087 600 000,00	$5 931 454 431,96
74	Dr Reddys Labs	Dr Reddys Labs	₹ 367 127 100 000,00	$5 729 199 438,20
75	Petronet LNG	Petronet LNG	₹ 348 975 000 000,00	$5 445 926 966,29
76	Power Finance	Power Finance	₹ 345 982 700 000,00	$5 399 230 649,19
77	DLF	DLF	₹ 342 442 900 000,00	$5 343 990 324,59
78	ACC	ACC	₹ 341 397 200 000,00	$5 327 671 660,42
79	Ashok Leyland	Ashok Leyland	₹ 340 795 000 000,00	$5 318 274 032,46
80	Container Corp	Container Corp	₹ 335 014 400 000,00	$5 228 064 918,85

Source: Money Control (15 September 2017)

Table A.4: China Top 80 firms listed on the Hong Kong Stock Exchange

	Short Name (Code)	Full Name	Market Capital (Hong Kong Dollar)	Market Capital (USD)
1	700	Tencent Holdings Ltd.	HKD 3 721 679 000 000,00	$ 476 527 400 768,25
2	939 *	China Construction Bank Corporation - H Shares	HKD 1 608 392 000 000,00	$ 205 940 076 824,58
3	941	China Mobile Ltd.	HKD 1 599 135 000 000,00	$ 204 754 801 536,49
4	5	HSBC Holdings plc	HKD 1 530 798 000 000,00	$ 196 004 865 556,98
5	1299	AIA Group Ltd.	HKD 788 448 000 000,00	$ 100 953 649 167,73
6	2318 *	Ping An Insurance (Group) Co. of China, Ltd. - H Shares	HKD 579 794 000 000,00	$ 74 237 387 964,15
7	1398 *	Industrial and Commercial Bank of China Ltd. - H Shares	HKD 525 972 000 000,00	$ 67 345 966 709,35
8	2378	Prudential plc	HKD 496 233 000 000,00	$ 63 538 156 209,99
9	805	Glencore plc	HKD 474 167 000 000,00	$ 60 712 804 097,31
10	883	CNOOC Ltd.	HKD 473 263 000 000,00	$ 60 597 055 057,62
11	2388	BOC Hong Kong (Holdings) Ltd.	HKD 393 836 000 000,00	$ 50 427 144 686,30
12	3333	China Evergrande Group	HKD 384 759 000 000,00	$ 49 264 916 773,37
13	1	CK Hutchison Holdings Ltd.	HKD 378 245 000 000,00	$ 48 430 857 874,52

14	16	Sun Hung Kai Properties Ltd.	HKD	363 830 000 000,00	$	46 585 147 247,12
15	11	Hang Seng Bank Ltd.	HKD	355 029 000 000,00	$	45 458 258 642,77
16	267	CITIC Ltd.	HKD	327 556 000 000,00	$	41 940 588 988,48
17	945	Manulife Financial Corporation	HKD	324 726 000 000,00	$	41 578 233 034,57
18	3988 *	Bank of China Ltd. - H Shares	HKD	315 256 000 000,00	$	40 365 685 019,21
19	1928	Sands China Ltd.	HKD	293 473 000 000,00	$	37 576 568 501,92
20	388	Hong Kong Exchanges and Clearing Ltd.	HKD	289 124 000 000,00	$	37 019 718 309,86
21	762	China Unicom (Hong Kong) Ltd.	HKD	278 744 000 000,00	$	35 690 653 008,96
22	2007	Country Garden Holdings Co. Ltd.	HKD	275 109 000 000,00	$	35 225 224 071,70
23	66	MTR Corporation Ltd.	HKD	271 470 000 000,00	$	34 759 282 970,55
24	688	China Overseas Land & Investment Ltd.	HKD	262 949 000 000,00	$	33 668 245 838,67
25	2888	Standard Chartered PLC	HKD	246 214 000 000,00	$	31 525 480 153,65
26	175	Geely Automobile Holdings Ltd.	HKD	245 714 000 000,00	$	31 461 459 667,09
27	1113	CK Asset Holdings Ltd.	HKD	242 926 000 000,00	$	31 104 481 434,06
28	27	Galaxy Entertainment Group Ltd.	HKD	238 317 000 000,00	$	30 514 340 588,99
29	2018	AAC Technologies Holdings Inc.	HKD	212 017 000 000,00	$	27 146 862 996,16
30	3	Hong Kong and China Gas Co. Ltd., The	HKD	206 737 000 000,00	$	26 470 806 658,13
31	12	Henderson Land Development Co. Ltd.	HKD	206 659 000 000,00	$	26 460 819 462,23
32	3328 *	Bank of Communications Co., Ltd. - H Shares	HKD	202 369 000 000,00	$	25 911 523 687,58
33	2	CLP Holdings Ltd.	HKD	200 221 000 000,00	$	25 636 491 677,34
34	2628 *	China Life Insurance Co. Ltd. - H Shares	HKD	200 168 000 000,00	$	25 629 705 505,76
35	1038	CK Infrastructure Holdings Ltd.	HKD	182 632 000 000,00	$	23 384 379 001,28
36	566	Hanergy Thin Film Power Group Ltd.	HKD	163 671 000 000,00	$	20 956 594 110,12
37	2382	Sunny Optical Technology (Group) Co. Ltd.	HKD	156 432 000 000,00	$	20 029 705 505,76
38	1972	Swire Properties Ltd.	HKD	155 025 000 000,00	$	19 849 551 856,59
39	1109	China Resources Land Ltd.	HKD	154 213 000 000,00	$	19 745 582 586,43
40	656	Fosun International Ltd.	HKD	151 063 000 000,00	$	19 342 253 521,13
41	1918	Sunac China Holdings Ltd.	HKD	146 887 000 000,00	$	18 807 554 417,41

42	6	Power Assets Holdings Ltd.	HKD	141 928 000 000,00	$	18 172 599 231,75
43	386 *	China Petroleum & Chemical Corporation - H Shares	HKD	141 089 000 000,00	$	18 065 172 855,31
44	3968 *	China Merchants Bank Co., Ltd. - H Shares	HKD	139 104 000 000,00	$	17 811 011 523,69
45	384	China Gas Holdings Ltd.	HKD	116 512 000 000,00	$	14 918 309 859,15
46	288	WH Group Ltd.	HKD	115 072 000 000,00	$	14 733 930 857,87
47	960	Longfor Properties Co. Ltd.	HKD	113 335 000 000,00	$	14 511 523 687,58
48	17	New World Development Co. Ltd.	HKD	112 924 000 000,00	$	14 458 898 847,63
49	2313	Shenzhou International Group Holdings Ltd.	HKD	111 464 000 000,00	$	14 271 959 026,89
50	20	Wheelock and Co. Ltd.	HKD	111 157 000 000,00	$	14 232 650 448,14
51	1114	Brilliance China Automotive Holdings Ltd.	HKD	110 996 000 000,00	$	14 212 035 851,47
52	1128	Wynn Macau, Ltd.	HKD	110 935 000 000,00	$	14 204 225 352,11
53	857 *	PetroChina Co. Ltd. - H Shares	HKD	110 558 000 000,00	$	14 155 953 905,25
54	1288 *	Agricultural Bank of China Ltd. - H Shares	HKD	110 352 000 000,00	$	14 129 577 464,79
55	2601 *	China Pacific Insurance (Group) Co., Ltd. - H Shares	HKD	108 375 000 000,00	$	13 876 440 460,95
56	966	China Taiping Insurance Holdings Co. Ltd.	HKD	105 844 000 000,00	$	13 552 368 758,00
57	1031	Kingston Financial Group Ltd.	HKD	101 292 000 000,00	$	12 969 526 248,40
58	1093	CSPC Pharmaceutical Group Ltd.	HKD	100 263 000 000,00	$	12 837 772 087,07
59	2020	ANTA Sports Products Ltd.	HKD	97 180 000 000,00	$	12 443 021 766,97
60	1044	Hengan International Group Co. Ltd.	HKD	92 656 000 000,00	$	11 863 764 404,61
61	23	Bank of East Asia, Ltd., The	HKD	91 674 000 000,00	$	11 738 028 169,01
62	2799	China Huarong Asset Management Co., Ltd. - H Shares	HKD	90 909 000 000,00	$	11 640 076 824,58
63	772	China Literature Ltd.	HKD	89 373 000 000,00	$	11 443 405 889,88
64	1658	Postal Savings Bank of China Co., Ltd. - H Shares	HKD	88 161 000 000,00	$	11 288 220 230,47
65	83	Sino Land Co. Ltd.	HKD	87 408 000 000,00	$	11 191 805 377,72
66	3799	Dali Foods Group Co. Ltd.	HKD	87 368 000 000,00	$	11 186 683 738,80

67	669	Techtronic Industries Co. Ltd.	HKD	83 566 000 000,00	$	10 699 871 959,03
68	486	United Company RUSAL Plc	HKD	83 562 000 000,00	$	10 699 359 795,13
69	1929	Chow Tai Fook Jewellery Group Ltd.	HKD	83 200 000 000,00	$	10 653 008 962,87
70	1177	Sino Biopharmaceutical Ltd.	HKD	82 275 000 000,00	$	10 534 571 062,74
71	2098	Zall Group Ltd.	HKD	82 153 000 000,00	$	10 518 950 064,02
72	6808	Sun Art Retail Group Ltd.	HKD	82 041 000 000,00	$	10 504 609 475,03
73	2319	China Mengniu Dairy Co. Ltd.	HKD	81 687 000 000,00	$	10 459 282 970,55
74	4	Wharf (Holdings) Ltd., The	HKD	81 675 000 000,00	$	10 457 746 478,87
75	151	Want China Holdings Ltd.	HKD	79 674 000 000,00	$	10 201 536 491,68
76	101	Hang Lung Properties Ltd.	HKD	78 798 000 000,00	$	10 089 372 599,23
77	322	Tingyi (Cayman Islands) Holding Corp.	HKD	76 471 000 000,00	$	9 791 421 254,80
78	998 *	China CITIC Bank Corporation Ltd. - H Shares	HKD	73 816 000 000,00	$	9 451 472 471,19
79	2328	PICC Property and Casualty Co. Ltd. - H Shares	HKD	73 225 000 000,00	$	9 375 800 256,08
80	270	Guangdong Investment Ltd.	HKD	73 224 000 000,00	$	9 375 672 215,11

Source: Hong Kong Stock Exchange (17 November 2017)

Table A.5: South Africa Top 80 firms listed on the Johannesburg Stock Exchange

	Short Name	Full Name	Market Capital		Market Capital (USD)	
1	ABINBEV	Anheuser-Busch Inbev SA NV	R	2 712 573 933 912,00	$	205 187 135 696,82
2	BATS	British Am. Tobacco Plc	R	2 037 377 780 403,00	$	154 113 296 550,91
3	NASPERSN	Naspers Limited	R	1 300 677 498 001,00	$	98 387 102 723,22
4	GLENCORE	Glencore Xstrata Plc	R	900 697 854 075,00	$	68 131 456 435,33
5	RICHEMONT	Compagnie Fin Richemont	R	617 526 000 000,00	$	46 711 497 730,71
6	BILLITON	Bhp Billiton Plc	R	505 967 919 449,00	$	38 272 913 725,34
7	ANGLO	Anglo American Plc	R	324 508 469 577,00	$	24 546 782 872,69
8	FIRSTRAND	Firstrand Limited	R	303 136 731 574,00	$	22 930 161 238,58
9	VODACOM	Vodacom Group Limited	R	281 709 365 260,00	$	21 309 331 714,07
10	STEINHOFF	Steinhoff Int Hldgs N.V	R	271 512 810 072,00	$	20 538 034 044,78
11	SASOL	Sasol Limited	R	261 279 333 001,00	$	19 763 943 494,78
12	STANBANK	Standard Bank Group Limited	R	256 532 564 939,00	$	19 404 883 883,43

13	MTN	Mtn Group Limited	R	232 104 348 790,00	$	17 557 061 179,27
14	OLDMUTUAL	Old Mutual Plc	R	171 067 347 859,00	$	12 940 041 441,68
15	SOUTH32	South32 Limited	R	170 730 338 735,00	$	12 914 549 072,24
16	SANLAM	Sanlam Limited	R	148 338 324 556,00	$	11 220 750 722,84
17	ASPEN	Aspen Pharmacare Hldgs	R	141 421 877 720,00	$	10 697 570 175,49
18	MONDIPLCP	Mondi Plc Pre	R	131 196 777 586,00	$	9 924 113 281,85
19	SHOPRIT	Shoprite Holdings Limited	R	127 126 624 910,00	$	9 616 234 864,60
20	B-AFRICA	Barclays Africa Grp Ltd	R	116 930 251 154,00	$	8 844 950 919,36
21	REMGRO	Remgro Limited	R	111 982 318 681,00	$	8 470 674 635,48
22	CAPITEC	Capitec	R	102 561 141 017,00	$	7 758 028 821,26
23	NEPIROCK	Nepi Rockcastle Plc	R	101 215 522 513,00	$	7 656 242 247,58
24	BIDCORP	Bid Corporation Ltd	R	100 537 412 547,00	$	7 604 947 999,02
25	NEDCOR	Nedbank Group Ltd	R	100 249 400 031,00	$	7 583 161 878,29
26	ANGLOPLAT	Anglo American Platinum Corporation Limited	R	94 901 055 683,00	$	7 178 597 252,87
27	RMBH	Rmb Holdings Limited	R	92 480 677 811,00	$	6 995 512 693,72
28	DISCOVERY	Discovery Holdings Limited	R	92 175 411 360,00	$	6 972 421 434,19
29	MEDCLIN	Mediclinic Int Plc	R	91 882 696 040,00	$	6 950 279 579,43
30	HAMMERSON	Hammerson Plc	R	76 061 926 881,00	$	5 753 549 688,43
31	GROWPNT	Growthpoint Properties Limited	R	74 233 488 357,00	$	5 615 241 176,78
32	TIGBRANDS	Tiger Brands Ltd	R	71 776 509 671,00	$	5 429 388 023,52
33	KUMBAIO	Kumba Iron Ore Ltd	R	68 282 226 488,00	$	5 165 070 082,30
34	INVPLC	Investec Plc	R	66 616 417 842,00	$	5 039 063 376,85
35	WOOLIES	Woolworths Holdings Limited	R	61 616 706 513,00	$	4 660 870 386,76
36	RMIH	Rand Merch Ins Hldgs Ltd	R	60 122 135 655,00	$	4 547 816 615,36
37	REDEFINE	Redefine Properties Ltd	R	59 834 053 486,00	$	4 526 025 225,87
38	INTUPROP	Intuprop	R	56 735 534 974,00	$	4 291 644 097,88
39	PSG	Psg Group Limited	R	54 853 508 748,00	$	4 149 282 053,56
40	REINET	Reinet Investments Sca	R	54 745 995 308,00	$	4 141 149 418,15
41	BIDVEST	The Bidvest Group Limited	R	54 664 178 471,00	$	4 134 960 550,00
42	RESILIENT	Resilient Property Income Fund	R	54 623 213 250,00	$	4 131 861 819,21
43	ANGGOLD	Anglogold Ashanti Limited	R	52 694 706 218,00	$	3 985 983 828,90
44	GFIELDS	Gold Fields Limited	R	47 468 159 810,00	$	3 590 632 360,82
45	MRPRICE	Mr Price Group Limited	R	47 258 260 563,00	$	3 574 754 959,38
46	SAPPI	Sappi Limited	R	47 000 037 032,00	$	3 555 222 165,81
47	MONDILTDP	Mondi Limited	R	42 250 746 502,00	$	3 195 971 747,50
48	FORTRESSB	Fortress Income Fund Ltd	R	41 673 425 141,00	$	3 152 301 447,88
49	CAPCO	Capital & Counties Prop Plc	R	39 963 199 347,00	$	3 022 934 897,66
50	SIBANYE	Sibanye Gold Limited	R	38 929 370 227,00	$	2 944 732 997,50

51	ASSORE	Assore Ltd	R	38 252 318 000,00	$	2 893 518 759,46
52	IMPERIAL	Imperial Holdings Ltd	R	38 216 596 390,00	$	2 890 816 670,95
53	CLICKS	Clicks Group Ltd	R	37 510 267 620,00	$	2 837 387 868,38
54	EXXARO	Exxaro Resources Limited	R	37 386 439 559,00	$	2 828 021 146,67
55	LIFEHC	Life Healthcare Grp Hldg Ltd	R	35 698 478 901,00	$	2 700 338 797,35
56	TRUWTHS	Truworths International Limited	R	34 922 695 681,00	$	2 641 656 254,24
57	A-V-I	Avi Ltd	R	34 588 785 245,00	$	2 616 398 278,74
58	NETCARE	Netcare Limited	R	34 332 145 513,00	$	2 596 985 288,43
59	TFG	The Foschini Group Ltd	R	33 321 154 002,00	$	2 520 510 892,74
60	SPAR	The Spar Group Ltd	R	32 074 070 178,00	$	2 426 177 774,43
61	TELKOM	Telkom Sa Limited	R	31 917 282 637,00	$	2 414 317 899,92
62	INVLTD	Investec Limited	R	30 909 712 381,00	$	2 338 102 298,11
63	LIB-HOLD	Liberty Holdings Ltd Ord	R	30 732 410 812,00	$	2 324 690 681,69
64	PICKNPAY	Pick N Pay Stores Limited	R	30 464 646 520,00	$	2 304 436 196,67
65	MMIHLDGS	Mmi Holdings Ltd	R	30 073 836 608,00	$	2 274 874 176,10
66	SANTAM	Santam Ltd	R	29 473 642 752,00	$	2 229 473 733,13
67	BRAIT	Brait S E	R	29 433 556 040,00	$	2 226 441 455,37
68	NPNSTL	Sb Npn R1800ctl 1:1oct17	R	29 259 500 000,00	$	2 213 275 340,39
69	DISTELL	Distell	R	28 820 753 337,00	$	2 180 087 241,83
70	HYPROP	Hyprop Investments Limited	R	28 260 195 372,00	$	2 137 684 975,19
71	PNR-FOODS	Pioneer Foods Group Ltd	R	27 538 570 960,00	$	2 083 099 164,90
72	IMPLATS	Impala Platinum Holdings Limited	R	27 039 844 310,00	$	2 045 374 002,27
73	BARWORLD	Barloworld Limited	R	26 065 476 046,00	$	1 971 669 897,58
74	MASSMART	Massmart Holdings Ltd	R	25 340 878 566,00	$	1 916 859 195,61
75	Dis-Chem	Dis-Chem Pharmacies Ltd	R	24 942 450 007,00	$	1 886 720 877,99
76	CML	Coronation Fund Managers Limited	R	24 192 105 894,00	$	1 829 962 624,36
77	ARM	African Rainbow Minerals	R	24 142 564 228,00	$	1 826 215 145,84
78	NORTHAM	Northam Platinum Limited	R	24 041 281 957,00	$	1 818 553 854,54
79	KAP	Kap Industrial Hldgs	R	22 761 804 604,00	$	1 721 770 393,65
80	TSOGO-SUN	Tsogo Sun Holdings Limited	R	22 379 039 027,00	$	1 692 816 870,42

Source: Sharenet (15 September 2017)

B. Appendix B: BRICS countries monthly 3-Month Treasury Bill Rates

Figure B.1: Brazil's monthly 3-Month Treasury Bill Rate fluctuation

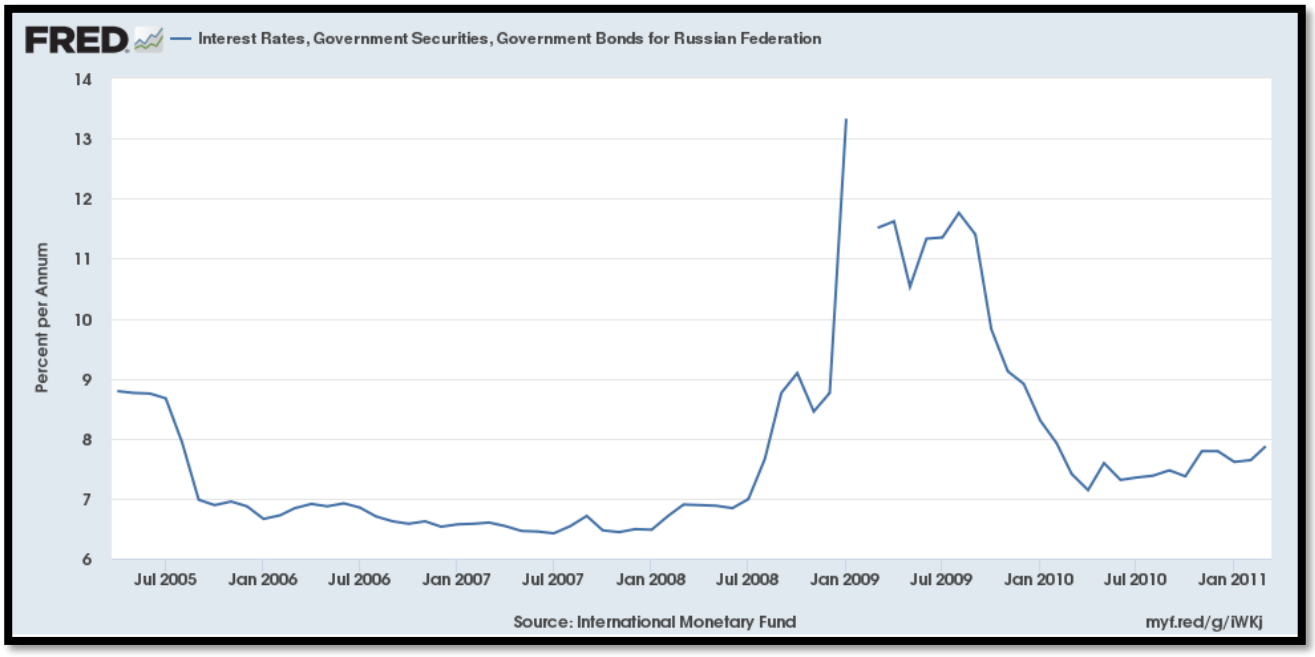

Figure B.2: Russia's monthly 3-Month Treasury Bill Rate fluctuation

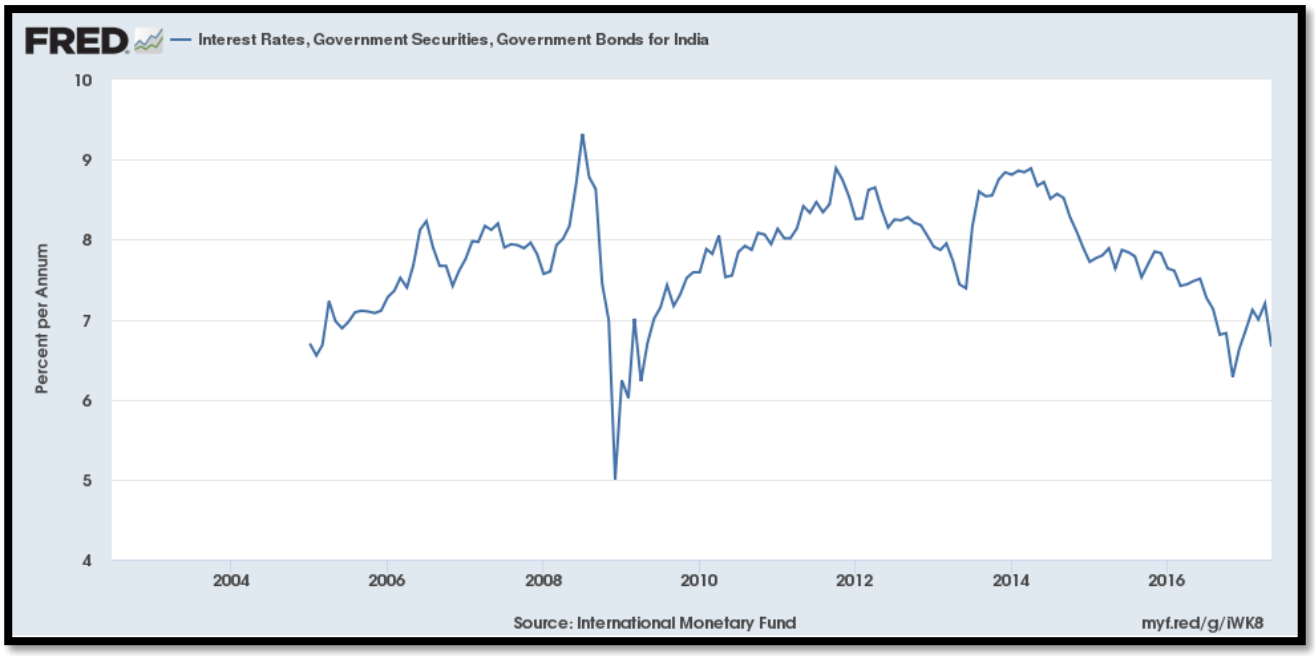

Figure B.3: India's monthly 3-Month Treasury Bill Rate fluctuation

Figure B.4: China's monthly 3-Month Treasury Bill Rate fluctuation

Figure B.5: South Africa's monthly 3-Month Treasury Bill Rate fluctuation

C. Appendix C: Hausman Test for fixed and random effects

Table C.1: Hausman Test for Brazil

Correlated Random Effects - Hausman Test
Equation: LSBRA
Test cross-section random effects

Test Summary	Chi-Sq. Statistic	Chi-Sq. d.f.	Prob.
Cross-section random	110.152289	8	0.0000**

Cross-section random effects test comparisons:

Variable	Fixed	Random	Var(Diff.)	Prob.
D(EPU)	-0.003738	-0.000711	0.000000	0.0000**
FIRM_AGE	0.205213	0.003299	0.000460	0.0000**
D(MARKET_CAPITALISATION)	0.000018	0.000015	0.000000	0.0046**
D(PROFITABILITY)	-0.000000	-0.000000	0.000000	0.5033
DSALES	0.000000	-0.000000	0.000000	0.4131
D(TANGIBILITY)	-0.000000	-0.000000	0.000000	0.3995
LEVERAGE(1)	-0.004652	-0.001272	0.000002	0.0230**
HT	0.997850	0.999148	0.000002	0.3781

* Significant at the 10% level, ** Significant at the 5% level, *** Significant at the 1% level.

Table C.2: Hausman Test for Russia

Correlated Random Effects - Hausman Test
Equation: LSRUS
Test cross-section random effects

Test Summary	Chi-Sq. Statistic	Chi-Sq. d.f.	Prob.
Cross-section random	1109.016401	8	0.0000**

Cross-section random effects test comparisons:

Variable	Fixed	Random	Var(Diff.)	Prob.
D(EPU)	-0.000488	-0.000213	0.000000	0.0000**
FIRM_AGE	0.019973	0.001313	0.000000	0.0000**
MARKET_CAPITALISATION	0.000000	0.000000	0.000000	0.0037**
D(PROFITABILITY)	0.000000	-0.000000	0.000000	0.0301**
DSALES	-0.000000	-0.000000	0.000000	0.9003
D(TANGIBILITY)	-0.000000	-0.000000	0.000000	0.0265**
LEVERAGE(1)	0.006965	0.058941	0.000019	0.0000**
HT	1.002693	0.970377	0.000019	0.0000**

* Significant at the 10% level, ** Significant at the 5% level, *** Significant at the 1% level.

Table C.3: Hausman Test for India

Correlated Random Effects - Hausman Test
Equation: LSIND
Test cross-section random effects

Test Summary	Chi-Sq. Statistic	Chi-Sq. d.f.	Prob.
Cross-section random	445.889955	8	0.0000**

Cross-section random effects test comparisons:

Variable	Fixed	Random	Var(Diff.)	Prob.
D(EPU)	0.000029	0.000033	0.000000	0.0000**
FIRM_AGE	-0.005418	0.000027	0.000000	0.0000**
D(MARKET_CAPITALISATION)	0.000000	0.000000	0.000000	0.0024**
D(PROFITABILITY,2)	-0.000000	-0.000000	0.000000	0.4088
DSALES	0.000000	0.000000	0.000000	0.2044
D(TANGIBILITY,2)	0.000000	0.000000	0.000000	0.3175
LEVERAGE(1)	0.002426	0.011803	0.000012	0.0067**
HT	0.999575	0.988839	0.000009	0.0005**

* Significant at the 10% level, ** Significant at the 5% level, *** Significant at the 1% level.

Table C.4: Hausman Test for China

Correlated Random Effects - Hausman Test
Equation: LSCHINA
Test cross-section random effects

Test Summary	Chi-Sq. Statistic	Chi-Sq. d.f.	Prob.
Cross-section random	598.227545	8	0.0000**

Cross-section random effects test comparisons:

Variable	Fixed	Random	Var(Diff.)	Prob.
D(EPU)	0.000005	0.000003	0.000000	0.0000**
DSALES	0.000000	-0.000000	0.000000	0.7842
D(MARKET_CAPITALISATION)	0.000000	-0.000000	0.000000	0.0144**
D(PROFITABILITY)	-0.000000	-0.000000	0.000000	0.0000**
D(TANGIBILITY,2)	0.000000	-0.000000	0.000000	0.0000**
FIRM_AGE	0.003152	0.000019	0.000000	0.0000**
LEVERAGE(1)	-0.004712	0.010844	0.000003	0.0000**
HT	1.000690	0.990946	0.000006	0.0000**

* Significant at the 10% level, ** Significant at the 5% level, *** Significant at the 1% level.

Table C.5: Hausman Test for South Africa

Correlated Random Effects - Hausman Test
Equation: LSRSA
Test cross-section random effects

Test Summary	Chi-Sq. Statistic	Chi-Sq. d.f.	Prob.
Cross-section random	39.163063	8	0.0000**

Cross-section random effects test comparisons:

Variable	Fixed	Random	Var(Diff.)	Prob.
D(EPU)	0.025646	0.032541	0.000004	0.0004**
FIRM_AGE	0.004128	0.000044	0.000000	0.0000**
D(MARKET_CAPITALISATION)	-0.000000	-0.000000	0.000000	0.8041
D(PROFITABILITY,2)	-0.000000	-0.000000	0.000000	0.4133
DSALES	0.000000	0.000000	0.000000	0.2173
D(TANGIBILITY,2)	-0.000000	-0.000000	0.000000	0.1652
LEVERAGE(1)	0.027795	0.032772	0.000094	0.6079
HT	0.968251	0.965842	0.000050	0.7333

* Significant at the 10% level, ** Significant at the 5% level, *** Significant at the 1% level.