The Financial Effect of Cross Listing on Sub-Saharan African Exchanges for Johannesburg Stock Exchange, (JSE), Listed Companies

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Thesis submitted in fulfillment of the requirements for the degree of
Master of Management in Finance & Investment
In the
FACULTY OF COMMERCE LAW AND MANAGEMENT
WITS BUSINESS SCHOOL
At the
UNIVERSITY OF THE WITWATERSRAND

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Declaration

I, Vusiszwe Noel Dabengwa declare that the research work reported in this dissertation is my own, except where otherwise indicated and acknowledged. It is submitted for the degree of Master of Management in Finance & Investment in the University of the Witwatersrand, Johannesburg. This thesis has not, either in whole or in part, been submitted for a degree or diploma to any other universities.

Signed:…… Date: 20 June 2017

ABSTRACT

There are 29 formal stock exchanges on the African continent with 23 based in sub-Saharan Africa. The pace and stage of stock market development has varied among most of the countries as only four stock markets have more than 50 listed stocks; five have at least 20 listed stocks; and the remaining 14 have less than 20 stocks. The Johannesburg Stock Exchange (JSE) stands out in Africa as by far the continent's largest, most liquid and best regulated market and is home to some of the continent's largest and most sophisticated companies. Cross listing refers to the listing of ordinary shares of a firm on an exchange other than the stock exchange in its registered jurisdiction. There are 24 JSE listed companies that have cross listed on other Sub-Saharan African stock exchanges. The bulk of these, (14), have cross listed on the Namibia Stock Exchange, 3 cross listed on Botswana Stock Exchange, 1 on the Nairobi Stock Exchange, 1 on the Ghanaian Stock Exchange, 3 on the Malawian Stock Exchange, 1 on the Zambian Stock Exchange and 1 on the Zimbabwean Stock Exchange.

The study establishes the possible reasons and benefits of cross listing on other sub-Saharan exchanges for JSE listed companies. The study also provides insight into the possible effects, (financial as well as any others), of cross listing on other sub-Saharan African exchanges that a number of JSE listed entities have experienced. The study uses financial information collected from a public platform, (Sharedata), to compute financial ratio's to determine the financial implications of the JSE companies cross listing on other sub-Saharan exchanges. The effects of cross listing on the JSE companies are then measured using latent growth curve modelling and a paired t test.

The study concludes that there is no evidence to suggest that there are financial benefits for JSE listed companies to cross list on other sub-Saharan exchanges. The study further suggests that JSE listed companies should rather consider cross listing for qualitative reasons rather for any quantitative reasons.

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1. CHAPTER 1: INTRODUCTION

When companies are looking to raise long-term additional capital, this may come in the form of long-term debt (loans, bonds and debentures) or new issues of equity (preference shares and ordinary shares) or retained earnings. However, as they continue to expand, equity and debt are the only options at their disposal. In a study done of Kenyan companies it was found that most companies prefer to use equity because it forms a permanent source of funding that cannot be easily cancelled (Onyuma, Mugo and Karuiya, 2012).

When a firm looks to raising equity by selling their stock to the general public for the first time, they may raise it within their domestic market and this is known as an initial public offering (IPO). Cross listing refers to the listing of ordinary shares of a firm on an exchange other than the stock exchange in its registered jurisdiction. Where a country has more than one securities exchange, cross listing may occur within the country. However, in most cases, cross listing occurs when a company attempts to raise equity capital beyond its national boundaries. In this sense, cross listing occurs when a firm lists its shares for trading on at least two stock exchanges located in different countries (Onyuma, Mugo and Karuiya, 2012).

According to Ernst and Young's Attractiveness Survey for Africa 2014, South African-headquartered companies were the most active in expanding their operations in the rest of Africa. Overall, between 2007 and 2013, South Africa was the fourth-largest investor in the rest of the continent by FDI projects. It was also noted that South African projects in other African countries had grown at a compounded annual growth rate (CAGR) of 44.2% since 2007 (*EY Attractivness Survey Africa 2014)*. Investment has occurred in a number of economic sectors and has gone beyond the traditional Southern African markets, spreading into West, East and Central Africa, in most cases with much success. The South African corporate presence has traditionally been strongest in countries of the Southern African Development Community (SADC), for obvious reasons of logistics, culture and proximity, however this presence has expanded further to East and West Africa as well (Games, 2004).

According to Games, (2004), the push further into other parts of Africa has been fuelled by stagnation in the local market, curiosity about the opportunities the rest of Africa offers, the fact that so many South African products are tailor-made for the African market, and regional integration. In addition, many international companies either opened or reopened offices in South Africa after the end of apartheid, and are using South Africa as a springboard for their operations elsewhere in the continent (Games, 2004).

The Johannesburg Stock Exchange (JSE) stands out in Africa as by far the continent's largest, most liquid and best-regulated market and is ranked in the top 20 of global exchanges as well as being rated as number one regulated stock exchange by the World Economic Forum Competitiveness in 2011 (ASEA Yearbook, 2014). It is home to some of the continent's largest and most sophisticated companies with a number of these companies being able to compete on a global scale. For over seven decades now South African companies have sought and listed on the top stock exchanges in the world such as the London Stock Exchange, (LSE), and the New York Stock Exchange, (NYSE). For instance, AECI Limited listed on the LSE as far back as 1938. Stilfontein Gold Mining and Tongaat Hulett also listed on the LSE the following year[1]

Most studies have focused on cross listings from relatively less developed markets to more developed markets with stricter regulations – this is because conventional theory has long held that firms cross-list their shares on other developed exchanges to buy their access to more investors, greater liquidity, a higher share price, and a lower cost of capital (Waweru, 2012). The bonding hypothesis, one of the key hypotheses driving this thinking, claims that firms cross list in countries with strict disclosure requirements and strong legal and regulatory institutions to assure shareholders that managers will not expropriate resources from the firm - this "bonding" is thought to facilitate access to capital (Crawford, 2007). However, Sub-Saharan African (SSA), countries have followed the global trend in establishing new stock exchanges and it has been argued that regional cross listing of stocks can bring significant benefits such as helping finance SSA corporate and development needs, providing wealth diversification, bringing greater efficiency, lowering the cost of capital, increasing market access for smaller stock markets, and potentially helping to mitigate the effects of foreign investment outflows in shallow markets (Adelegan, 2008). It is further argued by Waweru (2012) that cross listings in such instances cannot be viewed from the standpoint of the bonding hypothesis, but rather from the perspective of a company's desire to exploit growth opportunities.

1.1 The nature of African Stock Exchanges

There are currently 29 formal stock exchanges on the African continent. The past decades have seen a significant growth in the number and size of stock markets in Africa growing from 5 in 1960 to 17 by the end of 2002 and 29 by 2012. Accoriding the the 2010 African Stock

[1] (http://world-finance-conference.com/papers_wfc2/673.pdf)

Exchange Association (ASEA) report, between 2007 and 2009, there were 170 new listings across 18 of the exchanges translating into over 10 billion US dollars of share capital raised within the period. Also, the ten largest stock markets in the region saw their market capitalization grow from 222 billion to over 700 billion US dollars between 2002 and 2008, representing an annual growth rate of 18% within the period (Afego, 2011). The apparent substantial increase in stock markets in Africa can be attributed to the extensive financial sector reforms undertaken by a number of African countries (Ntim, 2012).

However, looking more closely at the 23 Sub-Saharan African exchanges, (excluding the 6 North African exchanges in Algeria, Egypt, Libya, Morroco, Sudan & Tunisia), the pace and stage of stock market development has varied among most of the countries. Only four stock markets have more than 50 listed stocks; five have at least 20 listed stocks; and the remaining 14 have less than 20 stocks. In 2013, the number of listed firms ranged from as low as 6 for the stock market of Swaziland, to as high as 386 for South Africa. Market capitalization accounts for less than 20 percent of the GDP of about half of the countries in the sample (ASEA 2014 Handbook; Adelegan, 2008; Exchange Websites).

However, these exchanges are faced with a myriad of development challenges. According to Afego (2011), the first challenge faced by these exchanges is that a low literacy level across much of the continent has resulted in a large number of poorly-informed investors who possess very little knowledge of the workings of the capital market. The second challenge described by Afego (2011) that is closely linked to the first, is the lack of public knowledge and awareness about stock markets and how members of the public can participate in them. The third challenge is that there is the lack of effective regulatory, institutional and operational structures which weaken the effectiveness of contract enforcements and settlement processes across many of Africa's bourses. The fourth constraint relates to the limited array of financial instruments and investment vehicles on offer in these stock exchanges which limits investors' ability to switch between instruments and asset classes. The fifth challenge Afego (2011) mentions is that, while there appears to have been significant improvements in the political and economic conditions in many African countries, the popular perception is that the political and economic landscape across much of the continent remains volatile. The final constraint described by Afego (2011) relates to the view by most African governments that stock exchanges are more or less national treasures. Hence, efforts to modernize and internationalize these exchanges receive little political support. As a result of these factors, (including others that may not have been mentioned), SSA stock markets are generally institutionally weak, suffer from miserably low levels of liquidity, and are generally small in size and market capitalization (Afego, 2011; Ojah and Kodongo, 2015).

1.2 Cross listing in Africa

Regional cross listings in sub-Saharan Africa have been associated with expansion and the setting-up of operations in the host countries. In almost all cases, firms are large with a strong base in their home countries, and they first established operations in their host countries before deciding to cross-list. Many cross listings are undertaken to expand operations in the host countries. Based on the company websites, almost all the firms that are cross-listed (about 94% or 35 out of 37) have set up operations in the host countries (Adelegan, 2009).

The regional cross-border listing trail was blazed by the JSE of South Africa when it cross-listed on the Namibia Stock Exchange (NSX) on the first day of trading of the NSX in October 1992. Subsequently, South Africa has cross-listed 28 firms on the NSX. There has also been regional cross listing between stock markets in Botswana and South Africa since 1997; Malawi and South Africa in 1999; Nigeria and South Africa first in 2001 and later in 2006 (MNET/Super Sport, a JSE primary listed company was cross-listed on the Nigerian Stock Exchange in 2001 and delisted in 2003); Zambia and South Africa in 2003; and Ghana and South Africa in 2004. The triple listing of stocks has also commenced, with the three East African Exchanges of Kenya, Uganda and Tanzania in 2004; and Ghana, Nigeria, and WAEMU (Bourse Régionale des Valeurs Mobilières) exchanges in 2006 (Onyuma, 2012).

Today there are 14 JSE listed companies that are cross-listed on the Namibian Stock Exchange, 3 cross-listed on Botswana Stock Exchange, 1 on the Nairobi Stock Exchange, 1 on the Ghanain Stock Exchange, 3 on the Malawian Stock Exchange, 1 on the Zambian Stock Exchange and 1 on the Zimbabwean Stock Exchange. These cross listing along with other Afican cross listings that have taken place on the continent are shown in Table A1 in the Appendix:

There have been other agreements to cross-list among stock markets in the African region. The JSE has signed MoU's with Botswana, Egypt, Ghana, Kenya, Namibia, Nigeria, and Uganda exchanges. The Nigerian stock exchange has signed MoU's with Ghana and WAEMU, while the Nairobi Securities Exchange has signed MoU's with the Dar-es-Salaam Stock Exchange and Uganda Securities Exchange to form the East African Securities Exchange Association[2] (Onyuma, Mugo and Karuiya, 2012).

[2] www.nse.co.ke/nse/history-of-nse.html

Regional cross listings in SSA have either been policy driven or market driven. Examples of government policy induced regional cross listings are the cross listings between the JSE and the Namibian Stock Exchange and among the East African Stock Exchanges (Nairobi Stock Exchange, Ugandan Stock Exchange and Dar es Salaam Stock Exchange).

The cross listing of many JSE companies listed on the Namibia Stock Exchange has been motivated by the imposition of capital controls on portfolio flows and by the domestic investment requirements set by the Namibian authorities in an attempt to keep the large surplus of the country's pension and insurance funds invested in Namibia. By cross listing, South African firms were able to qualify as Namibian investments. Similarly, the cross listing of East African Breweries on the Ugandan and Tanzanian exchanges was linked to ensuring market access for beer trade throughout the East African Community (Adelegan, 2009). Examples of market driven cross listings are the West African triple cross listing of Ecobank on the BRVM, the Nigerian Stock Exchange, and the Ghana Stock Exchange; the cross listing of Oando PLC on the Nigerian Stock Exchange and the JSE; and the cross listing of Shoprite on the JSE and Lusaka Stock Exchange.

Irrespective of the reason for the regional cross listing, it is beneficial to both the host and home countries (Adelegan, 2009). In general, the more developed African stock markets like those in South Africa, Kenya, and Nigeria have helped to prop up emerging stock markets in their localities by supplying cross listing entities. South Africa feeds Namibia, Botswana, Zimbabwe, Zambia and Malawi; Kenya feeds Tanzania, Uganda and Rwanda; and Nigeria feeds Ghana (Mataen, 2012).

1.3 Problem Statement

This study will evaluate the financial effects of cross listing on other Sub-Sharan African exchanges for JSE listed companies

The study will therefore seek to address the following problems questions:

1. What reasons do JSE listed companies have for cross-listing on other Sub-Saharan African exchanges?
2. What are the possible effects of cross listing on other exchanges in Sub-Saharan Africa?
3. What are the possible financial effects of cross listing on the key financial ratio's of the JSE listed companies when they cross list on another African bourse?

1.4 Purpose of Study

With a number of JSE listed companies having significant operations in other African countries, an argument can be made for potential reasons for listing on other exchanges in Sub-Saharan Africa. The study hopes to fill a gap by providing individuals such as, managers of JSE listed entities, investors, advisors and other active market participants, on the possible reasons and benefits of cross listing on other exchanges that exist in sub-Saharan Africa. The study will also attempt to assist in giving the relevant stakeholders, (mentioned above), insight on the possible effects, (financial as well as any others), of cross listing on other sub-Saharan African bourses that a number of JSE listed entities have experienced.

This study will evaluate the financial effects of cross listing on other Sub-Sharan African exchanges for JSE listed companies. The literature review (Section 2) will firstly look at the possible benefits of cross listing as well as the effects of cross listing based on other authors' findings. Following this will be the methodology (Section3), which will present how the financial results of selected South African cross listed entities will be reviewed, while Section 4 will discuss the results of the analysis. Section 5 will then conclude the study and provide suggested implications of the policy.

2. CHAPTER 2: LITERATURE REVIEW

2.1 Profiles of Select Sub-Saharan Stock Exchanges

The paper will only focus on a select number of Sub-Saharan stock exchanges in Southern, Eastern and Western Africa that JSE listed companies could potentially consider as attractive exchanges to cross-list on. Although all of the stock markets selected are relatively small, illiquid and unsophisticated (especially when compared to the JSE and exchanges in developed markets), these exchanges have been selected on the basis of their increasing growth and attractiveness. Another key criteria for the selection of these stock exchanges is that all of the economies in which the stock exchanges reside are classified as African emerging markets as they meet the criteria of high growth, private-sector led growth and investible markets (Nellor 2008).

These selected exchanges will thus include the following: Botswana Stock Exchange (BSE); Lusaka Stock Exchange (LUSE) in Zambia; Nairobi Securities Exchange in Kenya; Dar es Salaam Stock Exchange in Tanzania; Nigerian Stock Exchange and Ghana Stock Exchange.

2.1.1 The Botswna Stock Exchange

The Botswana Stock Exchange, (BSE), was established in 1989 and became the Botswana Stock Exchange in 1995. Currently, there are 35 listed entities on the BSE and this comprises of 23 domestic and 12 foreign companies (ASEA Yearbook, 2014). Although the BSE is one of the youngest stock exchanges in the world (and illiquid by world standards), it is also one of the fastest growing exchanges in the world. Established with only five listed companies, the BSE achieved remarkable growth, both in terms of market capitalization and number of participants, posting annual average growth of approximately 16 percent between 1994 and 2011. In an attempt to develop and improve the exchange‘s liquidity, the Central Securities Depository (CSD) was introduced in October 2007. The CSD is a computer-based system that facilitates holding of securities in electronic accounts in contrast to paper share certificates, which was used until September, 2007 (Galebotswe, 2012). The BSE has general rules that companies looking to cross-list would need to comply with and some of the key requirments are shown in footnote below[3]. As shown in Table 1, there are 3 JSE listed companies are currently cross-listed on the the BSE with the first listing in 1995 and the most recent in 2008.

[3] Key requirments for companies looking the cross-list on the BSE would be: A subscribed share capital of at least US$575,000; Historical audited accounts going back 3 years; An audited profit history of at least US$115,020; Only use advisors approved by the BSE and recorded on the BSE Register for Registered Advisors (KPMG, Listing in Africa, 2014); A minimum of 300 public shareholders who are resident in

As an economy, Botswana boasts a favorable business environment with good infrastructure development, regulatory frameworks and taxation system. In addition to this it has liberalized its capital account which allows foreign investors to repatriate their profits, (AfDB Economic Outlook 2014).

2.1.2 The Lusaka Stock Exchange

The Lusaka Stock Exchange, (LuSE), began operations in February 1994. The LuSE is incorporated as a private limited liability company owned by the broker members. The LuSE is licensed by the SEC-Zambia and also has membership, trading, clearing and settlement rules. The Exchange in 2005 introduced a Corporate Governance Code for listed and quoted companies. It currently has 21 listed firms with 20 of these companies being domestic and only 1 foreign company with more listings expected (ASEA Yearbook, 2014). Market capitalisation of the LuSE has also grown in recent times, and this will be further boosted by the alternate market for small businesses which will serve the purpose of raising cheaper financing for smaller firms.

The LuSE has general rules that companies looking to cross-list would need to comply with and some of the key requirments are shown in footnote below [4]. As shown in Table 1, there is only 1 JSE listed companies that is currently cross-listed on the the LuSE with the first listing in 2003. Inspite of only 1 JSE company to date, foreign companies have invested strongly in Zambia in recent times and in particular its mining sector. In 2014 Zambia was one of the main receipients of FDI on the continent receiving nearly US$1.8 billion in FDI. South Africa, the United Kingdom and Zimbabwe were the main investing countries[5].

On an economic level, Zambia's economy has been growing at an impressive rate over the past decade with the average annual real GDP growth rate surpassing 6% during this period. (AfDB Economic Outlook 2014)

Botswana; Make an offer for a sale of shares to the public of a size to be determined in consultation with the BSE (the BSE will determine the size of the offer based on demand for the applicant issuer's shares). (KPMG, Listing in Africa, 2014)

[4] The LuSE Board will normally accept the listings requirements of the exchange that the company has a primary listing on but reserves the right to request the company to comply with such aspects of the LuSE Listings Requirements as it may determine

[5] https://en.portal.santandertrade.com/establish-overseas/zambia/investing-3

2.1.3 The Nairobi Stock Exchange

The Nairobi Securities Exchange, (NrSE), formed in 1954, is one of the active capital markets in Africa. The NrSE is sub-Saharan Africa's fourth-largest bourse with 61 listed companies as well as market capitalization, which has grown from $453 million in 1990 to $14.8 billion in 2012. It successfully installed an automated trading system (ATS) in November 2007 and central securities depositories (CSD) in November 2004. The NrSE may be classified as both emerging market and frontier market due to its growing liquidity and higher turnover and market capitalisation compared to other exchanges in sub-Sharan African. It is therefore a model market in view of its high returns, vibrancy and well developed market structure. It therefore, raises interest and sets a precedent for comparison with other emerging markets in Eastern Africa and the world at large (Onyuma, 2012). The NrSE also remains an active member of the East African Securities Exchange Association (EASEA), whose aim is to standardize regulations and operations within the region to make cross border investing easier for citizens of the East African Community. In addition to this, the NrSE which is currently an Associate member of the WFE, has formally written to the WFE to confirm its intention to pursue full membership (ASEA Yearbook, 2014). The NrSE has general rules that companies looking to cross-list would need to comply with and some of the key requirments are shown in footnote below[6].

As shown in Table 1, there is 1 JSE listed companies that is currently cross-listed on the the NrSE with the first listing in 2011

Within the East African Community (EAC), the Kenyan economy is the anchor with its GDP accounting for 40 percent of the region's GDP. Kenya's economic dominance in the region is based on a strong private sector that has evolved under relatively market-friendly policies. Kenya boasts a market-based economy and the most liberal economic system in East Africa and has fairly sophisticated financial infrastructure in place[7].

2.1.4 The Dar es Salaam Stock Exchange

The Dar es Salaam Stock Exchange, (DSE), was incorporated in 1996 as a company limited by guarantee without a share capital. It became operational in April, 1998. Currently, the DSE

[6] Key requirements for a company looking to cross-list on the NrSE would be: A minimum share capital of US$571,102; Net Assets of US$1,142,205; Audited financial statements for the preceding 5 financial years must be made available; At least one third of the Board must be non-executive; Declared profits after tax attributable to shareholders in at 3 of the last 5 financial years prior; 25% of the shares must be held by not less than 1,000 shareholders (excluding employees of the issuer).

[7] https://www.brookings.edu/opinions/africas-powerhouse/

has 18 listed companies out of which 11 are local companies, and 6 are foreign companies. The DSE's market capitalisation has also nearly tripled over the last 3 years and has been identified by the World Bank Indicators as one of the emerging stock markets in Africa. In May 2003, the DSE liberalized its restrictions on cross listings to allow cross listings by companies based in EAC partners Kenya and Uganda (Massele, 2013). The DSE has general rules that companies looking to cross-list would need to comply with and some of the key requirments are shown in footnote below[8]. There are currently no JSE listed companies listed on the DSE.

The Tanzanian economy has consistently expanded at a robust pace in recent years. Real GDP growth averaged 6.8% p.a. between 2006 and 2012 within a narrow range of 6% (2009) and 7.4% (2008). In addition, Tanzania has managed to attract a large amount of FDI over the years, and this is expected to increase into the future (AfDB Economic Outlook 2014).

2.1.5 The Nigerian Stock Exchange

The Nigerian Stock Exchange (NSE), was founded in 1960 and today services the second largest financial center in sub-Saharan Africa. The exchange has almost 190 listed companies and 223 active brokers and is a founding member and an executive committee member of the African Securities Exchanges Association as well as an affiliate member of the World Federation of Exchanges (NSE, 2014). The NSE has grown dramatically over the years increasing its market capitalisation as a % of GDP to 28% by 2006, up from 6% in 1993, and liquidity to 7.8%, up from 0.7% in the same period (Agyapong, 2014). In 1999 the Nigerian Stock Exchange NSE signed an MOU with the JSE to encourage cross-border listings and in the same year, the first cross-listed company was admitted to its Main Board (ASEA Yearbook, 2014). The NSE has general listing rules that companies looking to cross-list would need to comply with and some of the key requirments are shown in footnote below[9]. There are currently no JSE listed companies listed on the NSE although there was 1 that was previously listed and de-listed in 2003 as a result of a change in ownership

[8] Key requirments would be to comply with the listing requirements of the DSE a well as gain authority from the CEO of the DSE to apply for a cross listing at the DSE. Other key requirments include: A track record of adequate duration; Minimum requirement of the capital of the company is TZS 400 million as of the year 2008 December; The public must hold at least 25% of the issued shares; The company must prepare and obtain approval of the Prospectus from the Capital Markets and Security Authority

[9] The NSE may refuse the listing of the securities of a foreign company if the NSE believes that it is not in the public interest to list them; or If the foreign issuer is incorporated or otherwise established in a jurisdiction where the NSE is not satisfied that the standards of shareholder protection are at least equivalent to those provided in Nigeria. Key requirements to cross-list would be to enure that a register of holders of registered securities must be maintained in Nigeria and transfers must be registered locally. In addition, the marketing of securities should be done such that there is a market capitalisation of at least US$173,187 or equivalent, that must be offered in Nigeria.

With about 170 million inhabitants, Nigeria has long been the largest nation in Africa, but, since April 2014, it is also now also acknowledged as the continent's largest economy[10].

2.1.6 The Ghana Stock Exchange

The Ghana Stock Exchange, (GSE), was established in July 1989 with trading beginning the following year. It currently has 34 listed companies (29 local and 5 foreign). Today, the GSE is the principal capital market in Ghana and one of the best- performing exchanges in sub-Saharan Africa. Market capitalisation of the Ghana Stock exchange, since its inception, has increased tremendously. Given the success of the GSE, as among the best-performing exchanges in frontier markets, the market gradually became very attractive to both domestic and international investors and in 2009 the exchange became fully automated (Mensah, 2014).

The GSE has general rules that companies looking to cross-list would need to comply with and some of the key requirments are shown in footnote below[11]. As shown in Table 1, there is 1 JSE listed companies that is currently cross-listed on the the GSE with the first listing in 2011.

Ghana which started producing oil in late 2010, recorded a GDP of 15% in 2011 and 7.9% in 2012. The World Bank estimates that Ghana will continue to be among the fastest growing economies in the medium term and projects a GDP of 7.8%, 7.4% and 7.3% for 2013, 2014 and 2015 respectively[12]

[10] McKinsey Global Report 2014

[11] Key criteria a company needs to fulfill to list on the GSE include: A post-floatation stated capital of at least 500,000 Ghana Cedi's in the case of an application relating to a second list; The public float of the applicant must constitute 25% of the number of issued shares; The spread of shareholders existing at the close of an offer or at the time of listing shall be such as the GSE considers adequate bearing in mind the class of security; The GSE may prescribe the minimum number of public shareholders for listed companies and may base the minimum number on the size of capital of that particular company.

[12] Doing Business in Ghana, www.kpmg.com

Table 2: Market Fundamentals for Selected African Stock Exchanges

Markets	BSE	LSE	Nairobi SE	DSE	Nigeria SE	Ghana SE	JSE
No of Listed Firms	35	21	61	18	190	34	386
Local Firms	23	20	n/a	n/a	188	29	n/a
Foreign firms	12	1	n/a	n/a	2	5	n/a
Market Cap (US$bn)	48	11	22	4	81	5	1 102
Value of Stock Traded (US$m)	266	38	1 811	160	6 529	211	413 053
Total No of Transactions	1 380 789	5 829	426 372	12 673	1 380 789	34 152	38 964 070
Market Cap as % of GDP	24%	52%	56%	7%	27%	189%	283%
Automated Trading System	Yes	No	Yes	No	Yes	Yes	Yes

Key

BSE: Botswana Stock Exchange

LSE: Lusaka Stock Exchange

Nairobi SE: Nairobi Stock Exchange

DSE: Dar es Salaam Stock Exchange

Nigeria SE: Nigeria Stock Exchange

Ghana SE: Ghana Stock Exchange

JSE: jJohannesburg Stock Exchange

Source: ASEA Yearbook, 2014

2.2 Potential Benefits of Cross listing

Based on Chisadza (2013), the following are the main reasons why a company would consider cross listing:

2.2.1 Expand Investor Base

Cross listings in a foreign market allows a company greater access to investors and, consequently increases the shareholder base and risk sharing, which results in higher valuations. Cross listings help to draw the interest of new investors and encourage them to start trading in both foreign and local markets. The interest may come not only from the larger scope of corporate information available after listing overseas, but also from a signal of commitment to higher governance standards which a company sends when deciding to enter foreign markets. Furthermore, by cross listing, a company could expand its potential investor base more easily than if it is traded on a single market, as cross listings bring foreign securities closer to potential investors, and they increase investor awareness of the securities (Chisadza, 2013).

2.2.2 Liquidity

Cross listing on deeper and more liquid equity markets leads to an increase in the liquidity of the stock and a decrease in the cost of capital. Cross listings lead to an increase in liquidity due to a pick-up in trading volumes in both the home and foreign stock market. As a result of cross listing, the home market and the host market will compete for order flows for the cross-listed stocks and order flows will shift to the market with lower trading costs. It has also been noted that the cross listing of a company from an emerging stock market to a developed stock market increases domestic prices by enhancing the ability of the domestic stocks to provide diversification and liquidity, and transfers a segmented local equity market to an integrated market with high liquidity and market capitalisation. However, cross listings may not always enhance liquidity, due to the potentially offsetting impact of market fragmentation. It is argued that liquidity may suffer in both the domestic and the foreign market if inter-market information linkages are poor (Chisadza, 2013).

2.2.3 Increase Visibility

Increasing visibility of stock exchanges is the principal reason that drives domestic markets to participate in cross listings. The putative benefits of increased visibility in the host country go well beyond the expected increase in shareholder base. Increased visibility can also boost local stock market marketing efforts, by broadening product identification among investors and consumers in the host country. Therefore, firms and domestic markets participate in cross listings in the quest for increasing visibility of stock exchanges and firms (Chisadza, 2013).

2.2.4 Financial Gain

Firms participate in cross listings for financial gain motives. If cross listing is accompanied by an initial public offering, the financing of the firm is increased and its cost of capital is reduced as equity increases. An optimal gearing level of equity and debt will result in the lowest weighted average cost of capital (Onyuma, 2012). Thus, cross listing is regarded as a means for lowering a market's cost of capital, that is, for enabling markets to get more money from investors when they offer their stock to the public (Chisadza, 2013).

2.2.5 Marketing

Another reason that pushes firms to participate in cross listings is marketing motivations. It is claimed that cross listings create greater market demand for the company's products as well as its securities. Companies do cross-list their security issues as a tool to signal their transparency and private information; hence, they also try to deliver a positive signal of their

value to outside investors that they are high-value or high-growth companies. Cross listings attract positive publicity in the foreign market and it is therefore evident that the drive for marketing motivations is one of the reason's firms participate in cross listings (Chisadza, 2013).

2.2.6 Bonding

Cross listing in a foreign market acts as a bonding mechanism used by firms that are incorporated in a jurisdiction with poor investor protection and enforcement systems to commit themselves voluntarily to higher standards of corporate governance. In this way, firms attract investors who would otherwise be reluctant to invest. The bonding hypothesis suggests that cross listings help companies to improve their corporate governance and protect minority shareholder interests by reducing the agency costs of controlling shareholders (Chisadza, 2013).

Looking at the above list of potential reasons, increased visibility, marketing and a larger investor base would most likely be the key motivating factors that drive South African companies to cross-list on the relatively less developed exchanges in the rest of Africa. In terms of liquidity, although it has been stated above that cross listing on deeper and more liquid equity markets may lead to an increase in the liquidity of the stock, it could also be argued that a cross listing firm can still realize better liquidity by cross listing in comparatively less liquid (in aggregate) markets. A security that is cross-listed in another exchange (even of a lower aggregate liquidity) may increase the number of traders participating in the market for that security at a given point and hence increase the security's turnover (Odongo, 2015). However, it is unlikely that the bonding hypothesis would be considered a key motivating factor since the JSE is one of the best regulated stock exchnages in the world having been voted the number one regulated stock exchange in 2010 and 2011 by the World Economic Forum Competitiveness Report[13]. Regarding financial gain, the paper seeks to determine if this would also be a motivating factor for South African companies to list on other African exchanges.

Outside of these reasons, there are however, proponents of cross listings who have argued that regional integration can bring greater efficiency, synergies, and economies of scale; attract the foreign flow of funds; foster risk sharing and portfolio diversification; act as an impetus to financial sector reforms, thereby broadening the competitiveness of regional financial systems and minimizing the risks of financial instability; facilitate capital market

[13] ASEA Yearbook 2014

development; and lead to economic growth. Theoretical asset pricing models have also predicted an increase in stock prices upon cross listing. If regional cross listing is beneficial to the firms and to the countries of both primary listing and secondary listing, then policy makers of the countries of primary and secondary listings need the right policy handles to encourage facilitate and steer regional cross listing efforts by firms. Through complementary policy based efforts, policy makers can set the stage for the regional cross listing of stocks and harness the numerous benefits that are associated with it (Onyuma, Mugo and Karuiya, 2012).

2.3 Possible Effects of Cross listing in Sub-Saharan Africa

The main goal of management is to increase shareholder wealth and therefore, when a firm decides to cross-list, it should ensure that it is fulfilling the goal of increasing or maximizing shareholder wealth. An increase in the valuation of a company after it cross lists would therefore indicate an increase in shareholder wealth.

In international findings on cross listing, one of Roosenboom et al. (2009) key findings was that the destination market matters in the valuation effects of cross listings. Cross listings on more developed markets created more value for shareholders. The average cumulative abnormal return around the announcement date of the cross listing was higher for US exchanges than for the London exchange. Their findings also suggested that abnormal returns for continental European markets and Tokyo were lower than US exchanges still (Roosenboom, Mathijs and van Dijk, 2009).

Cetorelli et al. (2010) findings on the impact of cross listing and market prestige are consistent with Roosenboom et al. as they show that firms cross listing in a more prestigious market enjoy significant valuation gains over the five-year period following the listing while firms cross listing in less prestigious markets suffer a significant decline in valuation over this same five-year post-listing period (Cetorelli and Peristiani, 2010).

In Doidge et al. (2004) paper they show that firms from around the world that cross-list their shares in the U.S. have higher valuations than other firms from their respective country's that do not cross-list. Their explanation for this result is that the controlling shareholders of firms that list have more incentives to limit their consumption of private benefits from control. They further explain that these incentives arise when firms have valuable growth opportunities that cannot be exploited without raising external funds. If controlling shareholders do not have such incentives, they are unlikely to let the firm list in the U.S. because a listing threatens their ability to extract private benefits from the firm (Doidge, Karolyi, and Stulz, 2004).

According to Inder et al. (2004), who assessed whether cross listing leads to a higher firm growth, firms that were externally financed grew following cross listing. They found that cross-listed firms exhibited greater amount of externally financed firm growth in comparison to a matched sample of non cross-listed firms. After cross listing, cross-listed firms experienced higher externally financed growth rates than the matched sample of non cross-listed firms (Onyuma, Mugo and Karuiya, 2012).

In studies focused more on Sub-Saharan Africa, Adelegan, (2009), argues that the performance of a firm's share around the time of cross listing could be used as a measure of the information contained in both the announcement and the actual cross listing. Based on her findings, she notes that studies in SSA on stock price reactions to events are scanty but diverse and this includes price reactions to earnings announcements, dividend announcements, stock splits, board changes, political succession, and connections. She further notes that most results find that statistically significant abnormal returns are earned on the market around the events studied; however, there is no study of market reactions to regional cross listing of stocks on SSA stock markets. In her examination of the effect of cross listing on stock returns and stock market development in Sub-Saharan Africa she found positive abnormal returns around the announcement date, and leading to stock market development. This suggests that firms benefit from the regional cross listing of stocks outside their home country.

Based on Waweru et al's (2012) study of cross listing and valuation effects from the Nairobi Stock Exchange, results indicate that the Tobin's Q of cross-listed firms in East Africa increases two years prior to cross listing and continues to increase two years after cross listing. The market-to-book ratios also show an increase two years prior to cross listing up to one year after cross listing, then decrease in the second year after cross listing (Onyuma, Mugo and Karuiya, 2012). .

Kuria (2008) determined the short-term and long-term effects of cross-border listing announcements on companies listed at the NSE and their post listing performance, and reported that cross listing announcements have statistically significant negative effects on stock returns. In fact, the non cross-listed firms had higher daily turnover ratios than cross-listed firms, an indicator of increased activity hence liquidity. Moreover, Mugo (2010) and Mugo et al., (2011) have reported that cross listing "may" affect firm liquidity and P/E ratios. However, a closer look at these findings reveals fatal interpretational errors as the changes were never tested for significance (Onyuma, Mugo and Karuiya, 2012).

In Onyuma et al's study of whether cross-border listing improves the firm's financial performance in Eastern Africa, it was shown that cross listing leads to improvement in a variety of firm fundamentals as it is associated with improved liquidity, earnings, and price to earnings ratio. It was also reported that firms benefit less from cross listing of shares outside their home market. The analysis also uncovered no clear evidence of material value creation to the shareholders of cross-listed companies. The study found neither anything suggesting that cross listing has significant impact on their financial performance nor any systematically less borrowing for asset investment. Nonetheless, the study did uncover positive findings only relating to improved market confidence as shown by positive changes in the price-to-earnings ratios for all the cross-listed firms (Onyuma, Mugo and Karuiya, 2012).

This study will therefore focuses on analyzing the financial effect of cross listing for all the JSE listed companies that have cross listed on other exchanges in Sub-Saharan Africa.

3. CHAPTER 3: METHODOLOGY

As shown in Table 1, there are 24 JSE listed companies that have cross listed on other Sub-Saharan African stock exchanges. The bulk of these, (14), have cross listed on the Namibia Stock Exchange , 3 cross listed on Botswana Stock Exchange, 1 on the Nairobi Stock Exchange, 1 on the Ghanain Stock Exchange, 3 on the Malawian Stock Exchange, 1 on the Zambian Stock Exchange and 1 on the Zimbabwean Stock Exchange.

3.1 Data Analysis

The JSE companies that are currently cross listed on other African exchanges are shown in Table 3 below:

Table 3: JSE listed Companies with Cross Listings on other African exchanges

Company Name	Primary Listing	Year - Listed	Secondary Listing	Year - Listed
South Africa - Botswana				
Anglo American Plc	Johannesburg Stock Exchange	1999	Botswana Stock Exchange	2001
Blue Financial Service Limited	Johannesburg Stock Exchange	2006	Botswana Stock Exchange	2008
Investec Limited	Johannesburg Stock Exchange	1986	Botswana Stock Exchange	2008
South Africa - Ghana				
AngloGold Ashanti Limited	Johannesburg Stock Exchange	1944	Ghana Stock Exchange	2004
South Africa - Kenya				
Liberty Holdings	Johannesburg Stock Exchange	1999	Nairobi Security Exchange	2011
South Africa - Malawi				
Illovo Sugar	Johannesburg Stock Exchange	1992	Malawi Stock Exchange	1997
Standard bank	Johannesburg Stock Exchange	1970	Malawi Stock Exchange	1998
Old Mutual plc	Johannesburg Stock Exchange	1999	Malawi Stock Exchange	1999
South Africa - Namibia				
Oceana Group	Johannesburg Stock Exchange	1947	Namibian Stock Exchange	1998
African Oxygen Limited (Afrox)	Johannesburg Stock Exchange	1963	Namibian Stock Exchange	1995
Barloworld	Johannesburg Stock Exchange	1941	Namibian Stock Exchange	1996
FirstRand Limited	Johannesburg Stock Exchange	1998	Namibian Stock Exchange	1998
Nedbank Group	Johannesburg Stock Exchange	1969	Namibian Stock Exchange	2007
Nictus Group	Johannesburg Stock Exchange	1969	Namibian Stock Exchange	1992
Shoprite Group	Johannesburg Stock Exchange	1986	Namibian Stock Exchange	2002
Truworths International Ltd	Johannesburg Stock Exchange	1998	Namibian Stock Exchange	1998
Vukile Property Fund	Johannesburg Stock Exchange	2004	Namibian Stock Exchange	2007
PSG Konsult	Johannesburg Stock Exchange	2014	Namibian Stock Exchange	2014
Sanlam Limited	Johannesburg Stock Exchange	1998	Namibian Stock Exchange	1998
MMI Holdings	Johannesburg Stock Exchange	2010	Namibian Stock Exchange	2012
Mediclinic	Johannesburg Stock Exchange	1986	Namibian Stock Exchange	2014
Bidvest	Johannesburg Stock Exchange	1990	Namibian Stock Exchange	2009
South Africa - Zambia				
Shoprite	Johannesburg Stock Exchange	1995	Lusaka Stock Exchange	2003
South Africa - Zimbabwe				
PPC Limited	Johannesburg Stock Exchange	1910	Zimbabwe Stock Exchange	1947

Source: Adelegan, 2009;

Source: Merchantec Capital Research

Source: Company Websites

However, not all the companies in Table 3 above will be analysed as there are information gaps for some of the companies that are explained below:

Table 4: Companies removed from Analysis

Company Name	Reason for not being included in Analysis
South Africa - Botswana	
Blue Financial Services Limited	The Company was suspended from the JSE in 2013 after failing to publish its financial results for a second year in a row. In addition to this, the company's historical financials have missing information
South Africa - Ghana	
AngloGold Ashanti Limited	The Company cross-listed on the JSE and Ghana Stock Exchange in the same year (2003), therefore a pre and post listing comparison was not possible as complete financial information prior to 2003 is not available
South Africa - Malawi	
Old Mutual plc	The Company cross-listed on the JSE and Malawi Stock Exchange in the same year (1999), therefore a pre and post listing comparison was not possible as complete financial information prior to 1999 is not available
South Africa - Namibia	
FirstRand Limited	The Company crosslisted on the JSE and Namibian Stock Exchange in the same year, (1998), therefore a pre and post listing comparison was not possible as complete financial information prior to 1998 is not available
Nictus Group	The Company crosslisted on the NSE in 1992. Data for the period before this cannot be obtained.
Truworths International Ltd	The Company crosslisted on the JSE and Namibian Stock Exchange in the same year, (1998), therefore a pre and post listing comparison was not possible as complete financial information prior to 1998 is not available
PSG Konsult	The Company crosslisted on the JSE and Namibian Stock Exchange in the same year, (2014), therefore a pre and post listing comparison was not possible as complete financial information prior to 2014 is not available
Sanlam Limited	The Company crosslisted on the JSE and Namibian Stock Exchange in the same year, (1998), therefore a pre and post listing comparison was not possible as complete financial information prior to 1998 is not available
South Africa - Zimbabwe	
PPC Limited	The Company cross listed on the Zimbabwe Stock Exchange in 1992. Data for the period before this cannot be obtained.

Source: Merchantec Capital Research

Source: Company Websites

The Companies that will be included in the analysis are shown in Table 5 below:

Table 5: Companies included in Analysis

Company Name	Primary Listing	Year - Listed	Secondary Listing	Year - Listed
South Africa - Botswana				
Anglo American Plc	Johannesburg Stock Exchange	1999	Botswana Stock Exchange	2001
Investec Limited	Johannesburg Stock Exchange	1986	Botswana Stock Exchange	2008
South Africa - Kenya				
Liberty Holdings	Johannesburg Stock Exchange	1999	Nairobi Security Exchange	2011
South Africa - Malawi				
Illovo Sugar	Johannesburg Stock Exchange	1992	Malawi Stock Exchange	1997
Standard bank	Johannesburg Stock Exchange	1970	Malawi Stock Exchange	1998
South Africa - Namibia				
Oceana Group	Johannesburg Stock Exchange	1947	Namibian Stock Exchange	1998
African Oxygen Limited (Afrox)	Johannesburg Stock Exchange	1963	Namibian Stock Exchange	1995
Barloworld	Johannesburg Stock Exchange	1941	Namibian Stock Exchange	1996
Nedbank Group	Johannesburg Stock Exchange	1969	Namibian Stock Exchange	2007
Shoprite Group	Johannesburg Stock Exchange	1986	Namibian Stock Exchange	2002
Vukile Property Fund	Johannesburg Stock Exchange	2004	Namibian Stock Exchange	2007
MMI Holdings	Johannesburg Stock Exchange	2010	Namibian Stock Exchange	2012
Mediclinic	Johannesburg Stock Exchange	1986	Namibian Stock Exchange	2014
Bidvest	Johannesburg Stock Exchange	1990	Namibian Stock Exchange	2009
South Africa - Zambia				
Shoprite	Johannesburg Stock Exchange	1995	Lusaka Stock Exchange	2003

Source: Merchantec Capital Research

Source: Company Websites

3.1.1 Financial Ratio Analysis

In Onyuma et al, (2012), a financial ratio analysis was undertaken to determine the financial implications of companies listed on the NrSE cross listing on exchanges within East African Community stock markets (Rwandan, Tanzanian and Ugandan stock markets). A similar financial ratio analysis will be done for this study that will look at financial implications, (pre and post the cross-listing), of companies listed on the JSE that cross listied on other exchanges on the continent.

The financial ratios that will be calculated will include a mix of profitability, liquidity, leverage and investor ratios. The profitability, liquidity and leverage ratios will be calculated to give a sense of the operational performance of the company pre and post the cross listing. The investor ratios will be calculated to give an overall sense of how the value of the company increased or decreased pre and post the cross listing. As mentioned earlier the main goal of financial management is to increase shareholder returns. These investor ratios will thus be important in understanding the change in value and returns that the shareholders of these companies experienced on their shares pre and post the cross listing. All the ratios mentioned will be calculated based on the financial data of these companies that will be obtained from Share Data Online[14]. Based on Cetorelli et al. (2010) and Waweru et al's (2012) sudies, their analysis was taken over a 4 – 5 year period therefore the ratio analysis performed in this study will include a two-year pre cross listing analysis and a three year post cross listing analysis.

The ratio's below are defined as per the definitions provided by the CFA intsitute[15].

3.1.2 Profitability Ratios

- **Operating Margin (OM)** – OM measures the operating income as a percentage of sales and is used to measure the company's operating efficiency. A higher OM would usually imply higher operating efficiency
    - Operating Income / Sales

- **Net Profit Margin (NPM)** – NPM measures the net income as a percentage of sales and is a meausre of the profitability of the company. A higher NPM would generally imply higher profitability
    - Net Income / Sales

[14] (http://www.sharedata.co.za).
[15] 2013 CFA Institute

- **Operating Cash to Sales (OCS)** – OCS measures the cash generated by a company from its operations in relation to its sales made. A higher OCS would usually imply a greater ability for a firm to turn its sales to cash.
    - Operating Cash / Sales

- **Return on Equity (ROE)** – ROE measures the income / return earned by a company on from the equity capital in the business. A higher ROE would typically imply a higher return earned on the company's equity.
    - Net Income / Total Equity

3.1.3 Liquidity Ratios

- **Current Ratio (CR)** – This ratio measures the ability to satisfy current liabilities using current assets. A higher CR suggests that the company is more capable of paying its short term obligations as it has a higher proportion of assets than liabilities. However it should also be noted that depending on the industry, if the ratio is too high, (i.e. significantly higher than its peers), the company may not be using its current assets efficiently Broadly speaking a current ratio ranging from 1 times, (1:1) to 2 times (2:1) is considered fair (Onyuma, Mugo and Karuiya, 2012).
    - Current Assets / Current Liabilities

3.1.4 Gearing Ratios

- **Debt-to-Equity Ratio (D/E ratio)** – This ratio measures a company's debt financing relative to its equity financing. A high D/E ratio would imply that the company has been financing its growth primarily with debt. A low D/E ratio would imply that the company's financing has come primarily through equity. It should be noted however that a high D/E ratio may be common in one industry while a low D/E ratio may be common in another
    - Total Debt / Total Shareholder Equity

- **Interest Cover** – This ratio measures a company's ability to satisfy its interest obligations[5]
    - Total Debt / Total Shareholder Equity

3.1.5 Investor Ratios

- **Market price** of share – an increase in the market price of the share would imply an increase in the share price and therefore the market capitalisation (valuation) of the company

- **Dividend Yield** – This ratio measures the dividend declared as a percentage of the market price of a share. The higher the dividend yield the higher the return that the investor will receive on each dollar they have invested.
    - Dividend per Share / Market Price

- **Earnings per Share (EPS)** – This ratio measures the amount of earnings attributable to each share of common stock. The higher the EPS the more the shares of stock will be worth.
    - Net Income / Ordinary Shares Outstanding

- **Price Earnings Ratio (PER)** – This ratio relates share price to the EPS. It is a ratio for valuing a company that measures its current share price relative to its earnings per share.
    - Net Income / Ordinary Shares Outstanding

- **Volume Traded** of shares – an increase in the volume of shares traded would imply an increase in liquidity because the shares are being traded more frequently.

3.2 Growth Curve Modelling and Paired T-Tests

In order to test for the effect of cross listing on the companies, the following two methods were used:

- Latent Growth Curve Modelling and
- Paired t-tests.

Latent Growth Modelling (LGM) is used as a statistical approach to carry out overall hypothesis testing about relations among observed and latent variables (Bollen, 1989). LGM tests the a priori predictions and assumptions of a theory of change against observed data. It is therefore critical that the researcher have a well-articulated theory of change before attempting to use LGM. A growth curve is used because it is assumed there would be some trend over the years in the variables for a specific company or for all companies due to external reasons. Thus, we try and fit the data to an 'ideal' growth curve and judge based on the fit statistics

whether this is a good interpretation of what is actually happening in the data. This procedure will be used to test whether the growth curve shows a ‘spike’ at the year of cross-listing. The Proc Calis procedure in SAS Studio will be used for the LGM analysis

While a regular two-sample t-test assumes independence, a paired t-test analysis assumes that the two samples are dependent. The paired t-test therefore compares the difference in the means from the two variables to a given number (usually 0). This means it will show if there is a difference in the means between the two samples but not how big the difference is. The paired t-test will be conducted on the average of each of the financial ratio’s in the two years before listing compared to the year of listing.

4. CHAPTER 4: RESULTS AND DISCUSSION

4.1 Financial Rato Analysis Results

A financial analysis of each of the companies in Table 5 will now be shown. As mentioned earlier, because the firms cross listed in different years, (thereby making some companies information difficult to obtain), the analysis will consist of two years pre-cross listing and three years post cross listing, (which includes the year of cross listing), for each companies so that the data presented is consistent.

Table 6a: African Oxygen Limited Ratio Analysis

COMPANY NAME	BEFORE CROSS-LISTING		YEAR OF CROSS LISTING	AFTER CROSS-LISTING	
AFROX	1993	1994	1995	1996	1997
Profitability					
Operating Margin	19.16%	18.50%	19.07%	19.00%	17.87%
Net Margin	8.74%	8.17%	9.77%	9.93%	8.97%
Op Cash / Sales	7%	7%	6%	7%	22%
Return on Equity	14.14%	15.46%	22.46%	21.00%	24.93%
Liquidity					
Current Ratio	0.98	0.84	0.85	1.03	0.95
Leverage Ratio's					
Debt to Equity	30.44%	35.67%	31.49%	32.56%	76.57%
Interest coverage	7.09	5.97	5.13	5.48	4.57
Investor Ratio's					
Market Price	8.85	11.00	12.40	15.00	12.60
Dividend Yield	0.02	0.02	0.02	0.02	0.03
Earnings per Share (ZAR)	0.35	0.39	0.56	0.65	0.71
Price Earnings Ratio	25.06	28.04	22.06	22.96	17.63
Volume Traded	7 023 290	10 312 580	13 594 510	11 227 916	19 742 555

Source: www.sharedata.com

Source: Own Calculations

Afrox is a supplier of gas and welding products that listed on the JSE in 1965 and then cross listed on the Namibian Stock Exchange in 1995. Looking at the profitability ratios, there was an increase in all the ratios in the year of cross listing except for the operating cash to sales ratio. The current ratio increased marginally while the debt to equity ratio and interest cover ratio both reduced in the year of cross listing. Regarding the investor ratios, the share price increased in the year of cross listing as well as the EPS and the volume of shares traded while the dividend yield remained constant and the P/E ratio decreased.

In the two following years after the company cross listed, almost all the profitability ratios decreased with the exception of the operating cash to sales ratio that increased. For the current ratio and leverage ratios, all three of the ratios saw a general increase. The investor ratios generally increased in the years after cross listing excluding the share price and P/E ratio which fell in 1997.

Table 6b: Anglo American Ratio Analysis

COMPANY NAME	BEFORE CROSS-LISTING		YEAR OF CROSS LISTING	AFTER CROSS-LISTING	
ANGLO AMERICAN	1999	2000	2001	2002	2003
Profitability					
Operating Margin	11.27%	15.75%	14.53%	15.46%	8.64%
Net Margin	13.40%	13.20%	20.86%	10.32%	8.54%
Op Cash / Sales	15.98%	19.96%	23.93%	23.89%	17.08%
Return on Equity	8.12%	10.76%	21.33%	8.42%	6.87%
Liquidity					
Current Ratio	1.97	1.13	1.14	1.18	0.99
Leverage Ratio's					
Debt to Equity	20.19%	27.49%	33.39%	47.23%	45.83%
Interest coverage	2.16	3.12	3.21	4.85	2.57
Investor Ratio's					
Market Price	109.07	112.36	201.32	139.01	157.14
Dividend Yield	0.02	0.03	0.02	0.03	0.03
Earnings per Share (ZAR)	6.81	9.48	19.83	12.76	9.33
Price Earnings Ratio	16.01	11.85	10.15	10.90	16.83
Volume Traded	553 489 310	333 058 739	465 871 678	607 705 868	662 664 302

Source: www.sharedata.com;

Source: Own Calculations

Anglo American is a diversified mining company that listed on the JSE in 1999 and then cross listed on the Botswana Stock Exchange in 2001. The profitability ratios showed improved results in the year that the Company cross listed as the net margin, operating cash to sales ratio and return on equity all increased significantly with the only exception being the operating margin that reduced marginally. The current ratio increased very marginally in the year that the Company cross listed while both the D/E ratio and interest coverage increased. Regarding the investor ratios, the company's share price increased very significantly in the year that it cross listed as well as the EPS and the volume of shares traded while the dividend yield and P/E ratio dropped.

The years 2002 and 2003 appear to have been difficult operating years for the company as most of the profitability ratios reduced significantly. This included a significant drop in the net margin and return on equity by almost half. There was also a substantial increase in the debt equity ratio as well as a drop in the interest coverage ratio. The share price and earnings per share of the company also fell drastically in these two years even though the P/E ratio and volume traded of shares increased.

Table 6c: Barloworld Ratio Analysis

COMPANY NAME	BEFORE CROSS-LISTING		YEAR OF CROSS LISTING	AFTER CROSS-LISTING	
BARLOWORLD	1994	1995	1996	1997	1998
Profitability					
Operating Margin	4.53%	5.43%	5.44%	5.51%	5.33%
Net Margin	2.89%	3.40%	3.74%	4.17%	3.92%
Op Cash / Sales	-0.01	0.06	0.03	0.05	info not available
Return on Equity	12.06%	15.10%	16.86%	18.49%	20.69%
Liquidity					
Current Ratio	1.52	1.49	1.51	1.31	1.22
Leverage Ratio's					
Debt to Equity	24.37%	25.88%	33.30%	29.56%	31.29%
Interest coverage	3.28	4.15	3.55	2.59	2.10
Investor Ratio's					
Market Price	28.75	41.25	44.00	53.25	22.00
Dividend Yield	0.02	0.02	0.02	0.02	0.06
Earnings per Share	1.87	2.63	3.24	3.88	3.82
Price Earnings Ratio	15.40	15.66	13.57	13.71	5.75
Volume Traded	47 000 000	39 972 604	39 402 686	92 100 000	177 920 573

Source: www.sharedata.com;

Source: Own Calculations

Barloworld is an industrial conglomerate that listed on the JSE in 1941 and then cross listed on the Nambian Stock Exchange in 1996. In the year of cross listing, there was a very slight increase in all the profitability ratios. The current ratio also experienced a slight increase in that year while the debt equity ratio increased and the interest coverage reduced. With the investor ratios, the share price and EPS increased in the year that the company cross listed while the P/E ratio and volume of shares traded reduced.

The two years after cross listing had mixed profitabilty results as the operating and net margins didn't differ too much from the year of cross listing but the return on equity increased in both years after cross listing. The liquidity ratios and the leverage ratios remained relatively constant however the investor ratios had some very contrasting results:

- Firstly market price rose significantly in 1997 and then fell drastically in 1998
- Dividend yield remained constant in 1997 and then increased significantly in 1998
- P/E ratio was marginally higher in 1997 but then dropped significantly in 1998
- Volume traded of shares trippled in 1997 and then nearly doubled in 1998

Table 6d: Ilovo Sugar Ratio Analysis

COMPANY NAME	BEFORE CROSS-LISTING		YEAR OF CROSS LISTING	AFTER CROSS-LISTING	
ILLOVO SUGAR	1995	1996	1997	1998	1999*
Profitability					
Operating Margin	11.40%	11.77%	14.99%	18.26%	info not available
Net Margin	6.07%	8.69%	8.36%	8.64%	info not available
Op Cash / Sales	0.16	0.16	0.15	0.00	info not available
Return on Equity	15.04%	20.68%	34.94%	39.28%	info not available
Liquidity					
Current Ratio	1.30	1.15	0.85	0.90	info not available
Leverage Ratio's					
Debt to Equity	37.46%	22.45%	14.74%	10.93%	info not available
Interest coverage	3.94	5.28	6.03	4.14	info not available
Investor Ratio's					
Market Price	6.70	8.90	8.50	4.90	info not available
Dividend Yield	0.03	0.04	0.05	0.08	info not available
Earnings per Share	0.61	0.97	0.76	1.08	info not available
Price Earnings Ratio	11.06	9.22	11.11	4.53	info not available
Volume Traded	5 202 330	13 035 228	27 815 931	83 471 941	info not available

Source: www.sharedata.com;

Source: Own Calculations;

** Information not available due to the Company changing year end*

Illovo Sugar is sugar producer that listed on the JSE in 1992 and then cross listed on the Malawi Stock Exchange in 1997. Most of the profitability ratios improved in the year of cross listing which included increases in the operating margin, net margin and return on equity. Looking at the liquidity and leverage ratios, the current ratio and the debt to equity ratios reduced while the interest coverage increased slightly. The investor ratios had slightly mixed results as the share price dropped slightly in the year of cross listing while the dividend yield, EPS, P/E ratio and volume of shares traded increased.

The year after cross listing saw a continuation in the increase in most of the profitability ratios. The current ratio also increased while both the debt equity ratio and interest covergae fell. Looking at the investor ratios, the share price dropped significantly as well as the P/E ratio which also saw a steep decline. The dividend yield and EPS both increased marginally while the volume of shares increased by almost three times from the year of cross listing.

Table 6e: Investec Limited Ratio Analysis

COMPANY NAME	BEFORE CROSS-LISTING		YEAR OF CROSS LISTING	AFTER CROSS-LISTING	
INVESTEC	2006	2007	2008	2009	2010
Profitability					
Operating Margin	41.50%	41.35%	44.02%	34.92%	30.17%
Net Margin	32.98%	29.32%	27.15%	23.66%	25.25%
Op Cash / Sales	0.18	0.00	0.72	0.29	1.10
Return on Equity	31.16%	27.22%	20.49%	12.71%	11.71%
Liquidity					
Current Ratio*	not reported	not reported	not reported	not reported	not reported
Leverage Ratio's					
Debt to Equity*	not reported	not reported	not reported	not reported	not reported
Interest coverage	0.59	0.54	0.42	0.23	0.29
Investor Ratio's					
Market Price	62.60	93.30	57.43	38.86	62.49
Dividend Yield	0.29	0.25	0.24	0.33	0.26
Earnings per Share	0.57	0.60	0.65	0.46	0.50
Price Earnings Ratio	109.03	154.57	88.91	84.45	123.90
Volume Traded	126 735 675	154 518 631	220 977 673	301 909 949	269 156 364

Source: www.sharedata.com;

Source: Own Calculations;

** Ratios not reported by the Company*

Investec Limited is a specialist bank that listed on the JSE in 1986 and then cross listed on the Botswana Stock Exchange in 2008. In the year of cross listing the operating margin and operating cash to sales ratio improved while net margin and return on equity both reduced. In the leverage ratios, the interest coverage ratio reduced in the year of cross listing. Similarly, most of the investor ratios did not show good results in the years of cross listing with the share price and P/E ratio falling significantly. The volume of shares traded however increased substantially

The following year after cross listing, (2009) appears to have been an overall difficult year for the business as almost all its ratios reduced from the year of cross listing except the volume of shares traded that increased. There were improvements in 2010 however with an increase in the net margin and interest coverage ratio. Similarly, the share price, EPS and P/E ratio increased however the number of shares traded fell.

Table 6f: Liberty Ratio Analysis

COMPANY NAME	BEFORE CROSS-LISTING		YEAR OF CROSS LISTING	AFTER CROSS-LISTING	
LIBERTY	2009	2010	2011	2012	2013
Profitability					
Operating Margin	5.29%	3.14%	10.74%	7.20%	9.44%
Net Margin	0.10%	4.66%	5.49%	4.76%	4.58%
Op Cash / Sales	0.11	0.03	0.11	0.06	0.10
Return on Equity	0.42%	20.43%	20.23%	24.00%	22.14%
Liquidity					
Current Ratio	0.80	0.47	0.63	0.47	0.40
Leverage Ratio's					
Debt to Equity	17.09%	14.90%	13.48%	11.76%	14.83%
Interest coverage	5.00	8.33	info not available	5.62	5.82
Investor Ratio's					
Market Price	69.20	72.50	79.48	111.17	121.60
Dividend Yield	0.07	0.06	0.06	0.05	0.05
Earnings per Share	0.15	8.37	9.35	14.34	13.65
Price Earnings Ratio	449.84	8.67	8.50	7.75	8.91
Volume Traded	99 914 222	93 683 529	85 645 798	69 176 442	78 989 779

Source: www.sharedata.com;

Source: Own Calculations;

Liberty is a financial services group that listed on the JSE in 1999 and then cross listed on the Nairobi stock exchnage in 2011. The profitability ratios in the year of cross listing were generally improved from those before cross listing. The current ratio also increased slightly in the year that the company cross listed while the debt equity ratio decreased. The investor ratios showed some postive results in the year of cross listing with the share price and EPS increasing while the P/E ratio and volume of shares traded reduced.

The years after cross listing saw a general fall in the profitability ratios with the exception of the return on equity which improved slightly. This was also the case with the current ratio which reduced while the D/E ratio and interest cover ratio reduced in 2012 and then increased in 2013. With the investor ratios, the share price and EPS continued to increase in the two years after cross lsiting. The P/E ratio fell and then rose again in the two years after cross listing while volume of shares traded was generally lower in compared to the year of cross listing and before.

Table 6g: Mediclinic Ratio Analysis

COMPANY NAME	BEFORE CROSS-LISTING		YEAR OF CROSS LISTING	AFTER CROSS-LISTING	
MEDICLINIC	2012	2013	2014	2015	n/a
Profitability					
Operating Margin	17.10%	16.91%	18.05%	info not available	info not available
Net Margin	5.55%	-4.52%	4.00%	info not available	info not available
Op Cash / Sales	0.19	0.23	0.21	info not available	info not available
Return on Equity	12.07%	-6.42%	4.99%	info not available	info not available
Liquidity					
Current Ratio	8.62	9.38	8.56	info not available	info not available
Leverage Ratio's					
Debt to Equity	289.10%	181.60%	145.32%	info not available	info not available
Interest coverage	2.29	0.80	4.51	info not available	info not available
Investor Ratio's					
Market Price	37.50	64.20	74.83	121.99	info not available
Dividend Yield	0.02	0.01	0.01	0.01	info not available
Earnings per Share	1.87	-1.34	1.48	0.00	info not available
Price Earnings Ratio	20.03	-48.05	50.68	info not available	info not available
Volume Traded	67 139 876	213 049 842	281 389 579	320 519 200	info not available

Source: www.sharedata.com;

Source: Own Calculations;

Mediclinic is a private hospital group that was listed on the JSE in 1986 and then cross listed on the Namibian Stock Exchange in 2014. Although the company only cross listed in 2014 and has a year of results since cross listing, it was still included in the analysis to see the effect of the cross listing for that period. Based on the results in the year of cross listing, the Company has seen a general improvement in its profitability ratios and leverage ratios while liquidity ratios have kept fairly constant. Its investor ratios have also improved since cross listing with the share price, P/E ratio, and volume traded of shares all having increased significantly.

Table 6h: MMI Holdings Ratio Analysis

COMPANY NAME	BEFORE CROSS-LISTING		YEAR OF CROSS LISTING	AFTER CROSS-LISTING	
MMI	2010	2011	2012	2013	2014
Profitability					
Operating Margin	info not available	14.29%	12.52%	6.91%	22.61%
Net Margin	info not available	10.95%	12.31%	11.10%	13.82%
Op Cash / Sales	info not available	-0.10	-0.06	0.34	0.22
Return on Equity	info not available	7.36%	9.78%	11.02%	12.93%
Liquidity					
Current Ratio	info not available	14.40	29.69	29.26	3.04
Leverage Ratio's					
Debt to Equity	info not available	76.08%	121.17%	161.71%	76.08%
Interest coverage	info not available	5.00	8.33	info not available	5.62
Investor Ratio's					
Market Price	info not available	16.99	18.00	22.17	26.25
Dividend Yield	info not available	0.07	0.10	0.06	0.05
Earnings per Share	info not available	1.09	1.46	1.66	2.04
Price Earnings Ratio	info not available	15.54	12.29	13.33	12.89
Volume Traded	info not available	736 000 000	577 445 135	602 108 013	591 559 769

Source: www.sharedata.com;

Source: Own Calculations;

MMI Holdings is a financial services group that listed on the JSE in 2010 and then cross listed on the Namibian Stock Exchange in 2012. In the year of cross listing the company's profitabiltiy

ratios had mixed results with the operating margin dropping while the net margin and return on equity increased. All of the liquidity and leverage ratios increased in the year of cross listing too. The investor ratios all increased in the year of cross listing excluding the P/E ratio and the volume of shares traded.

In the years after cross listing, the profitability ratos generally increased even though the operating and net margin both had slight dips in 2012. The current ratio reduced dramatically in the final year as well as the D/E ratio. Looking at the investor ratios, share price and EPS generally increased while the P/E ratio and volume traded of shares remained at levels that they were at cross listing.

Table 6i: Nedbank Group Ratio Analysis

COMPANY NAME	BEFORE CROSS-LISTING		YEAR OF CROSS LISTING	AFTER CROSS-LISTING	
NEDBANK	2005	2006	2007	2008	2009
Profitability					
Operating Margin	67.51%	74.80%	76.33%	81.37%	80.41%
Net Margin	44.98%	41.35%	42.59%	39.64%	29.60%
Op Cash / Sales	0.95	0.42	-0.05	0.10	-0.12
Return on Equity	17.06%	18.05%	19.95%	18.36%	12.17%
Liquidity					
Current Ratio	1.14	1.18	0.99	1.28	1.38
Leverage Ratio's					
Debt to Equity	92.47%	72.89%	67.64%	94.32%	72.84%
Interest coverage	0.39	0.47	0.39	0.31	0.38
Investor Ratio's					
Market Price	100.00	133.50	136.00	95.50	124.05
Dividend Yield	0.03	0.04	0.05	0.06	0.04
Earnings per Share	9.55	11.48	14.99	15.65	11.08
Price Earnings Ratio	10.47	11.60	9.07	6.10	11.20
Volume Traded	168 130 249	191 566 444	232 271 325	305 395 126	272 666 601

Source: www.sharedata.com;

Source: Own Calculations;

The Nedbank Group is a financial services group that was initiallly listed on the JSE in 1969 and then cross listed on the Namibian Stock Exchange in 2007. Looking at the profitability ratios, the company saw an improvement in its operating margin, net margin and return on equity in the year of cross listing. With the liquidity and leverage ratios, the current ratio and debt equity ratio increased while all the investor ratios increased in the year of cross listing except the P/E ratio.

In the years after the cross listing, only the operating margin increased while the other profitability ratios declined. The current ratio increased while the debt equity ratio and interest coverage ratio ended up at levels that they were at cross listing. For the investor ratios, there was a general decrease in the share price, EPS and the P/E ratio while the volume of shares traded was the only metric that increased in each of the years after cross listing.

Table 6j: Oceana Ratio Analysis

COMPANY NAME	BEFORE CROSS-LISTING		YEAR OF CROSS LISTING	AFTER CROSS-LISTING	
OCEANA	1996	1997	1998	1999	2000
Profitability					
Operating Margin	info not available	10.85%	9.85%	8.70%	9.55%
Net Margin	info not available	7.54%	6.07%	6.03%	6.48%
Op Cash / Sales	info not available	0.10	0.10	0.10	0.07
Return on Equity	info not available	49.68%	41.45%	29.06%	29.70%
Liquidity					
Current Ratio	info not available	1.18	1.23	1.40	1.41
Leverage Ratio's					
Debt to Equity	info not available	2.07%	1.02%	0.03%	0.25%
Interest coverage	info not available	23.53	23.74	38.00	26.93
Investor Ratio's					
Market Price	info not available	5.10	4.60	4.10	6.86
Dividend Yield	info not available	0.05	0.07	0.08	0.07
Earnings per Share	info not available	0.75	0.84	0.86	1.08
Price Earnings Ratio	info not available	6.82	5.50	4.75	6.36
Volume Traded	info not available	5 630 000	7 868 130	9 827 575	7 272 947

Source: www.sharedata.com;

Source: Own Calculations;

Oceana is a fishing and a cold storage company that listed on the JSE in 1947 and then cross listed on the Nambian Stock Exchange in 1998. In the year that it cross listed, the company experienced a decline in all of its profitability ratios excluding the operating cash to sales ratio. With the liquidity and leverage ratios, there was an increase in the current ratio in the year of cross listing while the debt equity ratio decreased and the interest coverage increased. Regarding the investor ratios, there was an increase in the dividend yield, EPS, and the volume of shares traded in the year of cross listing however there was a dcrease in the share price and P/E ratio.

This decline in the profitability ratios continued for most in the years after cross listing. The current ratio, debt equity ratio and interest cover all moved in the same way they had moved in the year that they cross listed. For the investor ratios, the years after cross listing had mixed results:

- the EPS increased,
- the share price and P/E ratio declined further and then increased,
- the dividend yield and volume traded of shares increased and then decreased

Table 6k: Shoprite Ratio Analysis

COMPANY NAME	BEFORE CROSS-LISTING		YEAR OF CROSS LISTING	AFTER CROSS-LISTING	
SHOPRITE	2001	2002	2003	2004	2005
Profitability					
Operating Margin	1.71%	1.70%	2.14%	1.82%	2.33%
Net Margin	1.55%	0.86%	1.66%	1.63%	2.08%
Op Cash / Sales	0.04	0.05	0.04	0.03	0.04
Return on Equity	21.98%	18.30%	33.78%	30.27%	32.30%
Liquidity					
Current Ratio	1.12	1.06	1.00	1.00	0.99
Leverage Ratio's					
Debt to Equity	28.81%	79.67%	68.75%	78.86%	41.75%
Interest coverage	4.89	4.32	6.47	6.56	21.10
Investor Ratio's					
Market Price	6.80	5.71	7.75	6.40	9.40
Dividend Yield	0.02	0.04	0.03	0.05	0.04
Earnings per Share	0.53	0.32	0.68	0.81	1.12
Price Earnings Ratio	12.80	17.76	11.38	7.87	8.42
Volume Traded	95 047 276	134 766 741	220 205 091	248 555 463	253 593 206

Source: www.sharedata.com;

Source: Own Calculations;

Shoprite is a supermaket retail group that listed on the JSE in 1995 and then cross listed on the Zambia Stock Exchnage in 2003. In the year of cross listing, the company experienced an increase in its profitability ratios except the operating cash to sales ratio which only marginally fell. The liquidity and leverage ratios were also improved in the year of cross listing as the current ratio fell slightly while the debt to equity ratio also decreased and the interest coverage increased. The investor ratios were generally postive in the year of cross listing as they all improved with the exception of the P/E ratio that decreased.

In the years after cross listing the company saw a decrease in its profitability ratios however these increased again in 2005. The current ratio decreased very marginally while the the debt equity ratio increased significantly in 2004 before dropping again in 2005 and the interest coverage increased substantially (over three times). For the investor ratios there was a slight drop in the share price in 2004 however this price increased in the following year. The rest of the investor ratios generally increased with the exception of the P/E ratio that declined.

Table 6k: Standard Bank Ratio Analysis

COMPANY NAME	BEFORE CROSS-LISTING		YEAR OF CROSS LISTING	AFTER CROSS-LISTING	
STANDARD BANK	1996	1997	1998	1999	2000
Profitability					
Operating Margin	info not available	36.63%	37.97%	38.18%	41.21%
Net Margin	info not available	21.44%	18.33%	23.30%	23.19%
Op Cash Flow / Sales	info not available	0.40	0.00	0.00	0.00
Return on Equity	info not available	19.70%	15.73%	21.20%	18.58%
Liquidity					
Current Ratio	info not available	1.14	1.18	0.99	1.28
Leverage Ratio's					
Debt to Equity	info not available	info not available	info not available	info not available	info not available
Interest coverage	info not available	7.96	15.13	info not available	6.50
Investor Ratio's					
Market Price	info not available	21.40	18.00	25.55	30.50
Dividend Yield	info not available	0.02	0.03	0.03	0.03
Earnings per Share	info not available	1.66	1.70	2.42	2.60
Price Earnings Ratio	info not available	12.87	10.59	10.58	11.75
Volume Traded	info not available	120 879 790	212 158 369	401 883 651	437 107 711

Source: www.sharedata.com;

Source: Own Calculations;

Standard Bank is a financial services group that listed on the JSE in 1970 and then cross listed on the Malawi Stock Exchange in 1998. In the year that the company cross listed the only profitability ratio that increased was the operating margin while the rest decreased. The Company also saw an increase in its current ratio and interest coverage ratio in the year that it cross listed. With regards to the investor ratios, the Company experienced a decrease in the share price and P/E ratio while the rest of the ratios increased in the year of cross listing.

The years following the cross listing had contrasting results for the profitability ratios as all of them increased. For the liquidity and leverage ratios, the current ratio decreased and then increased again in the year 2000 while the interest coverage decreased over the two years. There was an increase in all the investor ratios except the dividend yield which kept constant throughout both years.

Table 6l: Bidvest Ratio Analysis

COMPANY NAME	BEFORE CROSS-LISTING		YEAR OF CROSS LISTING	AFTER CROSS-LISTING	
BIDVEST	2007	2008	2009	2010	2011
Profitability					
Operating Margin	4.51%	4.84%	4.39%	4.98%	4.94%
Net Margin	2.82%	2.94%	2.49%	3.05%	2.99%
Op Cash Flow / Sales	4%	6%	6%	7%	7%
Return on Equity	25.41%	24.15%	20.12%	19.99%	20.03%
Liquidity					
Current Ratio	1.05	1.05	1.12	1.13	1.10
Leverage Ratio's					
Debt to Equity	28.77%	33.97%	29.06%	26.85%	31.26%
Interest coverage	6.69	5.24	4.61	6.64	8.19
Investor Ratio's					
Market Price	144.00	98.38	96.74	121.89	150.50
Dividend Yield	0.03	0.05	0.03	0.04	0.03
Earnings per Share	8.92	10.82	9.19	10.49	11.45
Price Earnings Ratio	16.15	9.09	10.53	11.62	13.14
Volume Traded	223 306 018	265 156 570	243 050 535	285 820 462	232 095 010

Source: www.sharedata.com;

Source: Own Calculations;

Bidvest is an international services, trading and distribution company that listed on the JSE in 1990 and then cross listed on the Nambian Stock Exchange in 2009. In the year that it cross listed the Company experienced a decrease in all of its profitability ratios excluding the operating cash to sales ratio which kept constant. In terms of the liquidity and leverage ratios the current ratio increased while the debt to equity ratio and interested coverage decreased. The investor ratios all decreased in the year of cross listing with the excpetion of the P/E ratio that increased.

For the proftability ratios, the years after cross listing were generally marked by slight increase in the ratios from the levels they were at cross listing. The years after the cross listing also saw the current ratio increase and then decrease while both leverage ratios increased over that period. The investor ratios generally increased over the two years.

Table 6m: Vukile Property Fund Ratio Analysis

COMPANY NAME	BEFORE CROSS-LISTING		YEAR OF CROSS LISTING	AFTER CROSS-LISTING	
VUKILE	2005	2006	2007	2008	2009
Profitability					
Operating Margin	66.15%	62.78%	66.01%	64.43%	63.64%
Net Margin	43.57%	54.13%	55.71%	31.82%	18.04%
Op Cash / Sales	31.02%	4.48%	3.35%	5.50%	63.53%
Return on Equity	102.89%	67.26%	38.35%	18.00%	10.70%
Liquidity					
Current Ratio	0.25	1.81	0.85	0.71	0.32
Leverage Ratio's					
Debt to Equity	82.63%	74.31%	47.85%	45.25%	46.49%
Interest coverage	2.55	2.54	2.73	3.22	3.29
Investor Ratio's					
Market Price	5.26	9.87	10.77	10.06	9.19
Dividend Yield	0.12	0.07	0.07	0.09	0.11
Earnings per Share	0.70	1.17	1.08	0.67	0.41
Price Earnings Ratio	7.57	8.47	9.93	15.07	22.16
Volume Traded	29 723 280	112 671 073	58 207 602	46 949 859	94 107 263

Source: www.sharedata.com;

Source: Own Calculations;

Vukile Property Fund is a property company that listed on the JSE in 2004 and then cross listed on the Nambian Stock Exchange in 2007. In terms of the profitabiliy ratios, the Company had an increase in the operating and net margin in the year that it cross listed however there was a decrease in the operating cash to sales ratio and the return on equity. The current ratio also decreased in the year that the company cross listed while the debt to equity ratio decreased and the interest coverage increased. In terms of the investor ratios, the share price and P/E ratio increased in the year of cross listing while the EPS and volume traded of shares decreased substantially.

The years after the cross listing saw an a decrease in all the profitability ratios excluding the operating cash to sales that increased dramatically. These years also saw a further decrease in the current ratio and debt to equity ratio while the interest coverage increased. For the investor ratios, the share price and EPS decreased while the dividend yield, P/E ratio and volume traded of shares all increased.

4.2 Latent Curve Modelling and T-Test Results

Latent Growth Curve Results

The Latent Growth Curve, which was used to confirm an assumed growth trend, was limited by the very small sample size of only 15 companies, which was further exacerbated by the fact that missing values reduced the sample size severely. Added to this, there was the problem that the some of the performance indicators, (i.e. the ratios calculated above), were missing thus resulting in the performance measure being rendered invalid / blank. An observation is excluded from the analysis if even one of the values across the 5-year period

of measurement for each variable is missing. Therefore, because only one value per year is given, a growth curve cannot be calculated with missing values. The results of the Calis procedure are shown in Table 7 below:

Table 7: Calis Procedure – Summary of fit statistics

Fit Summary		
Absolute Index	Chi-Square	40.0491
	Chi-Square DF	9
	Pr > Chi-Square	<.0001
	Standardized RMR (SRMR)	0.1569
	Goodness of Fit Index (GFI)	0.4564
Parsimony Index	Adjusted GFI (AGFI)	-0.2079
	RMSEA Estimate	0.6567
	McDonald Centrality	0.1782
Incremental Index	Bentler Comparative Fit Index	0.6966

This typical summary of fit statistics shows whether the data can be considered to match the 'ideal' curve we are comparing it to. In the above sample we would reject the model as the Chi-square, SRMR, GFI, RMSEA & Bentler CFI all suggest that the fit is bad.

- Global fit tests based on fit between the residual matrices, notably the:
  - The Root Mean Square Error of Approximation (RMSEA), for which scores <.05-.08 are often seen as good fit (Browne & Cudek, 1993; Raykov & Marcoulidis, 2000; Steiger, 1990). This measure is also accomodating to an estimation of a 90% confidence interval where researchers generally look for lower bounds < .05 and higher <.10
  - Standardised Root Mean Square Residual (SRMSR; Kline, 2005: 141-142), the normalised square root of average squared differences where <.05 is often seen as acceptable
- Global tests of the current model compared to a 'null' or 'baseline' model that is the worst possible fit. These include most notably:
  - Bentler Comparative Fit Index (CFI; Bentler, 1990), for which scores >.90-.95 indicate good fit
  - Goodness of Fit Index (GFI), for which scores >.90-.95 is good.

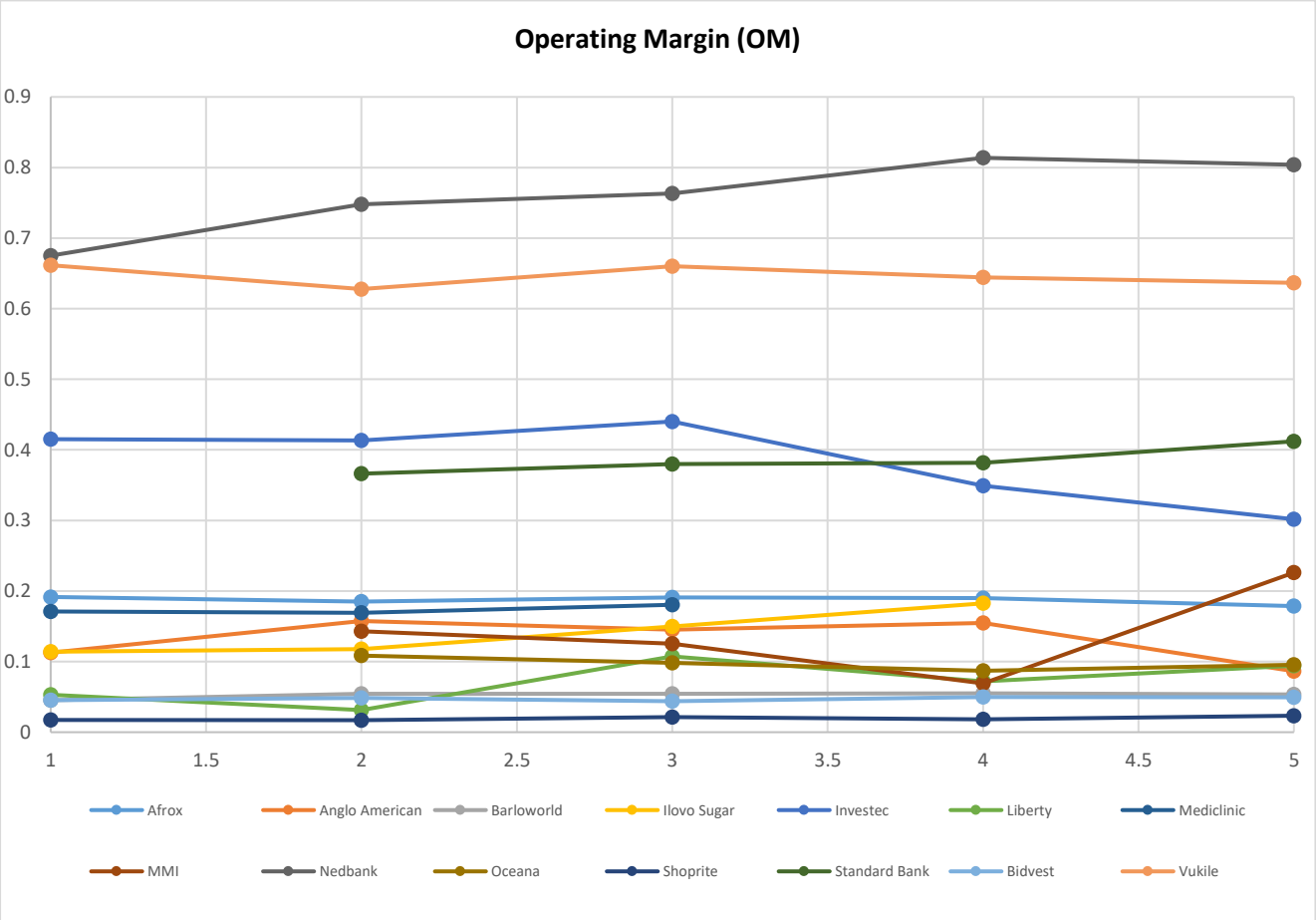
Only one performance variable was tested at a time because of the sample size. Adding more than one variable into the model at the same time would not allow for enough degrees of freedom for the analysis. Therefore the Operating Margin (OM), Net Profit Margin (NPM), Operational Cash/Sales (OCS), Return on Equity (ROE), Current Ratio (CR), Debt to Equity

(DE), Market Price (MP), Dividend Yield (DY), Earnings per Share (ES) and Price Earnings Ratio (PER) were all tested for sepearately.

The next step involved estimating the growth curve shapes that were deemed applicable and test the available data for fit, alter the proposed curve, re-test etc. A linear curve such as 1,2,3,4,5 was used to start with and we would then test for different types of curves based on our findings. An ideal situation would be to see a spike in the growth curve, (1,2,**4**,5,6 or 0,1,**3,**4,5 or 1,2,**5,**6,7), to show an effect that coincides with cross-listing. However, all linear growth curve models with any spike showed a bad fit. Individual variables would sometimes show poor but acceptable fit on a linear growth, (with no spike), but in none of the cases did we achieve even borderline fit statistics where a spike in the curve was proposed. Investigation into individual cases showed that there was no consistent growth across the variables at all.

Figure 1 below shows the variable Operating Margin as it changes for the individual companies over the 5-year period.

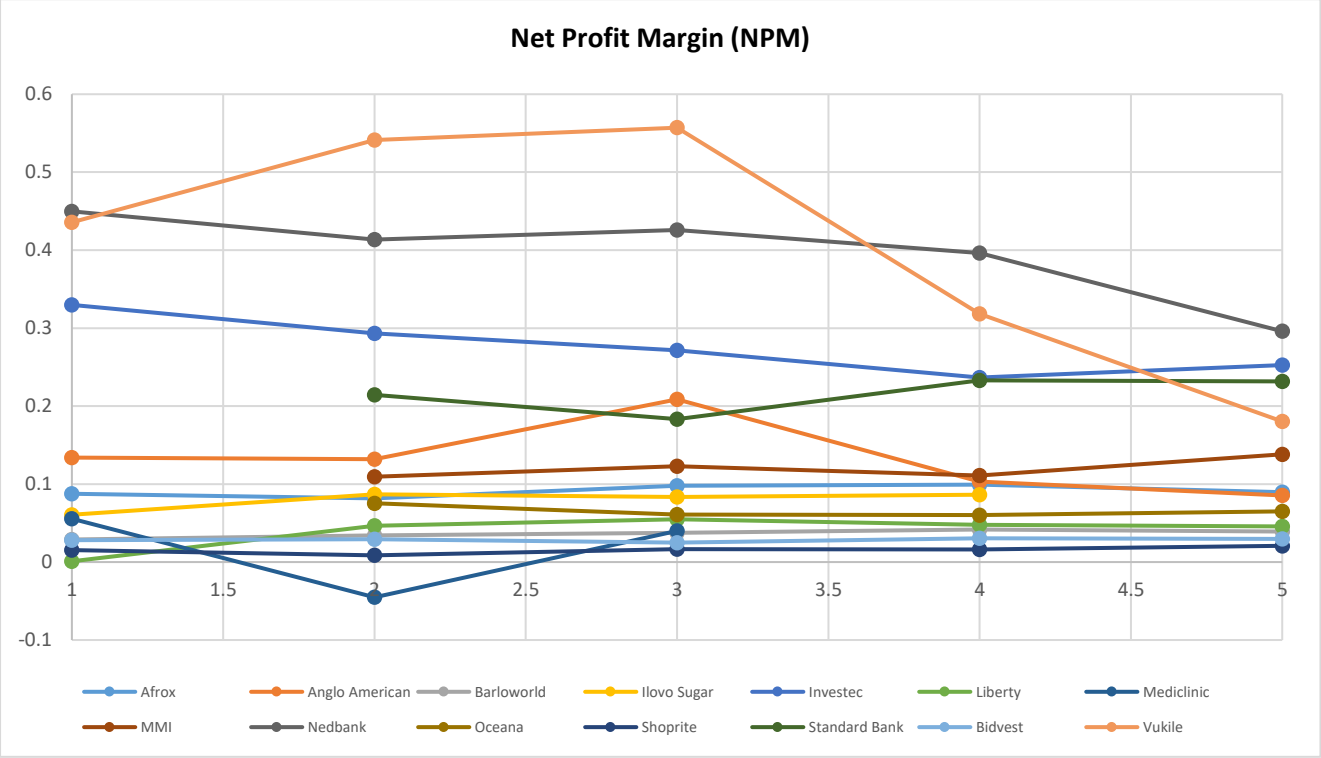
Figure 1: Operating Margin changes per company over 5 – year period



Visually presented it is easy to see that there is not really any call for assuming that there is a statistically significant spike in our measures for the year of listing. Very few individual companies show any growth on the middle year, (year of listing),and for those that do show growth, the growth is mostly not enough to qualify as a spike. The notable exception being Liberty and Investec. Nedbank and Vukile for instance, show growth in middle year but not statistically different from a linear growth curve.

Figure 2 below shows the variable Net Profit Margin (NPM) as it changes for the individual companies over the 5-year period.

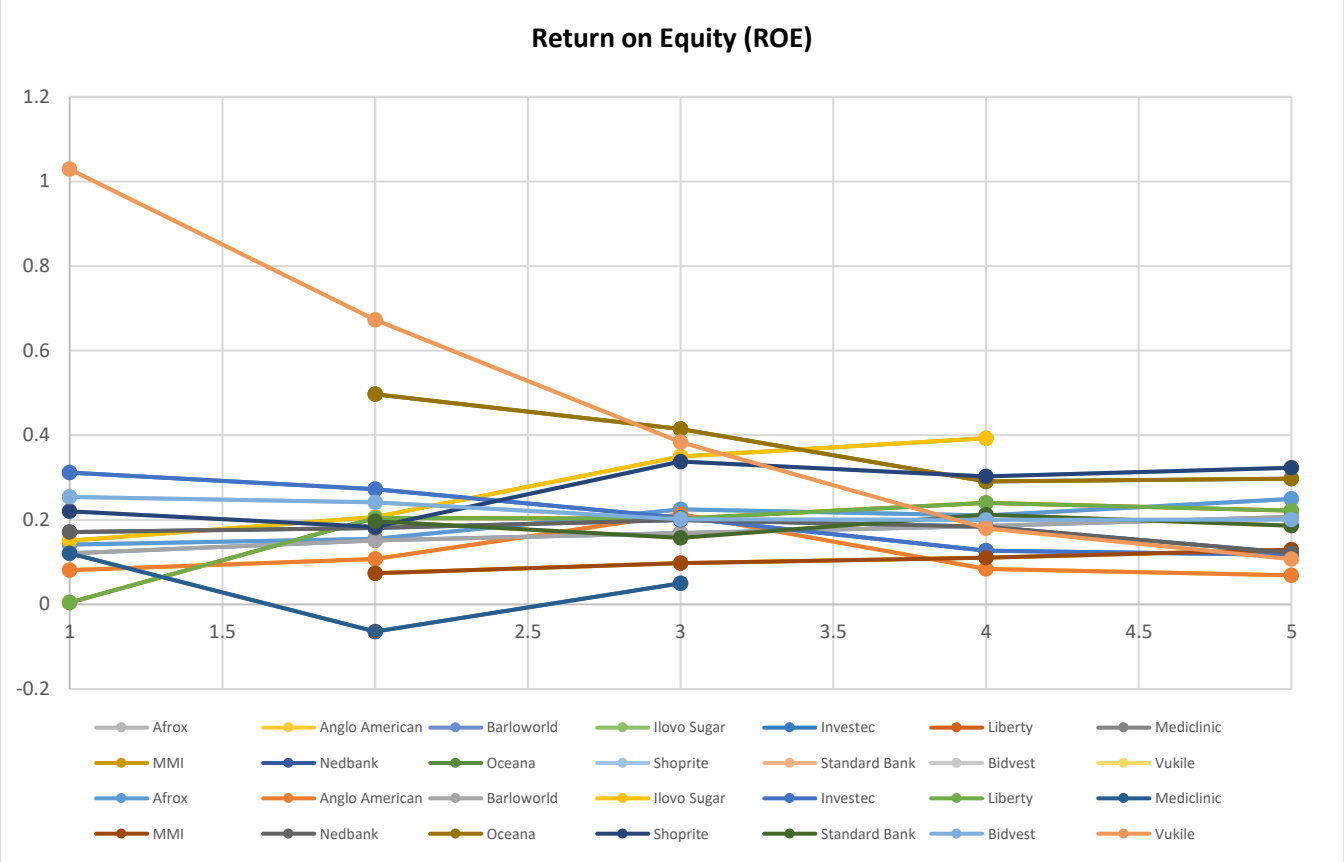
Figure 2: Net Profit Margin changes per company over 5 – year period



This example shows a similar result to the previous. Anglo American is the only company with a significant spike in middle year. Mediclinic goes up but only to previous level, Vukile goes up but at lower slope than previously.

Figure 3 shows yet another example of Return on Equity (ROE) as it changes for the individual companies over the 5-year period.

Figure 3: Retrun On Equity changes per company over 5 – year period



In this example we notice Shoprite and Anglo American showing spikes but most of the other companies staying at the same level or even dropping

After running a full series of LGM models on the available data we conclude that the idea of an upwards spike in the indicators during the year of listing is not supported by the data. Although it is true that individual companies shows such a spike on some of their indicators there is not enough support to generalise findings of this nature.

Paired T-Test Results

A Paired T-Test was also conducted on the average of the two years before listing compared to the year of listing. The average of the economic indicators for the two years prior to listing was used as the first variable and the year of listing as the second variable i.e. we compared two time periods using the same companies as subjects and see if the means of the two groups have any statistical difference.

In each case the results were the same as with the growth curve analysis. The results seemed to show no consistent significant differences on the tested performance measurements between “before listing”(ROEAVG) and “year of listing”(ROE3). Table 8 and Figure 4 and 5 below shows a sample output achieved with the paired T-Test using ROE as indicator.

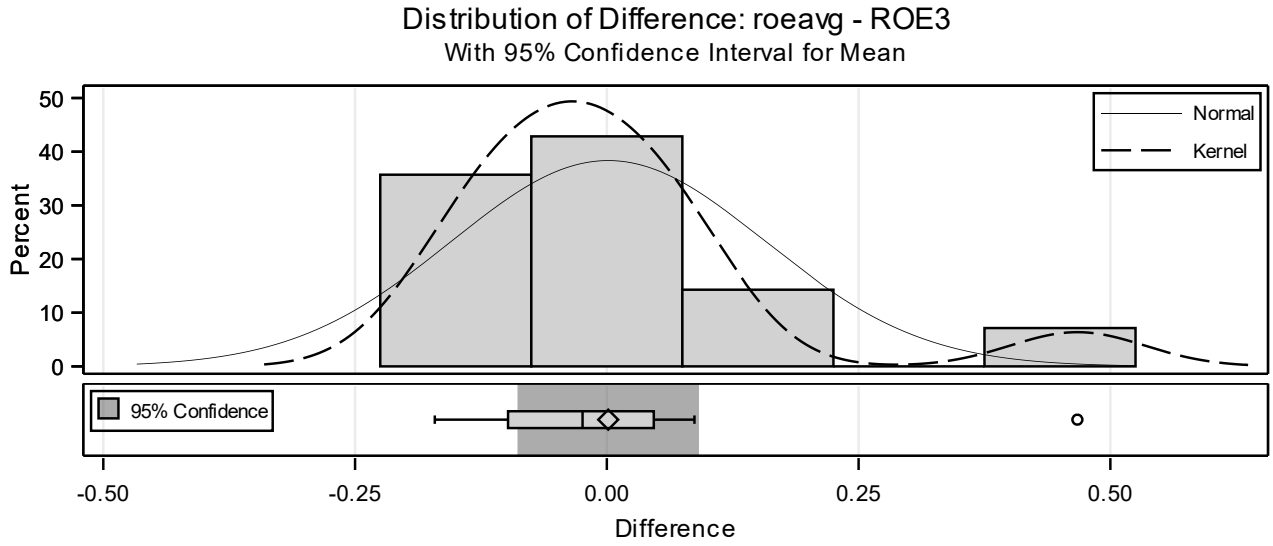
Table 8: Sample paired T-Test example - ROE

N	*Mean*	*Std Dev*	*Std Err*	*Minimum*	*Maximum*
14	0.00137	0.1560	0.0417	-0.1708	0.4673

Mean	*95% CL Mean*		*Std Dev*	*95% CL Std Dev*	
0.00137	-0.0887	0.0915	0.1560	0.1131	0.2514

DF	*t Value*	*Pr > |t|*
13	0.03	0.9742

Figure 4: Sample output – ROE Distribution Difference



As seen from the non-significant p-value of 0.9742 at DF 13, we cannot conclude that there is a significant difference between the means of the two paired samples. When the paired T-test was repeated for all the indicators, it proved to be the case in all the paired t-tests. The tests performed for the relevant economic indicators all showed non-significant p-values. Table 3 below shows the means distribution with 95% confidence level, the standard deviations and the p-values returned for each paired t-test.

Table 10: Results of Paired T-Test

	Mean	95% CL	Mean	Std Dev	95% CL	Std Dev	*Pr > [t]*
ROE	0.00137	-0.0887	0.0915	0.1560	0.1131	0.2514	0.9742
OM	-0.0148	-0.028	0.00159	0.0229	0.0166	0.0368	0.0809
NPM	-0.0116	-0.0306	0.00745	0.0329	0.0239	0.053	0.2116
ES	-1.7066	-3.6328	0.2196	3.3361	2.4185	5.3746	0.0779
PER	15.7931	-20.493	52.0793	62.846	45.5604	101.2	0.3642
DE	0.0675	-0.1368	0.2718	0.3215	0.2278	0.5459	0.4822
CR	-1.0545	-3.6406	1.5315	4.2795	3.0687	7.0643	0.3917
MP	-7.9629	-23.5493	7.6236	26.995	19.5701	43.49	0.2897
DY	-0.00009	-0.00893	0.00875	0.0153	0.0111	0.0247	0.9830

In each case we see that the means distribution at 95% CL includes 0. This leads us to conclude that the data does not support any statistically significant difference in our indicators for the periods prior to listing compared to year of listing.

4.3 DISCUSSION

The following discusion analyses the results and how they relate to the literature review. This section also highlights the influence of the low sample size on the emperical findings and results.

4.3.1 Financial Ratio Analysis

The financial ratios calculated included a mix of profitability, liquidity, leverage and investor ratios. The profitability, liquidity and leverage ratios give a sense of the operational performance while the investor ratios give an overall sense of how the value of the company increased or decreased pre and post the cross listing.

The ratio anlysis was limited by missing data for some of the companies. In addition to this information for a period longer than 5 years was not avaialable for most of the companies. Therefore data collected was not enough to show any trends.

4.3.2 Latent curve modelling and t test

The Latent growth curve model was conducted to test whether there was trend over the years in the financial ratio's of the companies in the anlaysis. The financial ratio's calculated for the companies were then fitted to an 'ideal' growth curve and judge based on the fit statistics to test whether the growth curve showed a 'spike' at the year of cross-listing.

In the Calis procedure that was conducted to show whether the data could be considered to match the 'ideal' curve it was being compared to, the sample used led to a rejection of the model as the Chi-square, SRMR, GFI, RMSEA & Bentler CFI all suggested that the fit is bad.

Since the model was rejected it can be infered that there was no trend over the years. However, this result is likely flawed given that the analysis was limited by the very small sample size of only 15 companies, This was further exacerbated by missing values which reduced the sample size severely. In addition, some of the ratios were missing resulting in the performance measure being rendered invalid / blank. As a result, a growth curve could not be calculated in instances where there were missing values.

A paired t-test was conducted on the average of each of the financial ratio's in the two years before listing compared to the year of listing. The test aimed to compare the difference in the means from these two variables to a given number. Similar to the latent curve test, the t-test results showed no consistent significant differences on the tested performance measurements between the years before listing and in the year of listing

4.3.3 Findings

The financial ratio analysis conducted was not able to give any conclusive results or trends due to a lack of sufficient data. The latent growth curve model and paired t test that were conducted on the financial ratios were also not able to provide any conclusive results due to the small data set as well as missing information in the data provided. It is therefore not possible to deduce what the possible financial effects of cross listing were on the key financial ratio's of JSE listed companies when they cross-list on other sub-Saharan bourses.

Given the issues caused by the sample size in this research, it can be concluded that the literature provides a better understanding of the effects of JSE listed company cross listing on other exchanghes in sub-Saharan Africa. According to the literature, these effects include a higher amount of externally financed firm growth in comparison to other non cross-listed companies (Onyuma, Mugo and Karuiya, 2012). In addition, the company may experience positive abnormal stock returns around the announcement date (Adelegan, 2009). Cross listing can also lead to an improvement in liquidity, earnings, and price to earnings ratio however firms benefited less from cross listing of shares outside their home market (Onyuma, Mugo and Karuiya, 2012).

5. CHAPTER 5: CONCLUSIONS AND RECCOMENDATIONS

5.1 Financial effects of of cross listing on other Sub-Sharan African exchanges for JSE listed companies

According to the literature above (Chisadza 2013), a larger investor base, increased visibility, marketing, and liquidity would be the key motivating reasons for a JSE listed company to cross-list on another exchange in sub-Saharan Africa. A larger investor base would allow the company greater access to investors which would increase the shareholder base and risk sharing and result in higher valuations. Increased visibility would also be expected to increase the companies shareholder base as well as broadening its product identification among investors and consumers in the host country. Marketing is another key reason for cross listing as it would allow the company to deliver a positive signal of its value to outside investors that it is high-value or high-growth company. Liquidity is a key reason for cross listing because a security that is cross-listed in another exchange may increase the number of traders participating in the market for that security at a given point and hence increase the security's turnover.

5.2 Effects of cross listing on other exchanges in Sub-Saharan Africa?

The literature discussed in this paper suggests a number of possible effects of cross listing on other exchanges in sub-Saharan Africa for JSE listed companies. The first possible effect is that after cross listing, the company may experience higher amount of externally financed firm growth in comparison to other non cross-listed companies (Onyuma, Mugo and Karuiya, 2012). The second possible effect is that the company may experience positive abnormal stock returns around the announcement date (Adelegan, 2009). Another possible effect noticed in a study on cross listing in East Africa was that cross listing lead to an improvement in liquidity, earnings, and price to earnings ratio however firms benefited less from cross listing of shares outside their home market. It was also noticed that there was no material value creation to the shareholders of cross-listed companies that cross listing had no significant impact on their financial performance nor any systematically less borrowing for asset investment (Onyuma, Mugo and Karuiya, 2012).

5.3 Financial effects of cross listing on the key financial ratio's of the JSE listed companies when they cross list on another sub-Saharan African exchanges

The financial ratio analysis conducted was not able to give any conclusive results or trends due to a lack of sufficient data. The latent growth curve model and paired t test that were conducted on the financial ratios were also not able to provide any conclusive results due to the small data set as well as missing information in the data provided. As such, this research failed to deduce what the possible financial effects of cross listing were on the key financial ratio's of JSE listed companies when they cross-list on other sub-Saharan bourses. Consequently this research paper relies on the literature and concludes that cross listing leads to an improvement in liquidity, earnings, and price to earnings ratio (Onyuma, Mugo and Karuiya, 2012).

5.4 Recommendations and Suggestions

5.4.1 Should JSE listed companies cross list?

In some of the studies shown above on the effects of cross lsiting there are compelling financial as well as non-financial reasons for JSE listed companies to consider cross listing on other sub-Saharan stock exchanges. However based on the financial ratio analysis performed on the JSE listed companies above, there is no evidence to suggest that there are financial benefits for JSE listed companies to cross list on other sub-Saharan exchanges. Therefore based on this, JSE listed companies should not consider cross listing on other sub-Saharan exchanges with a view of improving their financial performance. JSE listed companies should rather consider cross listing for some of the other qualitative reasons mentioned above i.e. a larger investor base, increased visibility, marketing, and liquidity.

5.4.2 Suggestions for future research

Future researchers looking to study the financial effects of JSE listed companies cross listing on other sub-Saharan Africa exchanges should consider using a wider set of data in order to get more improved results i.e. daily, weekly, monthly or even quarterly financial ratios for the companies pre and post listing and a longer period of anlysis for each of the companies. Futrure reserachers could also perhaps look at other cross listing related research such as JSE listed companies that have cross listed in other jurisdictions outside of Africa and look at comparing this with the JSE listed companies that have cross listed in Africa.

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APPENDIX

Table A1: Cross Listings in Africa

Company Name	Primary Listing	Year - Listed	Secondary Listing	Year - Listed
South Africa - Botswana				
Anglo American Plc	Johannesburg Stock Exchange	1999	Botswana Stock Exchange	2001
Blue Financial Service Limited	Johannesburg Stock Exchange	2006	Botswana Stock Exchange	2008
Investec Limited	Johannesburg Stock Exchange	1986	Botswana Stock Exchange	2008
South Africa - Ghana				
AngloGold Ashanti Limited	Johannesburg Stock Exchange	1944	Ghana Stock Exchange	2004
South Africa - Kenya				
Liberty Holdings	Johannesburg Stock Exchange	1999	Nairobi Security Exchange	2011
South Africa - Malawi				
Illovo Sugar	Johannesburg Stock Exchange	1992	Malawi Stock Exchange	1997
Standard bank	Johannesburg Stock Exchange	1970	Malawi Stock Exchange	1998
Old Mutual plc	Johannesburg Stock Exchange	1999	Malawi Stock Exchange	1999
South Africa - Namibia				
Oceana Group	Johannesburg Stock Exchange	1947	Namibian Stock Exchange	1998
African Oxygen Limited (Afrox)	Johannesburg Stock Exchange	1963	Namibian Stock Exchange	1995
Barloworld	Johannesburg Stock Exchange	1941	Namibian Stock Exchange	1996
FirstRand Limited	Johannesburg Stock Exchange	1998	Namibian Stock Exchange	1998
Nedbank Group	Johannesburg Stock Exchange	1969	Namibian Stock Exchange	2007
Nictus Group	Johannesburg Stock Exchange	1969	Namibian Stock Exchange	1992
Shoprite Group	Johannesburg Stock Exchange	1986	Namibian Stock Exchange	2002
Truworths International Ltd	Johannesburg Stock Exchange	1998	Namibian Stock Exchange	1998
Vukile Property Fund	Johannesburg Stock Exchange	2004	Namibian Stock Exchange	2007
PSG Konsult	Johannesburg Stock Exchange	2014	Namibian Stock Exchange	2014
Sanlam Limited	Johannesburg Stock Exchange	1998	Namibian Stock Exchange	1998
MMI Holdings	Johannesburg Stock Exchange	2010	Namibian Stock Exchange	2012
Mediclinic	Johannesburg Stock Exchange	1986	Namibian Stock Exchange	2014
Bidvest	Johannesburg Stock Exchange	1990	Namibian Stock Exchange	2009
South Africa - Zambia				
Shoprite	Johannesburg Stock Exchange	1995	Lusaka Stock Exchange	2003
South Africa - Zimbabwe				
PPC Limited	Johannesburg Stock Exchange	1910	Zimbabwe Stock Exchange	1947
Kenya- South Africa				
British American Tobacco	Nairobi Security Exchange	1969	Johannesburg Stock Exchange	2008
Namibia - South Africa				
Trustco Group Holdings	Namibian Stock Exchange	2006	Johannesburg Stock Exchange	2009
Nigeria - South Africa				
Oando PLC	Nigerian Stock Exchange	2005	Johannesburg Stock Exchange	2005
Zimbabwe - South Africa				
BICC Cafca Ltd	Zimbabwe Stock Exchange	1947	Johannesburg Stock Exchange	1947
WAEMU / Cote d'Ivoire - Nigeria				
Ecobank	WAEMU / Cote d'Ivoire	2006	Nigerian Stock Exchange	2006
WAEMU / Cote d'Ivoire - Ghana				
Ecobank	WAEMU / Cote d'Ivoire	2006	Ghana Stock Exchange	2006
Kenya - Uganda				
East African Breweries	Nairobi Stock Exchange	1954	Uganda Stock Exchange	2001
Kenya Airways	Nairobi Stock Exchange	1996	Uganda Stock Exchange	2004
Jubilee Insurance	Nairobi Stock Exchange	1984	Uganda Stock Exchange	2006
Kenya - Tanzania				
East African Breweries	Nairobi Stock Exchange	1954	Dar es Salaam Stock Exchange	2005
Kenya Airways	Nairobi Stock Exchange	1996	Dar es Salaam Stock Exchange	2004
Jubilee Insurance	Nairobi Stock Exchange	1984	Dar es Salaam Stock Exchange	2006

Source: Adelegan, 2009;

Source: Merchantec Capital Research

Source: Company Websites