A Critical Assessment of the South African Bond Market

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by

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Dedication

I would like to thank my husband, Kevin Fellingham, for his emotional support as well as his sound advice and encouragement during this process. He may be my husband but he was also my informal 'supervisor'.

I would also like to thank Professor Nicholas Biekpe for his 'tough love' supervision.

Abstract

This paper looks at the experience of South Africa in the development of its local-currency, so-called domestic, bond market. Whilst South Africa had the deepest financial market in Sub-Saharan Africa it also had one of the shallowest domestic bond markets, until 2009. This changed with the rapid bond issuances by the national government as a means to fund its expanding government expenditure.

The paper finds that the government issuances served to deepen the market for rand-based bonds and lengthen the maturities of bonds, for the benefit of itself, state-owned enterprises, and the private sector, particularly the banks. At the same time, it has heightened the risk of negatively impacting economic development.

The World Bank and other multilaterals advocate the development of the domestic bond market as a financial cushion against financial stress and as a way to better channel domestic savings towards domestic investment. There is argument that South Africa's domestic bond market acts as a substitute and competition for the dominant bank market. At the same time, given the market infrastructure and regulation, there is also high risk that the bond market could act as a co-contagion in the event of a bank crisis. There is no evidence that total savings improved as a result of the bond market, however the provision of a long-term instrument more theoretically suitable to South Africa's specialist pension and insurance funds suggest that the market provides beneficial intermediation.

The recommendations focus on mitigating the negative biases of market infrastructure supports and the pension fund regulation.

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Chapter 1 - Introduction

1.1 – Background

Post South East Asian crisis and since the early 2000s the World Bank (WB) and other financial development institutions have recommended that emerging and middle income countries develop their domestic bond markets. It could act as a buffer in the event of a financial crisis like the ones just experienced[1]. In a speech entitled "Global Challenges", then United States Federal Reserve Chairman Alan Greenspan remarks on how real estate bubbles occur "with chronic frequency around the globe without triggering the size of the collapse experience in East Asia in 1997" (2000, paragraph 7). He goes on to say that the ultimate risk barrier is sound financial institutions and infrastructures, but as these take time to develop emerging and middle income markets need to "build formidable buffers against financial stress [, that is,] alternatives that enable financial systems under stress to maintain an adequate degree of financial intermediation even should their main source of intermediation, whether banks or capital markets, freeze up in a crisis" (2000, paragraph 9). He gives the experience of the United States (U.S.) in the 1980s as an example when its bond market stepped in when the banks, hit by a real estate crisis, stopped lending, and in doing so averted a more severe financial crisis.

More recently, the multilateral institutions have added another impetus, the need to better mobilise domestic savings towards domestic investment, especially in the face of declining international development aid. In its report Financing for Development Post-2015, the World Bank writes: "Financing a transformative development agenda will require that available resources be used more effectively and strategically to catalyse additional financing from official and private sectors. Developing countries will need to step up efforts to finance their own development by improving domestic resource mobilization" (2013, p.1). A domestic bond market could serve as such an effective channel of intermediation.

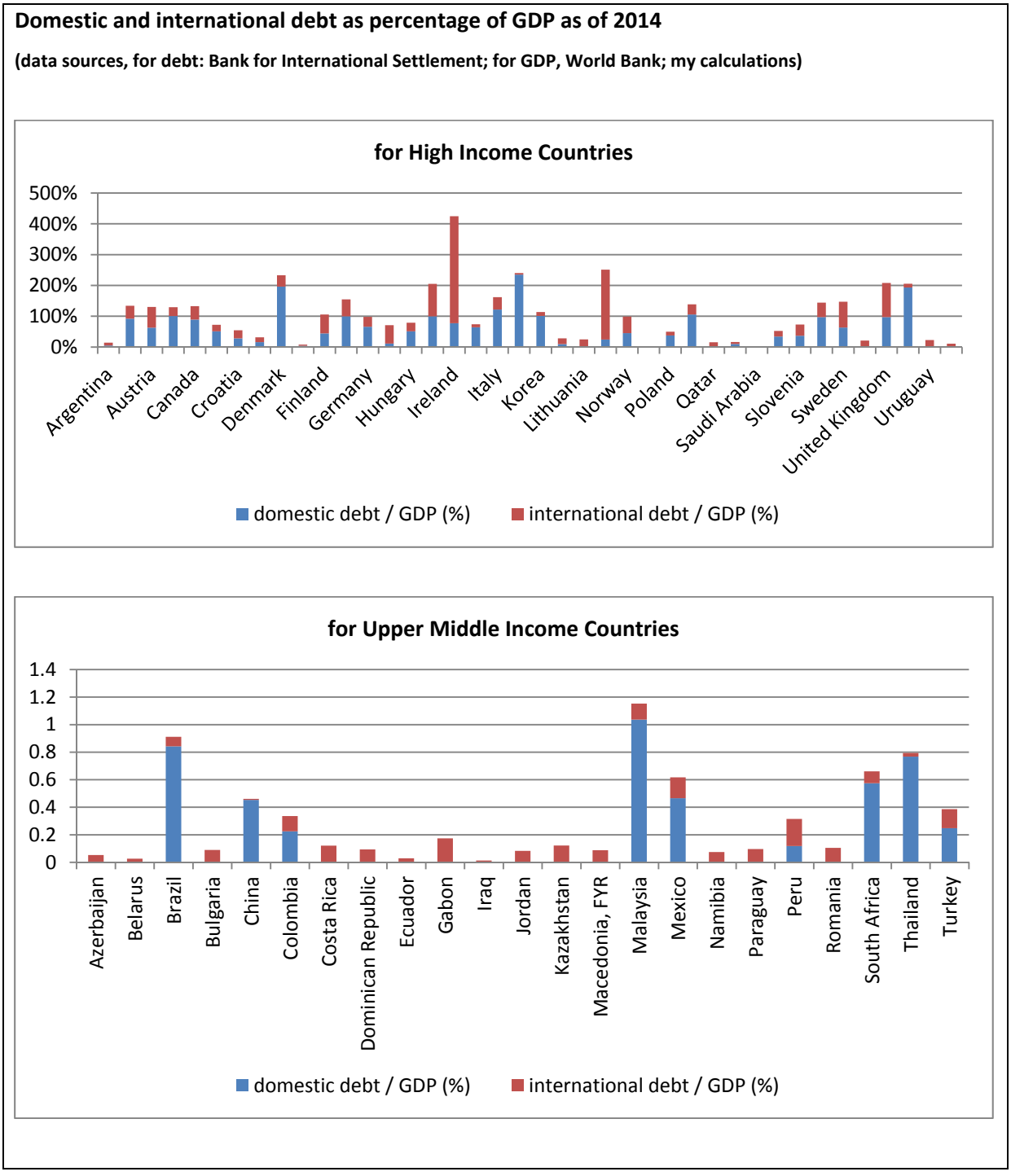
To define it explicitly, a domestic or local bond market is one in which the bonds are denominated in a country's local currency. This is distinguished from the international, foreign or external bond market where the bonds are denominated in another country's currency, typically that of the U.S.

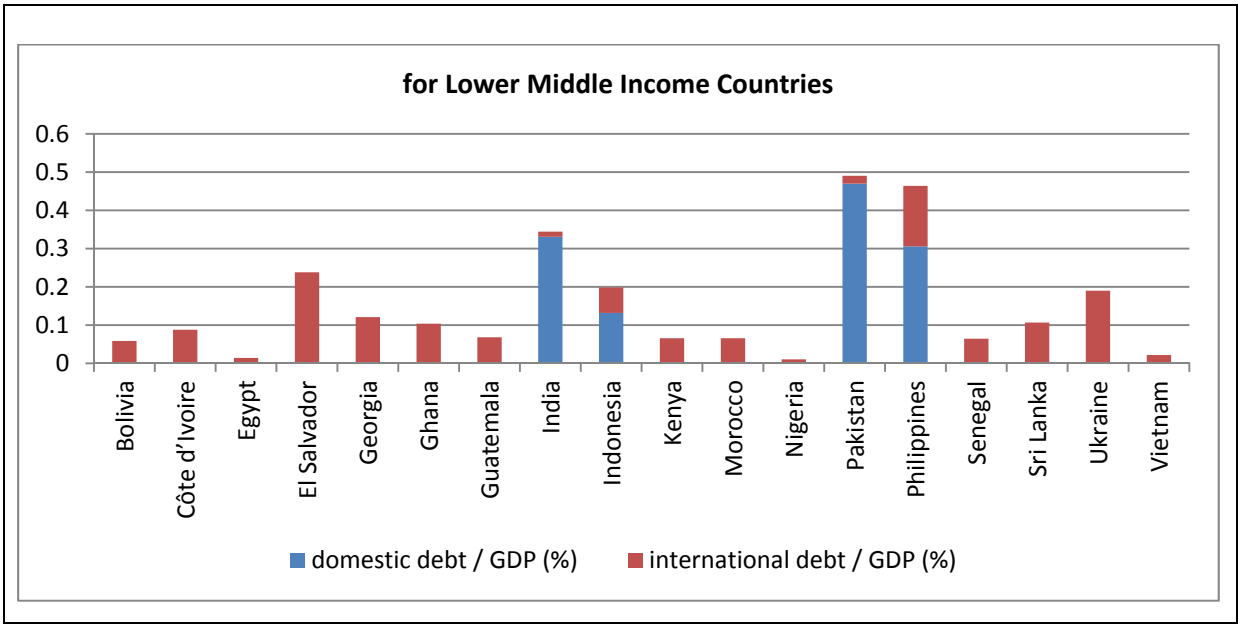
Whilst the international bond market was the primary credit market for most emerging countries, the domestic bond market was non-existent or nascent in most developing countries at the time of the WB's and Greenspan's call-to-arms,. Even now, the rates of development of the domestic bond

[1] Besides the South East Asian crisis, other crises in the 1990s include Mexico (1994), Russia (1998), Brazil (1999), and Argentina (1998-2002, with legacy issues still continuing today).

market vary country by country, not only between the developed and developing countries but also between emerging markets, as shown by the three graphs in Figure 1.a. The figure shows the proportion of international to domestic debt, as a percentage of Gross Domestic Product (GDP), for High Income, Upper Middle Income and Lower Middle Income countries – the designations are the World Bank's.

Fig. 1.a – Proportion of domestic and International debt for High Income, Upper Middle Income and Lower Middle Income countries, as percentage of GDP, as of 2014 (data source: Bank for International Settlement and the World Bank)





That the rates of progress are different is not surprising given the immense complexity of building the market, which necessitates public policy commitment, technical knowledge, capital and other resources, and support from the rest of the financial market, not to mention the cost, not just at the beginning but on an on-going basis. Two brief regional examples provide some context.

The then eight EMEAP member countries[2] of South East Asia could be said to have made the greatest push. Their Asian Bond Market Initiative (ABMI) established regional working groups to build the market infrastructure including details such as standardising contracts, with their most prominent initiative the establishment of an Asian Bond Fund which commits to investing in Asian sovereign and quasi-sovereign bonds (Eichengreen 2004). The fund invested U.S. $1 billion in 2003 and U.S. $2 billion in 2005, "not so big as to influence markets but big enough to signal serious intent" (BIS, 2005, presentation slide 6). Writing in 2014, Felman et al note that these countries' bond markets have undergone "a quality transition, becoming a more mature channel of funding, with lower barriers to entry" (p.61) but others have pointed out that the markets have failed to attract and or sustain corporate bond issuance (Felman, 2014, citing Mieno et al, 2009; Spiegel, 2009), so failing in channelling savings to effective private sector investment.

In Africa, the African Development Bank is trying to set up a fund to invest in African local currency bonds, the African Domestic Bond Fund. The International Finance Corporation's (IFC) support is through the issuance of bonds in the currencies of countries like Nigeria, Zambia and Rwanda with

[2] EMEAP is Executives' Meeting of East Asia-Pacific Central Banks, a forum of central banks and authorities in the region established in 1991. It now counts 11 members. The then 8 members were China, Hong Kong SAR, Indonesia, Korea, Malaysia, the Philippines, Singapore and Thailand

the aim of kick starting those local currency markets. For instance, in the case of Rwanda, prior to the IFC bond issue, the domestic bond market consisted of Rwandan 19.5 billion francs (equivalent to U.S. $ 28.6 million) consisting of government bonds and one corporate bond. The IFC bond, which was issued in 2014, adds 15 billion francs (U.S. $ 22 million). Jingdong Hua, IFC vice-president and treasurer says: "The first transaction is always the one that will send a signal that the country is ready. To get here we have been working with Rwandan regulators and market participants for the past two years in terms of making sure the regulatory framework is in place, the settlement and all the logistics are in place" (as quoted in the Financial Times, 15 May 2014). That 80 percent of the bonds are bought by domestic banks and pension funds (Sulaiman, 2014) is also a benefit for local savings development. One-off issuances do not sustain a market, so the Rwandan government commits to a regular, quarterly bond auction programme.

This paper's focus is South Africa (SA), whose domestic bond market started earlier than the above mentioned countries yet most of its development happened in the last decade. In 2008 its domestic bond market could be said to be one of the shallowest in Sub-Saharan Africa[3] – as measured by the scope for expansion the ratio of domestic debt to broad money – even while its financial sector was the deepest of the region – as measured by the ratio of the contribution to broad money as a percentage of GDP (Adelegan & Radzewicz-Bak, 2009). The private sector of the market, at 20 percent of total market size, could be said to be even less developed. However, between 2009 and 2014, government bond issuance expanded rapidly, three-fold[4], and the SA domestic public bond market has come to be considered one of the more liquid bond markets in the world (Hassan, 2013). On the other hand, private sector bond issuance has grown at a much slower pace, with even fewer industries issuing making the private sector even smaller relative to the public sector and more concentrated. This paper's aim is to provide a critical assessment of the development of SA's local bond market.

1.2 – The research gap

The benefit of such an assessment is to help fill a research gap.

Research into domestic bond markets has been growing, but it could be said that they have grown in silos. There are studies on the role debt plays in development and, as will be discussed, the results

[3] SA's domestic debt as a percentage of M2 was 18 percent in 2008; only Botswana, Benin, Burkina Faso, Cote d'Ivoire and Swaziland had lower percentages (Adelegan & Radzewicz-Bak, 2009, p. 9, table 4)
[4] Domestic debt was R528 billion in 2008 and R1,626 billion in 2014 (data source: SARB)

are inconclusive. Other types of studies look to the factors necessary for the development of the market. These have mostly been empirical, surveying swathes of time and countries/regions, which have allowed the deconstruction of a complex ecosystem into analysable parts. However in doing so they obscure the relationships between the factors and these are important for completing or hindering the development of the market.

Case studies can be helpful in trying to pull together research silos, but these are few and most focus on the South East Asian countries.

I did not come across case studies on African countries, and it is a remiss to ignore South Africa in particular. As mentioned it started earlier than many others, remaining small until recently. Now, size-wise it sits within the range of those of other High Middle Income Countries (see Figure 1.a), which includes some of the ABMI countries. SA grew its market on its own (as compared to the ABMI countries and some of the Sub-Saharan African countries who benefited from multilateral support). Its growth has mostly been in the public sector raising interesting questions about the relationship between the government and private debt sectors. While its domestic bond market is relatively new, its banking and equity markets are well-established, large and sophisticated, so its bond market has had to grow in negotiation with these larger competing markets. That navigation may provide useful lessons for other countries with more established bank markets. Finally, its savings market is low, raising the question of who is investing in the bonds?

1.3 – The research questions, scope, methodologies, and data limitations

A critical assessment of any financial market needs to recognise that it is a form of financial intermediation, a channel to mobilise savings, so the assessment needs to be about how well it serves this function. As a market is the sum of its players' actions, the assessment needs to consider the cost versus benefits to all its key participants.

This, then, leads to my research questions:

1. Has the development of the domestic bond market allowed the SA government to raise funds more effectively?

2. Has the development of the market allowed the SA private sector to raise funds more effectively?

3. In what way has domestic savers benefited from having access to investment in domestic bonds?

In line with other researchers, I define "development" as the growth in the size of the bond market. Size can be measured in two ways, nominal value or market value. I will use the nominal value as that is the obligation a borrower must repay.

The period of my study is from 1996, when the bond exchange formalised, to 2014. Within this I am particularly interested in the period from 2009 onwards for that is when the SA domestic bond grew the fastest.

To answer the research questions, I will rely predominantly on qualitative analysis, refining the study where appropriate and possible with quantitative tools. This is because the factors necessary to build the market has been studied but not their interconnectedness, and this is best done through discourse. Another reason is quantitative analysis requires more data than is possible for me to access.

On access to data, this has turned out to be more of a challenge than other researchers have warned. Even though domestic bonds are listed on the Johannesburg Stock Exchange, such information is not publicly available[5]. I have had to rely on a secondary data source Bloomberg, which is a well-respected data provider. Some socio-economic data are available from SA government sources such as the National Treasury, the SA Reserve Bank, and Statistics SA, and from the databases of the WB, International Monetary Fund (IMF), Bank for International Settlement (BIS) and reputable think tanks but not always for the full period of my study.

1.4 – Organisation of the paper

This paper is organised into seven chapters. The next, Chapter 2, is a Literature Review which lays the foundation of study pursued in the following chapters. Chapter 3 looks at the supply side of the market, government and private sector bond issuance. Chapter 4 turns to the demand side, the investors. As some further details are needed on two key market participants, the domestic banks and the large public sector pension fund, and they will be discussed in Chapter 5. Chapter 6 pulls together the discussions to answer my research questions. Finally, Chapter 7 concludes with where I started, the two benefits espoused by the WB and other development institutions, and my recommendations for public policy to help maximise those benefits.

[5] Frustratingly, despite having been granted access to information by the Johannesburg Stock Exchange, their technicians have been unwilling or unable to provide me with more than just stock data on secondary trading such as opening and closing prices, and only for a limited period of weeks.

Chapter 2 - Literature Review

As mentioned, the study of the domestic bond market is a growing field built around silos. I will focus on those most directly related to my research questions. As each deserve their own mini-chapters, I will discuss each in turn over four Sections. These are:

Section 2.1 - The role of debt and growth

Section 2.2 - The need for a bond market in the presence of a bank market

Section 2.3 - The relationship between the bond market and the savings market

Section 2.4 - Factors required for the development of the bond market

2.1 – The role of debt and growth

Literature on financial intermediation finds that it contributes positively to growth for the most part. As Herring and Chatusrispitak (2000) summarises, a financial sector "mobilizes savings and allocates credit across space and time. It provides not only payment services, but more importantly products that enable firms and households to cope with economic uncertainties by hedging, pooling, sharing, and pricing risks. An efficient financial sector reduces the cost and risk of producing and trading goods and services, and thus makes an important contribution to raising standards of living" (2000, p.3). However does borrowing itself contribute to growth?

2.1.A – Does debt contribute positively to growth?

Research that found a positive relationship between debt and growth include the study by Abbas and Christensen (2007). Evaluating the impact on growth of domestic debt for 93 low-income and emerging countries from 1975 to 2004 they state: a "battery of panel growth regressions [confirms] a strong and non-linear positive impact of [domestic debt] on economic growth" (p. 21). They also find that a higher level of debt can be sustained without compromising growth if the debt is issued in marketable or tradeable securities and held outside the banking system, a finding that is supportive of having both a bond as well as a bank market.

To explain this, they look at the dynamics between domestic debt levels and politico-economic stability, income, financial development, and private savings variables, using Granger causality analysis. They find that the size of domestic savings, and to a lesser extent, the level of income and financial depth, likely limits the size of debt borrowing. However all of the variables benefit from domestic debt issuance, which means "strengthening and expanding the domestic debt markets can, therefore, form a potentially virtuous cycle of higher private savings and stronger capital markets" (p. 15).

A credit market also contributes to the diversification of the financial market. While equity encourages risk taking, credit markets which have limited capital gain potential encourages risk aversion (Boot and Thakor, 1997) and thus the prudence of risk management.

Jiang et al (2011) looks at the specific contributions a bond market makes to the economy. First, unlike bank credit where pricing is non-public, bond market trading provides transparent pricing allowing for a "yield curve" (yield by maturity) which provides a useful benchmark for pricing domestic risk. This can be used to price not only bond-issuer risk but also bank loans and equity. Second, it provides competition for the banking sector, and if the banks themselves issue bonds, it subjects them to increased market discipline. Third, the bond market creates a base from which a derivative market could be developed, including an interest rate hedging market. Finally, and recently, it allows the transfer of risk through securitisations such as mortgage-backed securities.

2.1.B – Does debt contribute negatively to growth?

On the other hand, other researchers have found that debt only weakly or indeed negatively contributes to growth. The most famous of these papers might be Reinhart and Rogoff's (2010), which found a negative relationship between debt levels and growth. They also purport to find the particular level of debt beyond which growth slows down considerably. The paper caused controversy coming two years into a major fiscal (and monetary) expansion programme by the U.S. government – amongst other governments – trying to counter the impact of the 2008 financial crisis through an expansion of fiscal spend financed by debt. That controversy was turned back on the authors when it was found they had made a coding error. Nevertheless the paper is influential in instigating research into the cost benefit of debt on the economy[6].

[6] As Abbas and Christensen (2007) said, there was very little academic research in this area before the paper.

Egert (2012), re-looking at the Reinhart and Rogoff study over an extended period and using a non-linear econometric model, mostly agree with their findings: “growth rates appear to decline gradually with the rise in public debt from the range 0% to 30% to above 90%” and be “broadly stable … from the range of 60% to 90% of GDP to above 90%.” (p. 7). However, Egert caveats this by saying that the “results are very sensitive to the time dimension and country coverage considered, data frequency (annual data vs. multi-year averages) and assumptions on the minimum number of observations required in each nonlinear regime.” (p. 6). Kumar and Woo (2010), analysing 19 countries from 1970-2007, also find an inverse relationship between debt and growth.

Kumar and Woo’s paper is also useful in synthesising “a large literature on the determinants of medium- and long-run growth” (p.4) to potentially explain the negative relationship. High debt can adversely affect capital accumulation which could otherwise be invested in research and development, which is negative on long-term development. This could come about because the higher interest rates creditors would demand for the additional credit risk (citing Gale and Orzag, 2003; Baldacci and Kumar, 2010) necessitates higher distortionary taxation to service the higher cost of debt (citing Barro,1979; Dotsey, 1994). It also raises the risk of higher inflation (citing Sargent and Wallace, 1981; Barro, 1995; Cochrane, 2010). As the high level of debt limits the ability of the country to enact anti-cyclical fiscal policy (citing Aghion and Kharroubi, 2007; Woo, 2009) there would also be greater uncertainty of policy which makes the country more vulnerable to volatility which could lead to crises (citing Sargent and Wallace, 1981; Barro, 1995; Cochrane, 2010). In essence, debt could set up a vicious cycle of growing debt inducing slowing growth which further relies on debt. Kumar and Woo warn about reverse-causality, that it could be low growth that causes higher debt levels (rather than the other way around) and or that the two factors are determined by a third variable altogether. Whilst the paper is comprehensive and well-argued, it looks at ‘high’ levels of debt so its lessons may not be applicable for all levels of debt.

Another important risk is ‘crowding out’, a term generally used to describe when private sector funding is negatively impacted because of the level of sovereign borrowing. Research on debt crowding out focus on two potential causes. That the high level of interest rates demanded by creditors affects all domestic borrowers making loans unaffordable to some, and without the funding investment decreases negatively affecting long-term growth (Emran and Farazi, 2008 and 2009; Eichengreen and Luengnaruemitchai citing MacCauley and Remolona, 2000). The second hypothesis is that during times of stress, induced by high levels of debt, domestic investors shift out of private sector investments into sovereign ones. This was observed by Broner et al during the 2009 Eurozone financial crisis, who conclude that this re-allocation deepened the Eurozone

recession. More generally, their concern with crowding out is that "while some economies might eventually outgrow the crowding-out [affect] and reach an equilibrium with high output, others may be permanently trapped in equilibria with low investment and output" (p. 3).

2.1.C – A U-shaped relationship between debt and growth?

Yet other researchers find more of a so-called 'U-shaped relationship' between debt and growth. That is, lower levels of debt contribute to growth, but as debt grows that level of contribution declines, until past a so-called 'threshold' level of debt the contribution is negative. Cecchetti et al (2011) finds "for government debt, the threshold is around 85 percent of GDP" (p. 1); Checherita and Rother (2010), looking at 12 euro zone areas from 1970-2011, finds the threshold is 70-80 percent of GDP; and Baum et al (2013), looking at a narrower date range 1990-2010 for the euro zone, find that positive contributions starts to become insignificant at 67 percent of GDP and turns negative at 95 percent.

2.1.D – Lessons on debt and growth

Research on whether debt helps or hurts growth appears to be inconclusive. Perhaps it is as Panizza and Presbitero's (2013) writes: "While many papers have found a negative correlation between debt and growth, our reading of the empirical literature is that there is no paper that can make a strong case for a causal relationship going from debt to economic growth. We also find that the presence of thresholds and, more in general, of a non-monotone relationship between debt and growth is not robust to small changes in data coverage and empirical techniques. We conclude with a discussion of the challenges involved in measuring and defining public debt and some suggestions for future research which, in our view, should emphasize cross-country heterogeneity" (p.1). In other words it depends on the situation of each country at a particular point in time. Nevertheless, high debt even if it has not brought about negative growth raises the vulnerability thereof.

2.2 The need for a bond market in the presence of a bank market

As Levine writes, "for over a century, economists and policy makers have debated the relative merits of bank-based versus market-based financial systems" (2000, p.1). He criticises these earlier research for being limited – they mostly focus on only four countries, Germany and Japan as bank-

based economies versus United States and United Kingdom as market-based ones, and as the four have very similar long-run growth rates what conclusion can be drawn? His study is the first to broaden the field he empirically finds that whilst economic growth is "robustly linked" (p.1) to overall financial development there is no evidence to suggest that a bank-based or a bond-based system is better. He expressly points out that this covers the extremes, countries with either very well-developed markets but poorly developed banks and vice versa, as well as countries with more balanced systems. His paper is highly influential and oft-cited, but it fails to ask about the differences the two markets make to micro-economic development.

2.2.A – Bank versus bond markets for micro-economic development[7]

For the two markets do offer different contributions to the micro-economy. For whilst both serve to mobilise funds from savers to borrowers they differ in their method of doing so.

Consider maturity transformation. Banks take short-term funds (from depositors) and transform them to long-term funds (for borrowers) managing the maturity risk. Bond markets offer no such time intermediation so savers' and borrowers' investment/borrowing horizons need to be the same (Levine 2000 referencing Allen and Gale 1999; Bencivenga and Smith 1991).

But as a consequence of this, the bond market is able to offer longer maturity assets than the bank market. This is particularly helpful for specialist savers such as insurance companies and pension funds who have long-term liabilities. Without the bond market, these savers must use more less-ideal substitute assets and thus their products end up being more costly (Herring and Chatusrispitak, 2000).

The banks and bond markets do not target the same savers and borrowers. The bond market typically focuses on the larger borrowers and savers. Some researchers consider this as privileging the bigger companies at the expense of smaller ones (Bonizzi 2013 citing Rethel 2010 studying of Malaysia). However it may already be the case that the largest and best-known companies are already issuing bonds just not at home but abroad. If so, their bonds are likely to be denominated in a foreign currency, which subjects the firms to currency risk (Herring and Chatusrispitak 2000) or, if they hedge the risk, higher cost of borrowing due to the cost of hedging. Thus the development of a domestic bond market would offer a domestic-currency channel.

[7] Literature comparing the relative merits of bank and capital markets tends to include equity as part of capital markets. Since we are interested in the bond market specifically, I have excluded researchers' considerations that apply only or mainly to equity.

Some banks, finding the bond market has competed away the large companies, reorient their business, increasing the proportion of credit to households - in many incidences quite dramatically (Bonizzi 2013 citing the following: Ashman, Fine, and Newman 2011; Karwowski 2012 for South Africa; Becker et al. 2010 for Slovakia; Chang 2010; Cho 2010 for South Korea; dos Santos 2011 and 2013 for Brazil, Mexico, Poland, and Turkey; Ergunes 2009 for the case of Turkey; Gabor 2010 for Eastern Europe; Painceira 2012 for Brazil; and Rethel 2010 for Malaysia).

The simple fact that bonds are designed for trading also leads to significant differences in how they contribute to the economy. For one, the bond contract is different than the loan contract. Loan contracts are more creditor-protective drafted to allow banks to monitor firms and minimise borrower moral hazard (Levine, 2000, citing Boot and Thakor, 1997). Bond contracts are much simpler, for the practical reason of minimising the difficulty and cost of needing to coordinate collective action among a large number of investors and the 'standardisation' of contracts minimises administration costs which reduces trading costs (Herring and Chatusrispitak, 2000). Thus, researchers argue banks are better at corporate governance and capital allocation (Levine, 2000, citing Diamond, 1984; Ramakrishnan and Thakor, 1984). Indeed, some say that as bond investors can exit a liquid market at minimal cost, they are actually dis-incentivised to acquire full information before investing (Levine, 2000, citing Stiglitz, 1985). On the other hand, bond contracts better suit entrepreneurs as it is less dilutive of their control (Eichengreen and Luengnaruemitchai, 2004). Moreover, the bond markets also serve their venture capitalists funders who need the option to exit their investments through the equity and bond markets (Black and Gibson, 1998).

Trading allows for a large number of investors, which means better risk-pooling and risk-sharing amongst bond holders, in contrast to banks where risk is concentrated (Herring and Chatusrispitak, 2000).

However, risk concentration can be useful in countries with weak contract enforcement, for powerful banks can better force repayment than a collection of smaller bondholders. The benefit of this is such banks provide comfort to external investors who may otherwise be reluctant to invest in countries with underdeveloped institutions (Levine citing Gerschenkron 1962; Rajan and Zingales 1998).

On the other hand, powerful banks can also negatively impact the economy. They could stymie innovation by "extracting informational rents and protecting established firms with close bank-firm ties from competition (Hellwig 1991; Rajan 1992)" (Levine 2000 p.3). Large uncompetitive banks with market power have lower incentive to maximise revenues and minimise costs as Hackethal et al

(2012) find for German state-owned banks. Furthermore, the dominance of banks can result in too low deposit rates and too high lending rates (Herring and Chatusrispitak 2000). Maudos and Fernandez de Guevara (2007) found that reducing banks' market powers improved social welfare gains more than the loss of cost efficiency from economies of scale. Companies knowing they must rely only on banks may try to control them through affiliations and conglomerates to form an internal capital market which could lead to a charge of crony capitalism (Herring and Chatusrispitak 2000; Eichengreen and Luengnaruemitchai, 2004). In such events, a bond market could serve as competition to reduce banks' powers.

Because the bond market is a trading market, it provides public pricing information. It does this by aggregating diffuse market information (Levine citing Boot and Thakor 1997; Allen and Gale 1999) and providing "the market consensus about the appropriate credit risk (and possibly liquidity risk) premium" (Herring and Chatusrispitak (2000) p.20). This market-determined term structure of interest rates, or 'yield curve' can be used for pricing not just credit but also equity. As Herring and Chatusrispitak note, whilst an equity market can thrive without such information "it may not be very efficient in the sense of aligning prices with fundamental economic values [for] ideally, share prices should reflect the present discounted value of expected future earnings" (p.20), and absent a transparent and market-consensus it is not clear what the discount interest rate should be.

A benchmark yield curve also allows for the development of a derivatives market which can serve to offer interest rate risk hedges. "In the absence of a well-functioning bond market, it may be possible to obtain [derivatives] but they will be very expensive relative to what they would cost in an economy with a well-functioning bond market because they cannot be hedged as efficiently. The consequence is that market participants will be exposed to more financial risk than they would choose to accept if they had access to well-functioning derivatives markets" (Herring and Chatusrispitak, 2000, p. 32)

As bond markets also allow a governments to trade its own bonds it enables more flexibility in managing monetary policy (Christensen, 2004)

2.2.B – Bond versus bank market in a crisis

What of Greenspan, the WB and other multilaterals' belief, that a bond market complements a bank market, so that having one reduces the negative impact during financial crisis? Recall that Greenspan's belief is supported by the experience of the U.S., and also by the positive experience of

Sweden as compared to that of Japan. Sweden has a variety of nonbanking intermediaries and it was this that allowed for the speed of its economic recovery after its early 1990 real estate crisis. In contrast, Japan's problems have proved longer lasting because it relies almost exclusively on banks (2000).

Countering this argument is Jiang et al (2011) who note that "the bond markets in Argentina, Brazil, Russia and Turkey did not help to reduce the volatility during crises - on the contrary, the bond markets usually were the first markets to collapse under pressure and seemed to be a channel for spreading financial contagion" (p. 107).

Financial contagion does not yet have an established definition for its study is new, but most researchers broadly define it as the transmission of shocks from one sector of the economy to another or from one economy to another not explained by fundamentals. (The difficulty is how to strip out the fundamentals from a price movement?) Most research focus on country to country(ies) transmission and they do find evidence that bond markets play a role in international contagion (Hernandez and Valdez, 2001). There is less research on intra-country transmissions, one is Jiang et al's (2001) regression study using Beck et al's (1999) World Bank data of 13 OECD countries. They find the relationship intra-country to be positive, that different financial markets are not complimentary and stress in one market likely results in stress in the other.

A 2011 study by Jiang et al looking back at this 2001 intra-country study hypothesises that whether bond markets act as co-contagions or not might depend on the underlying causes of the crisis. In the case of the U.S. in late 1980s that was cited by Greenspan the source of the crisis was the real estate market, and its impact was limited to that sector and the banks, so its bond market could continue to function. In the case of the emerging markets, the domestic markets are much more correlated and therefore unable to be contained – "rapid contagion effects across financing channels … [which] appear to render the bond market a source of instability" (p. 110). Moreover emerging countries were subject to high correlations between emerging countries' bond markets which further fuels instability (over 1994-2000, the average cross correlation was 0.51; this average rose sharply during crises – the Asian and Russian crises reached 0.8 – 0.9 – and fell afterwards) (p. X)

The channel of contagion is a complex subject that merits its own paper, but for the purposes of this study it is also important to state that policy may help mitigate impact. For instance, if cross-country contagion is the cause of a crisis, "countries could attempt measures such as imposing prudential capital account regulations" (Hernandez and Valdez, 2001, p.3). If financial market linkages are to

blame (Pritsker 2000), one solution is to increase liquidity into the financial system to stem the need for investors to sell assets in one market solely to pay for losses in another (for example, the United States Troubled Asset Relief Program "TARP" instigated in 2008).

2.2.C – Lessons on bank versus bonds

The banks and bond markets offer different benefits to the economy, and there is obviously a case for both. But it is unclear if during a bank crisis a bond crisis could act as a dampener of financial risk or a co-contaminant in financial contagion.

2.3 – Developing the demand side for domestic bonds

As financial intermediation is about the mobilisation of savings to those who need the funds, developing a savings base is vitally important. As it is a topic that requires its own research paper, in this sub-section I will focus on the merits and risks of relying on a diversity of investors, the benefits and risks of foreign investors and the growing area of pensions in emerging markets as most directly relevant to my study.

2.3.A – Broadening the investor base

Amongst the IMF extensive guidelines (the latest published in 2014) to create a stable and strong bond market is the recommendation to deepen the market by broadening the types of investors. For one, having more investors means selling pressure need not turn into a market shock. For another, having diverse types of investors with different investment time horizons means one type may be willing to buy when another group is selling. Moreover, diversification of investors reduces the monopoly of powerful groups of investors (IMF, 2014).

2.3.B – Foreign portfolio investment

The IMF recommends attracting foreign investors as part of this diversity drive. Foreign markets offer the additional benefit of additional, and many cases, deeper sources of funding that

compliment smaller domestic markets (WB-IMF, 2014). Indeed, it advocates that domestic and foreign investors should be treated equitably and this is controversial.

For other researchers find that the liberalisation of capital accounts adds to financial instability. Their argument is that whilst financial liberalisation attracts foreign investors, many of them demand that the assets be denominated in foreign-currency (the "original sin problem" described by Eichengreen and Hausmann, 1999) and some in fact are 'hot money'. Whilst the capital inflow does help economic growth, they drive up prices of assets including currency faster than development. A rising real exchange rate deteriorates the country's current account and external financial position. At the same time the expanded borrowing makes the country fragile. Eventually investors start limiting their exposure which slows down the boom. Should a shock occur, such as a bank failure or a sharp fall of the currency, foreigners then exit en masse leading to a crisis (Greenspan 2000; Arestis & Glickmann, 2002; Singh 2003; Fritz and Prates 2013). Examples of this include the 1997/98 South East Asian crisis and the recent/ongoing Greek crisis. Their point is that whilst cycles are endogenous to a free market (Palma 1998) foreign capital contributes a further exogenous factor. Rather than treating foreign investors 'equitably', they recommend limitations on capital flows.

2.3.C – Pension regulation

A significant in improvement in domestic savings has been the result of pension reform. According to Roldos, while reform was originally motivated by political and demographic pressures, the movement "towards fully or partially funded, privately managed systems in several emerging market countries has lead to additional benefits for the development of capital markets" (2004, p.1). Pension funds pool the funds of smaller individual investors, providing greater diversification and lower transaction costs to improve better risk-returns for the end-investor. Moreover, "their long-term liabilities allow pension funds to invest in and contribute to the development of longer-term securities markets" (2004, p.4). In the G7 countries, institutional investors' assets grew from 23 percent in 1970 to 108 percent of GDP in 1998 with pension assets at 43 percent; similar trends have been observed in emerging markets (Roldos citing Davis and Steil 2004; IMF 2004). Pension investment has been linked to the development of the equity and bond markets, as well as lowering the average level of capital market volatility (Roldos citing Davis and Steil 2004 and Impavido et al 2003), although the relationship is not necessarily straight-forward as research finds mixed causality from pension assets to market capitalisations (Roldos reporting on Catalan et al, 2001).

Pension funds have contributed particularly to the development of the domestic bond market, especially in Hungary, Poland, Mexico and particularly Chile (Roldos, 2004). Chile has succeeded in developing a market for long-term corporate bonds (with maturity dates from 10 years to even 30 years) as a result of it according to Cifuentes et al (2002). In Chile, as well as in Argentina and Peru, reforms also contributed to better legal and regulatory framework, increased investment decision-making and greater transparency (according to Roldos 2004 referencing Walker and LeFort 2000). These domestic fund managers are also affecting the external debt markets as external investors consider their actions (Roldos 2004 citing Brainard 2001).

Despite this evidence of their positive contributions, expectations for pensions in emerging markets must be tempered: "there may be limits to the development of local markets and whether these emerging markets could respond to the increased pension fund demand with a substantial volume and enough diversity of securities is one of the key questions in emerging markets and one of the key challenges for regulators of securities markets and the pension industry" (Roldos, 2004, p.7)

2.4 Factors required for the development of a debt market

In this sub-section, we consider what is needed to develop a bond market, or what is missing to prevent its development? Research has been growing but remains inconclusive, and this sub-section presents the key research in mostly chronological order.

2.4.A – The first research

It could be said that the papers by La Porta et al (1997) and Eichengreen and Hausmann (1999) catalysed recent study, not least because of the controversy the two papers created. La Porta et al (1997) studying 49 countries' capital markets with "huge differences in the size, breadth, and valuation" (p.1) find that countries with poorer investor protections, as measured by law and enforcement, have smaller and narrower capital markets – both in equity and debt. They also find that French civil law countries, being worse on protection, have less developed capital markets than common law countries. Their conclusion is countries wanting to develop their capital markets need to improve their legal environment.

Eichengreen and Hausmann (1999) state the reason why emerging countries' capital markets are underdeveloped is due to "original sin" (p.3). The markets are incomplete because the countries are unable to use their domestic currency to borrow abroad or to borrow at home for long term. Eichengreen and Hausmann see original sin as "a fact about the world" (p.11) though they speculate

it could be caused by hyper-inflation and or currency devaluation - or perceptions thereof. So unlike La Porta et al, they believe improving the legal system will have little impact - indeed there appears very little a government can do at all.

Subsequent researchers have weighed in on these polarising arguments and most do not appear to agree with Eichengreen and Hausmann. Jeanne and Guscina (2006) report the countries in their study are able to issue domestic-currency, long-term bonds with a fixed interest rate in a size of "great importance" (p. 8). They also note a variety of debt structures in the domestic markets with "the only category that is not represented at all in the data is short-term indexed debt with a variable interest rate" (p.8). Their acknowledgement that the exception are countries with monetary instability who "were left with a choice between short term in the domestic currency, or at longer maturities with some indexation" (p.11) also adds one other factor to the debate, inflation and monetary policy. They also believe that a large banking sector and a large domestic investor base would help a government sell its debt domestically.

Burger and Warnock (2010) point out that there has been a sharp increase in emerging country local currency bonds a decade on from the Eichengreen and Hausmann (1999) study. From 2001 to 2008, local currency bonds grew from 1.6 trillion U.S. dollar equivalent to 3.4 trillion; from 19 percent to 23 percent of GDP; and foreign currency bonds have shrunk from 30 percent to 15 percent of outstanding bonds (p.4). They also find that the average local currency bond maturity has also lengthened, most particularly in Latin America. They find that whilst growth was spread across emerging markets, the countries that grew the most had stronger legal rights – thus supporting La Porta et al (1997)- and lower inflation volatility – thus also supporting Jeanne and Guscina's (2006) inflation findings. Burger and Warnock note that the increased ability of these countries to borrow in their domestic currency further improves the driving factors which should further increase their domestic borrowing capacity in a virtuous feedback cycle.

2.4.B – The Eichengreen and Luengnaruemitchai (2004) seminal study

Eichengreen and Luengnaruemitchai's (2004) study vastly expands the number of factors under consideration, they consider 15. As their methodology has been much followed by subsequent researchers, it bears discussing this study in some detail. The study looked at 41 countries, developed and emerging Asia, from 1990 to 2001. The dependent variable is bond market capitalisation as a percent of GDP. The independent variables, with discussion and findings, are as follows:

- **Economic size (GDP at purchasing power parity)**. The reason for this variable is that the size of a country limits the size of its market. A small market lacks the economies of scale to bring down the high transaction costs that deter investors and raise sufficient size of funds to attract large borrowers. Eichengreen and Luengnaruemitchai find a positive albeit weak relationship
- **Natural openness (exports to GDP).** The argument is that more open economies are less likely to have entrenched interests which are not conducive to financial innovation (citing Rajan and Zingales, 2001). They find a positive but not "particularly strong relationship" (p.11)
- **Geographical/disease endowments (distance from equator).** This factor reflects upon "endowment theories that suggest environmental factors shape long-standing institutions influencing financial development" (p.12). The relationship is found to be positive
- **Developmental stage of the economy (GDP per capita).** The less developed a country, the more volatile its investment environment, the "weaker [its] creditor rights, [due to] inadequate transparency, and poor corporate governance" (p.13), which are factors that do not entice investors. Eichengreen and Luengnaruemitchai find there is a positive association between a country's and its markets' states of development.
- **Absence of public sector funding needs**. This variable looks at the impact on the size of both the public bond and the private bond sub-markets. There is a positive relationship between the need for public funding and the size of the public bond market as one would expect. However, the relationship between the need for public funding and the private market is less self-evident. On the one hand, a sizeable government bond market is necessary to create a yield curve beneficial to pricing private debt and the infrastructure to facilitate efficient trading. On the other hand, large government borrowing could crowd out borrowing by the private sector because there is insufficient savings base to support both borrowing demands. The study finds "a positive relationship between private- and public-sector bond market capitalization" (p.14).
- **Riskiness of the investment environment (presence of strong credit issuers).** Bonds are a way for investors to reduce risk in their savings (if they want to take risk they invest in the equity markets) thus a bond market will only develop if there are stronger credit quality issuers issuing (citing Harwood 2000). The findings agree with this argument.
- **Legal system.** The study's finding is consistent with that of La Porta et al (1997) and Burger and Warnock (2010), that the strength of the legal system is important.

- **Law and order (International Country Risk Guide measure).** The study finds a positive relationship between the measure and bond market size as well as a negative relationship between corruption and bond market size.
- **Weak corporate governance and transparency (quality of accounting standards).** If governance is weak, managers can enrich themselves at the expense of their shareholders and creditors. Investors would also prefer to invest in banks rather than directly in borrowers believing the banks to have superior information. The study finds a positive relationship between quality of accounting standards and the size of the bond market.
- **Poor regulatory enforcement (bureaucratic quality).** The hypothesis is investors would be reluctant to invest where opportunistic participants abound which regulation tries to prevent. The study finds negative correlation, the poorer the bureaucracy the smaller the bond market
- **Size of the banking system.** Banks compete with bond markets and a strong bank sector could make it difficult for a bond market to develop. At the same time, banks serve as bond dealers and market makers, whose presence is needed for the market. Eichengreen and Luengnaruemitchai find "that on balance banking systems and bond markets develop together" (p.14)
- **Banking concentration.** This variable tries to look at the theory that banks actively stifle the bond market (citing Bentson 1994; Schinasi and Smith 1998; Smith 1998; Rajan and Zingales 2003). The study finds "countries with more concentrated banking systems appear to have smaller bond markets, consistent with arguments suggesting that banks with market power may use it to discourage bond flotations" (p.18)
- **Interest rate variability.** Volatile interest rates reduce investor appetite for long-term debt since there is a great risk that the investor's purchasing power could be eroded. The study finds this to be the case as there is a negative relationship with nominal interest rate volatility, though the co-efficient is marginally significant.
- **Level of interest rates.** The higher the interest rate, the higher the cost of debt and thus the lower the affordability of debt which means lower issuance. Counter intuitively, the study shows that this not significant.
- **Exchange rate regime.** Citing Goldstein 1998, the argument is that a pegged exchange rate reduces (perceived) risk for external investors which should increase demand for local currency bonds. But findings do not suggest fixed rate regimes have bigger bond markets, however stable exchange rates are conducive to bond market development.

The study summarises its key findings as “no single class of factors is wholly responsible for the underdevelopment of … bond markets; rather, the present state of affairs reflects a confluence of influences” (p. 19).

One criticism that could be levied against the study is that some of variables may not be the most appropriate. For instance, would inflation be a more apt determinant than “level of interest rates” seeing as nominal rates can be affected by inflation? Secondly, there is the question of endogeneity, or as Mu et al (2012) explains “the assumption that explanatory variables are exogenous to bond market development may not be valid, making problematic the task of identifying determinants. For example, the fiscal balance drives debt stocks but the interest on an existing debt stock may drive the fiscal balance, especially if the debt stock is significant. Thus fiscal balance might be endogenous in the model” (p. 8). This also applies to exchange rates, for Ricci, Milesi-Ferretti & Lee (2008) argue that the real effective exchange rate changes with the country’s economic fundamentals over the long run.

2.4.C – Studies on Sub-Saharan Africa

Following the Eichengreen and Luengnaruemitchai (2004) methodology for Sub-Saharan Africa (SSA) are research by Adelegan and Radzewicz-Bak (2009) and Mu et al (2013).

The Adelegan and Radzewicz-Bak study agreed with the Eichengreen and Luengnaruemitchai’s save on two out of the 13 variables.

For the variable ‘Natural openness’**,** the Adelegan and Radzewicz-Bak (2009) study used a different measure, capital controls. With this they found a negative relationship. They argue that this is because the greater the controls, the lower its level of access to external funding, in which case it needs to depend more on its domestic market.

They found the opposite to Eichengreen and Luengnaruemitchai (2004) for the variable ‘Size of banking system’. The found that the bigger the banking industry the smaller the bond market. They also found that the higher the ‘Concentration of banks’ the smaller the bond market. Putting the two findings together they suggest that countries with more developed banking need not rely on the bond market. Bringing in the discussion from sub-section 2.2.B, the complementarity of banks and bonds, Adelegan and Radzewicz-Bak (2009) would find them to be substitutes, whereas Eichengreen and Luengnaruemitchai (2004) would find them to be complements.

Summarising, they single out the key impediment to be lack of savings (size of the market). Their recommendations are for (1) improvement of the investment environment through investor rights, law and order, and bureaucratic quality; (2) encouragement of competition; (3) regional approach to bond markets in order to increase investor base despite the small sizes of the individual countries; and (4) appropriate macroeconomic policies.

The Mu et al (2013) study expands the number of years studied, covering 1980 to 2010, and increases the number of countries to 36 (but still in SSA). They also differentiate between marketable from non-marketable debt as the latter does not contribute to the development of a trading market. Their dataset is also richer in corporate bonds allowing them to make different predictions for public versus private sector bonds. Below is a summary of their results either where they differ from Eichengreen and Luengnaruemitchai (2004) or Adelegan and Radzewicz-Bak (2009), or where they have a different finding for the private than the public sector.

- Economic size. Mu et al find that the larger the country, the relatively smaller the public market and the larger the corporate market (as compared to the other two researchers who found positive correlations between economic size and the bond market generally).
- Openness. Measured using trade and capital flows, they have opposing findings for public versus private sector debt. They find that the more open a country, the bigger public sector market (consistent with Eichengreen and Luengnaruemitchai and inconsistent with Adelegan and Radzewicz-Bak). But the relationship with the private debt market is negative: "one explanation is that corporations in more closed economies may face external financing constraints that prompt greater domestic market development" (p.15).
- Law and order. They have split findings between public and private bonds: they find a negative relationship to government bonds i.e. higher the corruption index the smaller the bond market consistent with the other two research finding; they find a "strongly positive" relationship for private bonds (p.18) – but they do not offer an explanation.
- Banking sector size. The Mu et al findings are consistent with Eichengreen and Luengnaruemitchai (2004) and inconsistent with Adelegan and Radzewicz-Bak (2009) that the bigger the bank size, the bigger the bond size.
- Interest rate variability. They have different findings for public and private sector bonds: for private bonds the more variable the rate the smaller the bond market (consistent with the general findings of the other two papers); for public bonds, they find the variable "to have less influence" (p.16). Mu et al opine that "this is because corporate bonds are driven more

by market forces while governments often tend to enjoy captured investor base in underdeveloped financial markets such as Africa" (p.16)

- Exchange rate regime. Findings are also mixed for public and private bonds. A more volatile exchange rate leads to smaller public bond market (consistent with the other two researchers) but a larger private bond market

Summarising the different factors that affect the public and the private sub-markets, Mu et al find that "a combination of structure, policy, and institutions variables appear to exert a statistically significant effect on government securities markets" (p.23) encompassing most of the variables, whilst "a somewhat narrower set [is] significant" (p.24) for private debt. Their policy recommendation is simply that SSA governments should "strive to develop their economies strive to develop their economies and this will in turn lead to greater corporate bond market development and deeper government securities markets, which will have a virtuous influence on economic development" (p.24)

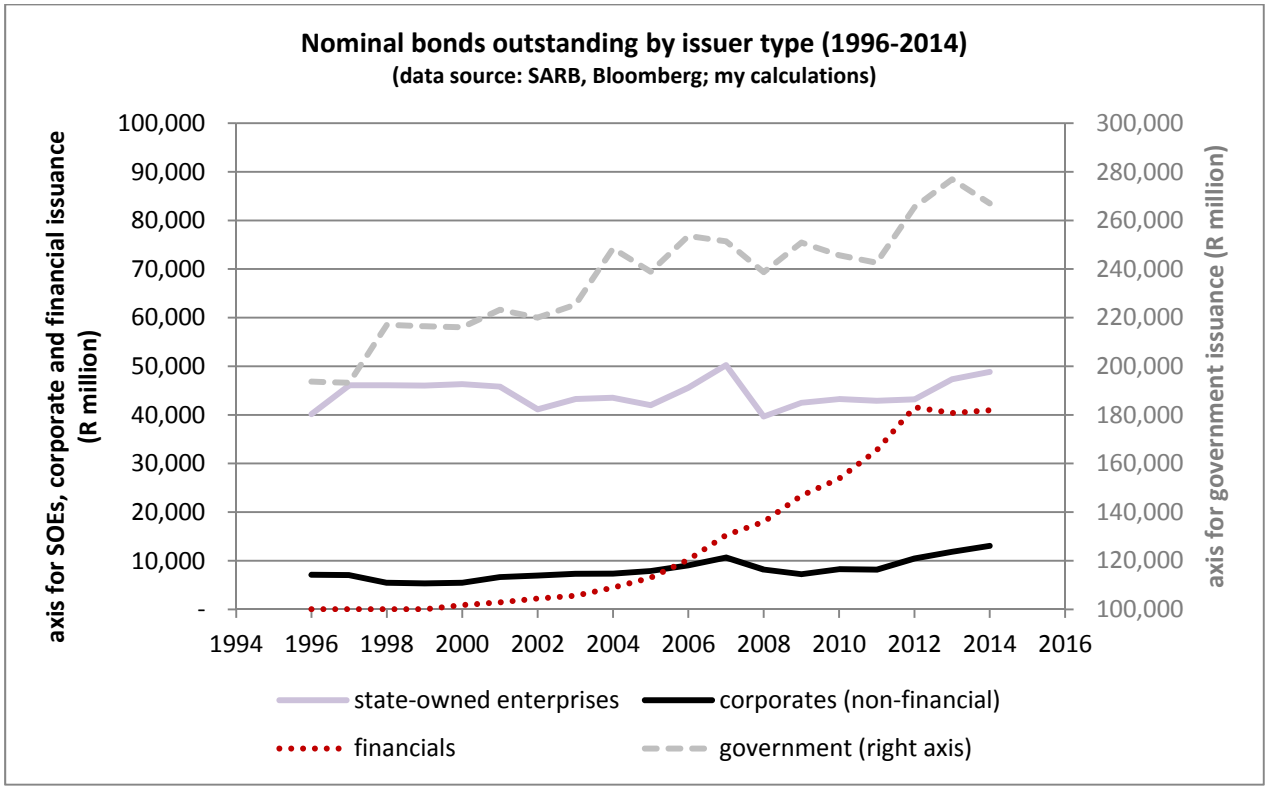
2.4.D – Lessons from factors necessary to develop the domestic bond market

The papers deconstructing a complex issue into analysable parts, and I use their findings to write the next chapters but with the intention of understanding the links between the factors.

Chapter 3 – A discussion of the SA domestic bond supply side

This chapter looks at the supply side of the domestic bond market. As an overview, Figure 3.a shows the issuance of domestic debt by type of borrower: government, state-owned enterprises (SOE), the financial and the non-financial private sectors.

Figure 3.a – Bond issuance by issuer type, in nominal value of outstanding bonds (data source: Bloomberg, my calculation)



As the SA government is the largest issuer by far, the bulk of the chapter focuses on the motivations and actions of the government (sub-sections 3.2 and 3.3, with 3.4 providing an overview of SOE issuance). The last sub-section (sub-section 3.5) considers trends in the private sector issuance.

First, however, I need to start with a quick history of the market in order to set the mis-en-scene.

3.1 – A quick history of the SA domestic bond market

The domestic bond market is one legacy of the apartheid era, "In the 1970s and 1980s, sanctions were progressively imposed on South Africa, and the country was effectively denied access to international financial markets. At the same time, the government of the day ran large deficits"

(Mboweni, 2006, p. 5), in other words the government had no recourse but to tap domestic savers who were made captive investors by law restricting foreign investment. Issuance was informal, the government issuing on an as and when funds were needed basis: "There were no formal auctions, liquid benchmarks, active secondary market or prevailing market rate" (SA National Treasury b, 2011/12, p.1). Various steps were taken to improve upon the market, with the biggest leap made in 1996 with the creation of the Bond Exchange of South Africa (BESA) – now part of the Johannesburg Stock Exchange (JSE). With BESA came major developments including electronic trading, matching and settlement.

Another milestone was reached in 1998 when regular auctions of government bonds were scheduled and primary and secondary markets dealerships were established – up to this point, the SA Reserve Bank (SARB) functioned in these roles – (Mboweni, 2006).

The primary market describes the market when a bond is first issued. The bond is placed with designated primary dealers who bid on size and price via an auction process. These dealers then sell on to savers with the difference between the issuance purchase price and the subsequent sale price their profit margin. In order to remain designated dealers, they are obligated to make minimum bids at weekly auctions but they are also are also granted a window after auction closes to take up an additional percentage of the issuance. As of 2014, there are nine primary dealers[8] who include the largest domestic banks (SA National Treasury a, 2014/15).

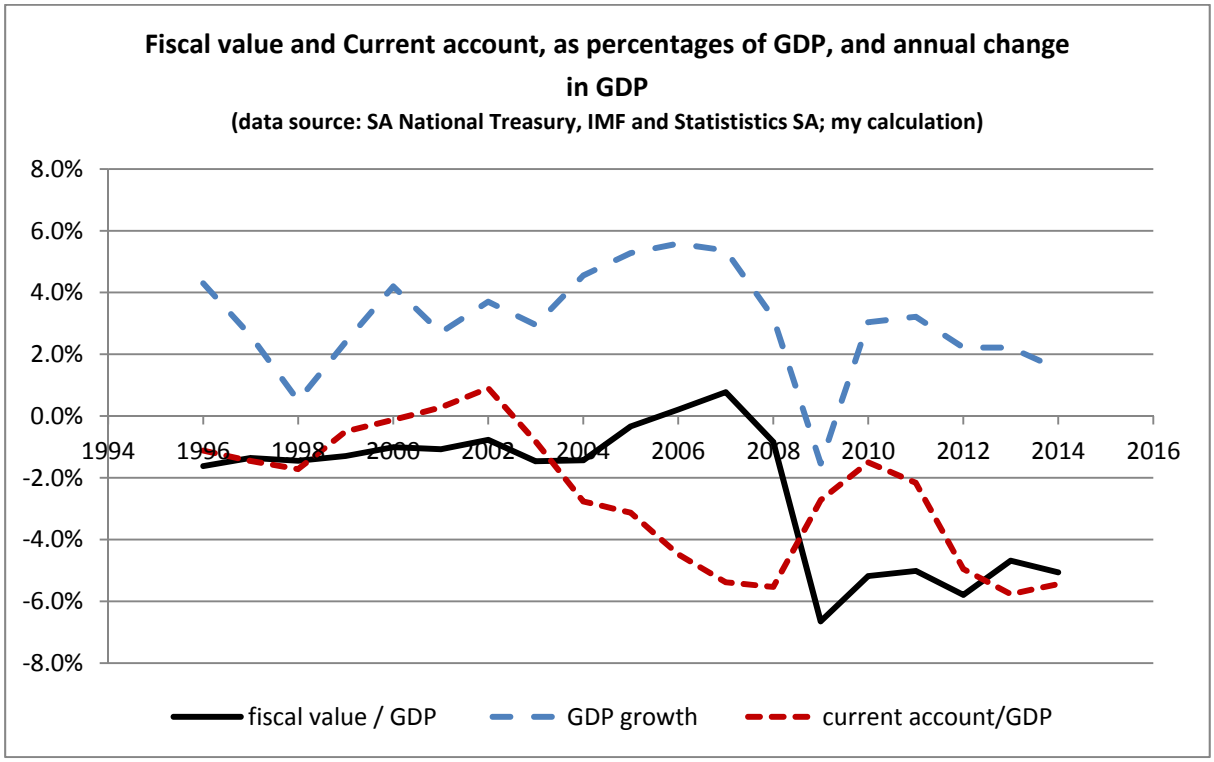
The secondary market is the market that follows from the primary where trading takes place between end-investors intermediated by secondary dealers. The primary dealing banks are also secondary dealers (SA National Treasury a, 2014/15).

3.2 – South Africa's fiscal policy, fiscal balance and the need for debt

Governments typically issue bonds to finance a fiscal deficit, so borrowing is not a primary objective but a consequence of public policy. Figure 3.b shows SA's fiscal value as a percent of Gross Domestic Product (GDP).

[8] Barclays Africa Group, Citibank, Deutsche Bank, FirstRand Bank Limited, HSBC Bank, Investec Bank Limited, JPMorgan Chase Bank, Nedbank Limited and Standard Bank (SA National Treasury, 2014/15, p. 11)

Figure 3.b – SA fiscal value as percent of GDP, current account as percent of GDP, and change in annual GDP (data source: National Treasury b and Statistics SA, my calculations)



2008 was a key year, with the fiscal value taking a sharp turn downwards. To be clear, the country had also been in fiscal deficit prior to 2008 - with the exception of 2007 – but the lowest level back then was negative 1.6 percent of GDP, whereas after 2008 the deficit hit a new low of negative 6.6 percent of GDP (in 2009). As of 2014, it is negative 5.1 percent. This turn could be attributable to two events which affected public policy, the global financial crisis that started in the U.S. in mid-2007 and a change in political fiscal focus due to a change in leadership in the ruling political party the African National Congress (ANC) in late 2007.

That the global financial crisis negatively impacted South Africa can be seen by a sudden drop in its GDP and current account deficit, also shown in Figure 3.B. GDP had been growing since 1998, reaching a high of 5.6 percent per annum in 2006. This reversed by the end of 2007 and declined to negative 1.5 percent in 2009. Changes in the current account as a percent of GDP more or less echo the GDP change.

To try to counter this economic downturn, the government significantly stepped up its fiscal spend (Mnyande, 2010). Whilst the actual budget expenditure for fiscal year 2008/09 increased from planned by a slight 3.7 percent, the expenditure for the following fiscal year (2009/10) was targeted to increase by 16.5 percent (the actual increase was 16.9 percent). Increases were also planned for the next two years (2010/11 and 2011/12) to be circa 7.2 percent higher than the 2007/08

expenditure. In actuality, the increases were 9.9 percent and 8.8 percent over those two years. Table 3.a summarises the original planned expenditure, any subsequent revisions and the actual expenditures. As can be seen for all years expenditure for future years were planned to rise, in almost all cases then revised upwards and actual came in even higher still (source: SA National Treasury b).

Table 3.a – planned and actual national expenditure (source: SA National Treasury b). To read the table, start with a column. This is the budgeting year, for instance the column 'as of 2008' is the budgeting year 2008. The rows mark the year of expenditure. Thus 'as of 2008', the intention was to spend 542,117 that fiscal year, 611,096 the next fiscal year, and so on. To see the revisions for an expenditure year, stay on the row and move to the next column. For instance, row '2008/09' which showed planned fiscal spend of 611,096, in the next budget year (column 'As of 2009') was revised upwards to 633,907. The figures in blue show actual spend. The two rightmost columns show change of actual from first planned and actual compared to 2007 expenditure levels.

Expenditure year	**Planning year**							*change of actual from original planned*	*change from 2007 expenditure*
	As of 2008	As of 2009	As of 2010	As of 2011	As of 2012	As of 2013	As of 2014		
2007/08	**542,117**								
2008/09	611,096	**633,907**						*3.7%*	*16.9%*
2009/10	681,606	738,563	**748,816**					*9.9%*	*38.1%*
2010/11	744,670	792,354	818,143	**809,923**				*8.8%*	*49.4%*
2011/12		848,971	888,338	888,923	**891,199**			*5.0%*	*64.4%*
2012/13			964,314	968,132	969,365	**966,967**		*0.3%*	*78.4%*
2013/14				1,053,029	1,053,830	1,055,075	**1,049,109**	*-0.4%*	*93.5%*
2014/15					1,139,579	1,137,981	1,137,981		
2015/16						1,225,727	1,225,727		

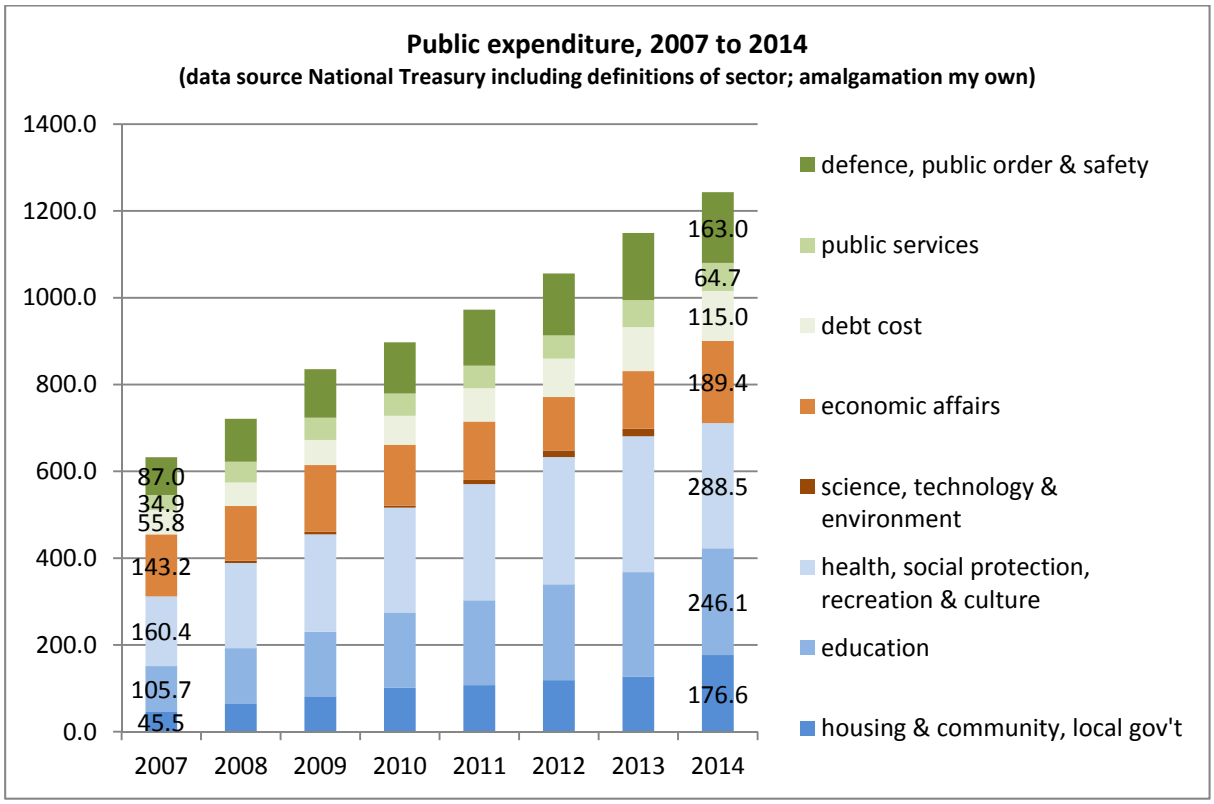
To be clear, it was not just the counter-cyclical measures that increased expenditure, it was also driven by a change in fiscal policy. "Over the past decade, the public finances have supported a large-scale redistributive effort to support national development and reduce poverty" (SA National Treasury b, 2014, p.2). This can be seen from Table 3.b, which shows government spend by sector[9], and Figure 3.c, which shows the same information graphically. The budget sector "health, social protection, recreation and culture" has the highest allocation of government spend in 2014 and the budget sector "housing and community, local government" has the highest rate of increase in spend.

Table 3.b – public expenditure by amalgamated budget sectors (data source National Treasuryb including definitions of sector; amalgamation my own).

R million	public services	defence, public order & safety	economic affairs	science, technology & environment	housing & community, local gov't	education	health, social protection, recreation & culture	debt cost	total expenditure	expenditure /GDP
2007	34.9	87.0	143.2		45.5	105.7	160.4	55.8	632.5	24%
2008	48.1	98.6	126.2	5.1	65.3	127.3	196.1	54.3	721.0	27%
2009	51.4	111.7	154.1	5.8	81.6	148.9	224.2	57.6	835.3	31%
2010	51.3	118.0	140.3	4.7	102.1	172.7	241.6	66.6	897.4	33%
2011	52.1	128.9	134.6	9.9	107.5	195.5	267.5	76.6	972.5	34%
2012	53.8	142.5	123.2	15.1	119.0	220.9	293.0	88.3	1055.9	36%
2013	62.6	154.5	132.6	17.5	127.2	240.5	313.1	101.3	1149.3	39%
2014	64.7	163.0	189.4		176.6	246.1	288.5	115.0	1243.3	41%
Ratio of 2014 to 2007 spend	1.9x	1.9x	1.3x		3.9x	2.3x	1.8x	2.1x	2.0x	

[9] The budget sectors are provided by government but categorisations changed from budget to budget. In order to make year-on-year comparisons I have created my own amalgamations.

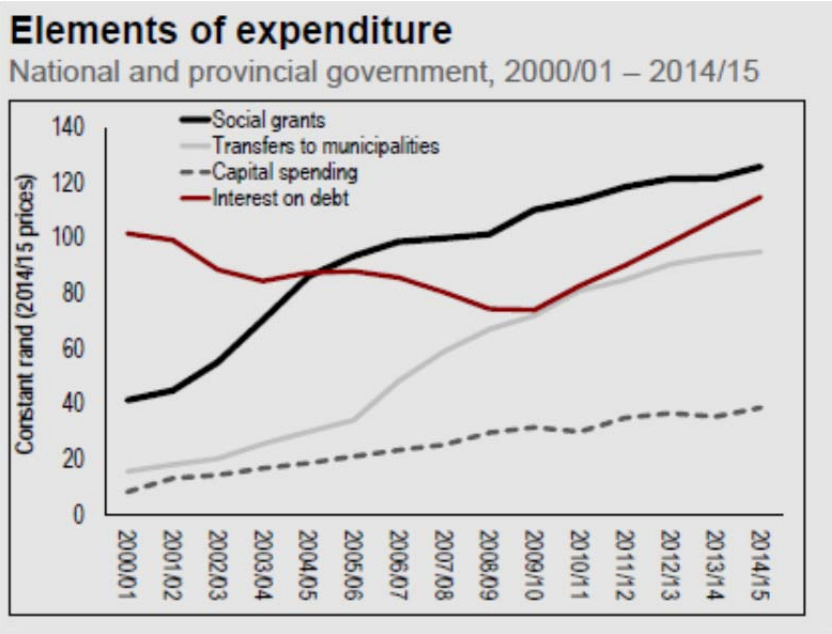
Figure 3.c – public expenditure by sectors. Same data and sources as Table 3.B



Within the budget, a significant portion has been directed to salaries, see Figure 3.d. Part of this can be explained by service delivery being assigned down to provincial and municipal levels (SA National Treasury b, 2014) thus requiring civil servants at each level of government. Nevertheless, it is questionable whether this fully accounts for the degree of salary increase. As noted in the 2014/15 Budget: "Between 2007/08 and 2010/11, total local government personnel spending increased by 60 per cent, from R27.3 billion to R43.6 billion" and "between 2006/07 and 2010/11, national and provincial personnel expenditure grew by over 15 per cent per year, despite little evidence of a corresponding improvement in service delivery" (p.33). As a result, in 2014, 44 percent of government expenditure is on civil service salaries, and comprises 28.7 percent of total public and private sector wages (data source for employee compensation: Statistics SA; data source for government expenditure: SA National Treasury; my calculation). The Ministry of Finance's concern can be read in its concluding statement on the issue: "A 2014 study conducted by the National Treasury estimated that most public-sector workers were in the top 30 per cent of wage earners nationally. Typically, higher-income earners experience inflation in line with or slightly below consumer price index (CPI) inflation. Yet wage demands remain in excess of CPI inflation" (p.33). The

impact of which is that for any additional wage hikes not already planned, funds would need to be directed out of future budgets for government expenditure (SA Ministry of Finance, 2015/16).

Figure 3.d (source – SA National Treasury b, 2014/15, p.2)



I do not wish to distract from the focus of this paper by discussing a topic that might naturally arise, namely the economic value of government spend – the classic Ricardian versus Keynesian schools of thought. However I do need to raise the issue of the impact on the economy that different types of government spend might have vis-à-vis their multiplier effects, in terms of both size of impact and timing (Corsetti et al, 2012, and Auerbach and Gorodnichencko, 2012). For this impacts tax generation and the ability to service and repay the debts that fuel the expenditure. For instance, "when funds are allocated to public sector capital investment in roads, schools, hospitals and other items of infrastructure this enables the nation to increase the output it can produce. This will make it easier to pay off previous debts or to pay the interest on them" (Phetla-Lekhethe and Matsemela, 2015, slide 10).

This is important because the fiscal deficit has been funded by debt. Figure 3.e shows the gap between fiscal revenue and spend. Figure 3.f shows the annual issuance of debt in correspondence to the fiscal gap.

Figure 3.e – Annual change in public revenue and expenditure (data source: SA National Treasury b)

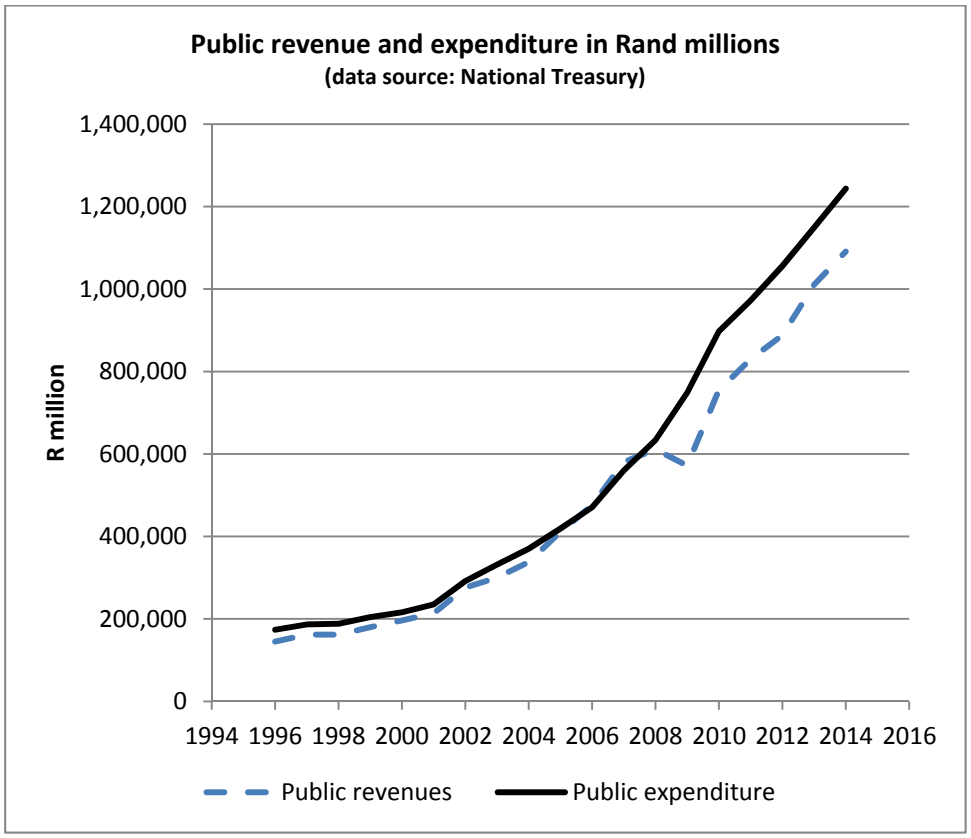
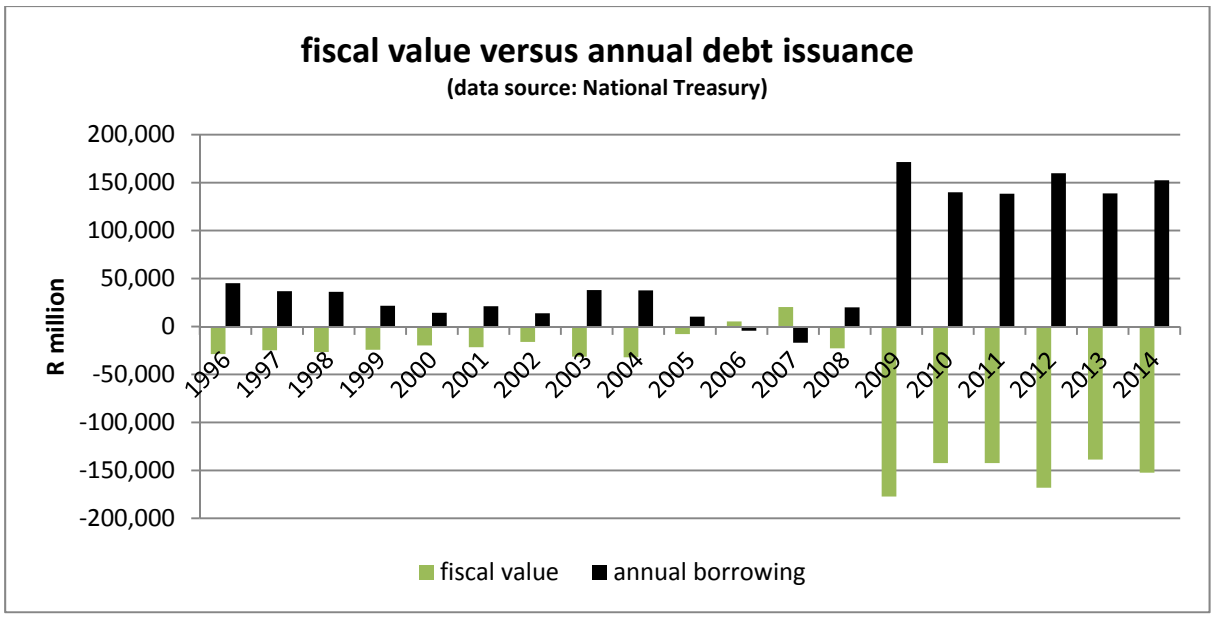
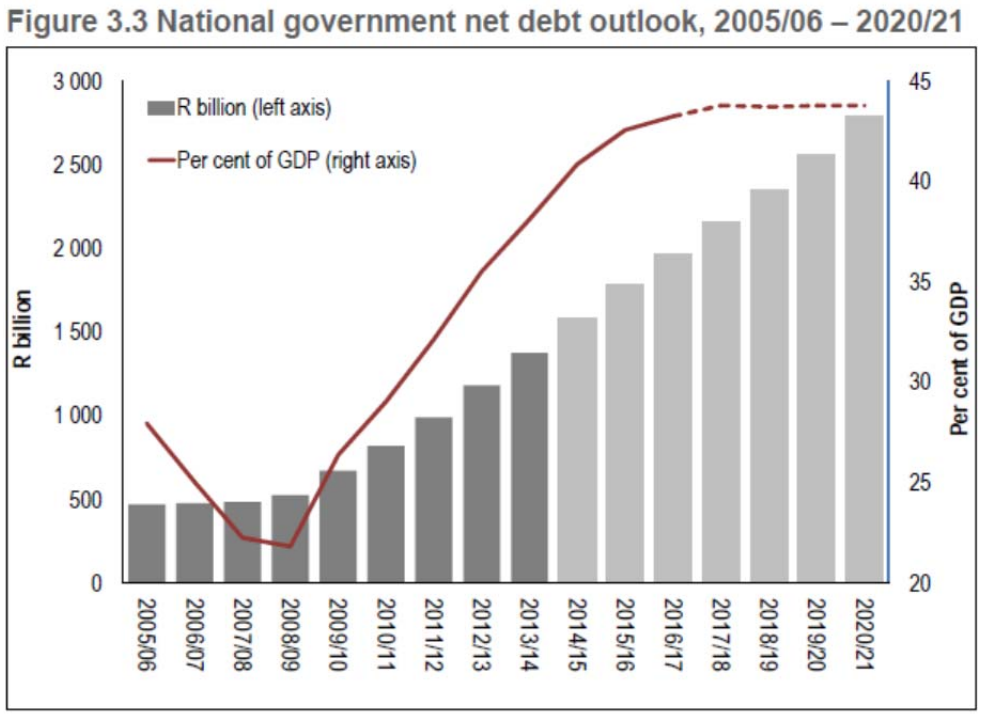


Figure 3.f – Change in fiscal value and net annual debt issuance (data source: SA National Treasury b)



As of 2014, gross debt stands at R 1,788 billion or 59.4% of GDP. Including guarantees of state-owned enterprise debt, it would be 67.2% (data source: SA Reserve Bank). The National Treasury reports debt net of cash and reserves, rather than gross debt, and Figure 3.g shows progression of net debt from 2005, including projections into 2020/21.

Figure 3.g – net debt outstanding with National Treasury projections (source National Treasury b 2014/15, p. 38).

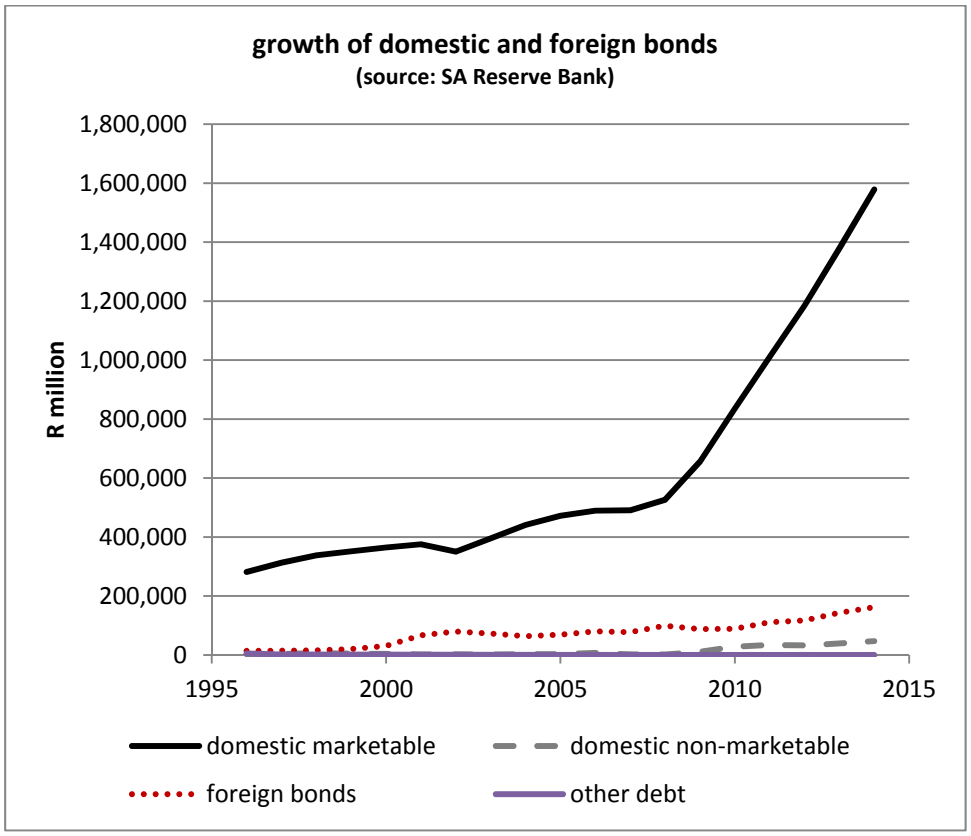


3.3 – local debt issuance and debt risk management

Next, let us turn to the type of debt that has been used for it establishes the risk(s) that the country must face.

The SA government has the option to fund in the foreign or the domestic debt market – recall that foreign debt means in a currency that is not the rand, which in SA's case is predominantly U.S. dollars and Euros. Within the domestic bond market, it can issue bonds intended for trading and investing, so-called 'marketable', and for cash management, so-called 'non-marketable' – treasury bills, amongst some other instruments, would be an example of non-marketables. Figure 3.h shows actual issuance by type of debt.

Figure 3.h – growth in SA domestic bonds and foreign bonds (data source: SA Reserve Bank)



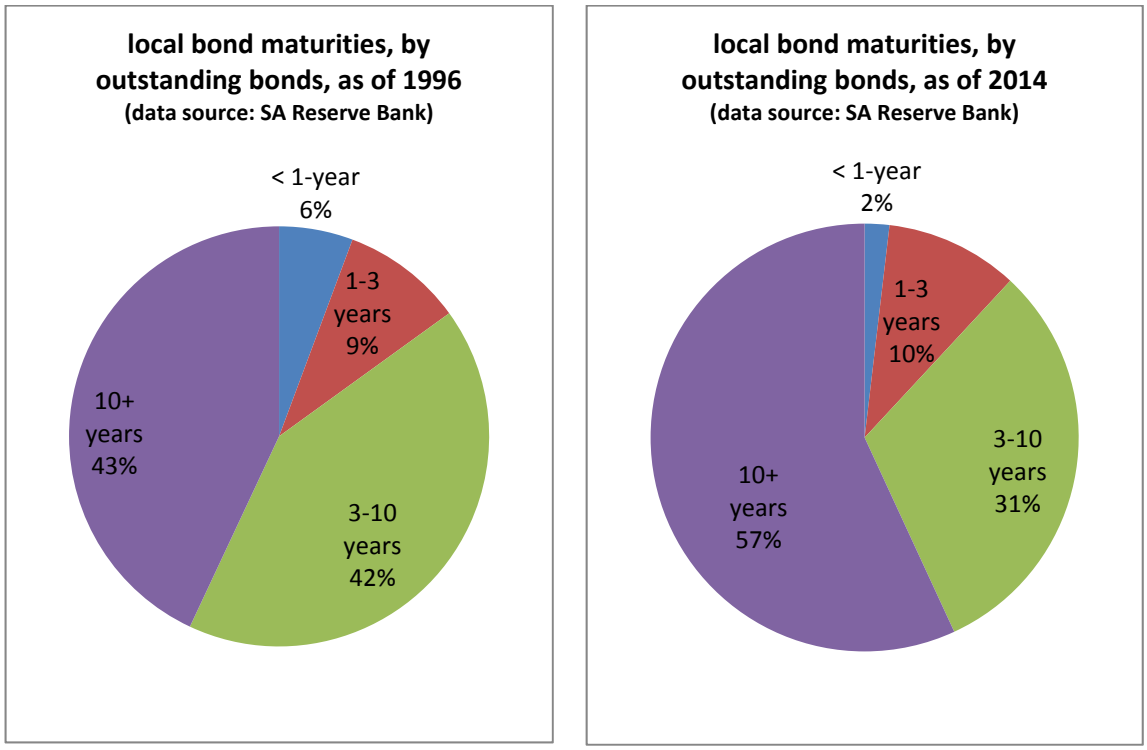
There are various factors in the consideration of versus domestic debt. One reason for choosing foreign debt is cost. Typically, the cost of foreign bonds is lower than for domestic bonds on a nominal level due to savings on the inflation premium demanded by domestic investors (Velde, D.W. ,2014, & Esters, C. 2013). For example, in 2014, SA issued two bonds of 30-year maturity in both the foreign and domestic markets: the foreign bond, denominated in U.S. dollars, had an issuance yield of circa 5.5 percent; the domestic bond had an issuance yield of circa 8.7 percent (data source: Bloomberg, my calculations).

Of course, the foreign currency cost of debt would need to be funded in rand if there are insufficient foreign exchange reserves and so is dependent on the value of the rand. Considering that the standard deviation of the USD-ZAR exchange rate has been as low as 1.7 percent and as high as 17.4 percent per annum between 1996 and 2014 (data: Bloomberg, my calculation), it is conceivable that any saving in nominal cost of debt of the foreign bond could be eaten away by adverse movements in the exchange rate. The gravity of this risk is brought to mind from the lessons learnt from the emerging market financial crises of 1980s and 90s, a high dependence on foreign debt coupled with a currency crisis could bring about a crash in the economy. Though I hasten to add that the risk for

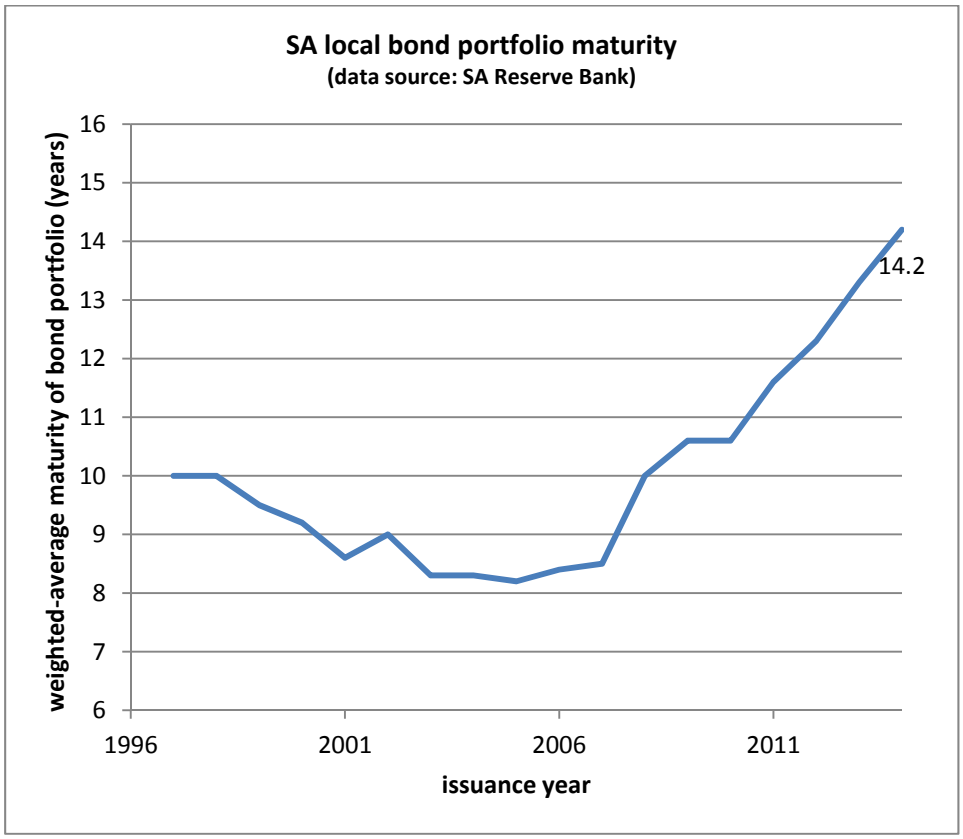
SA is vastly lower since the size of the foreign bond market to the domestic bond market is about one-tenth (see Figure 3.h).

Turning to the domestic bond market, one exemplary development has been SA's ability to extend the maturity of its local bonds, something Eichengreen and Haussman (1999) had found implausible for emerging markets due to 'original sin' as discussed in Chapter 2. It should be said that SA had been able to issue long-term bonds even in 1996, see Figure 3.i, but it seems to have been able to deepen this section of the market and thus been able to borrow proportionally more as also shown in Figure 3.i. The extension of its portfolio maturity over the study period can be seen in Figure 3.j. It has allowed for a reduction in so-called refinancing risk. Figure 3.k shows the current (as of fiscal year end 2014/15) maturity profile for SA's debt.

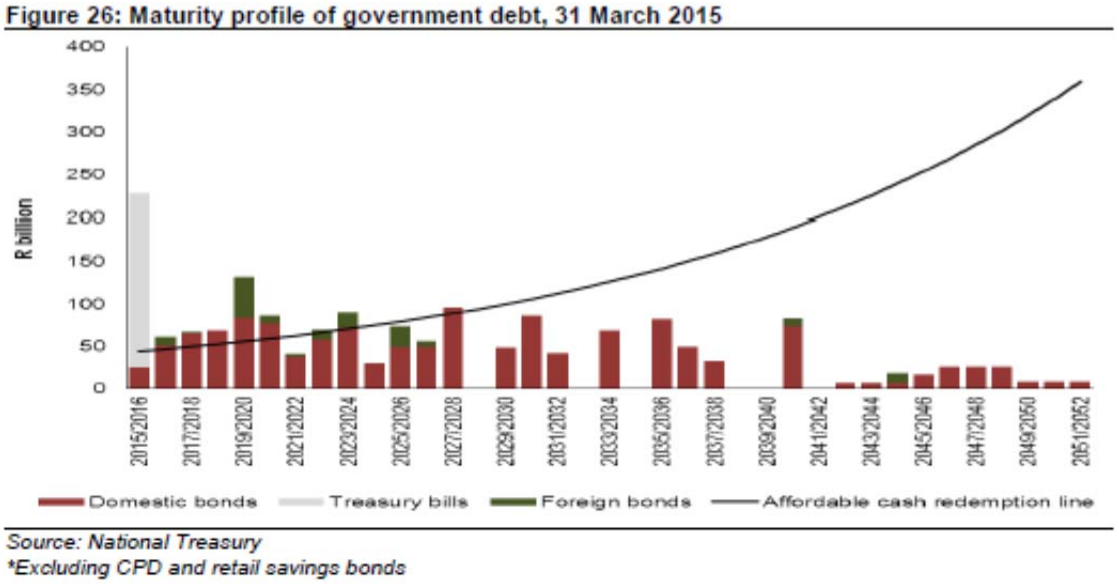
Figure 3.I – break down of local bonds by maturity buckets (data source: SA Reserve Bank)



3.j – SA local bond portfolio maturity(data source: SA Reserve Bank)



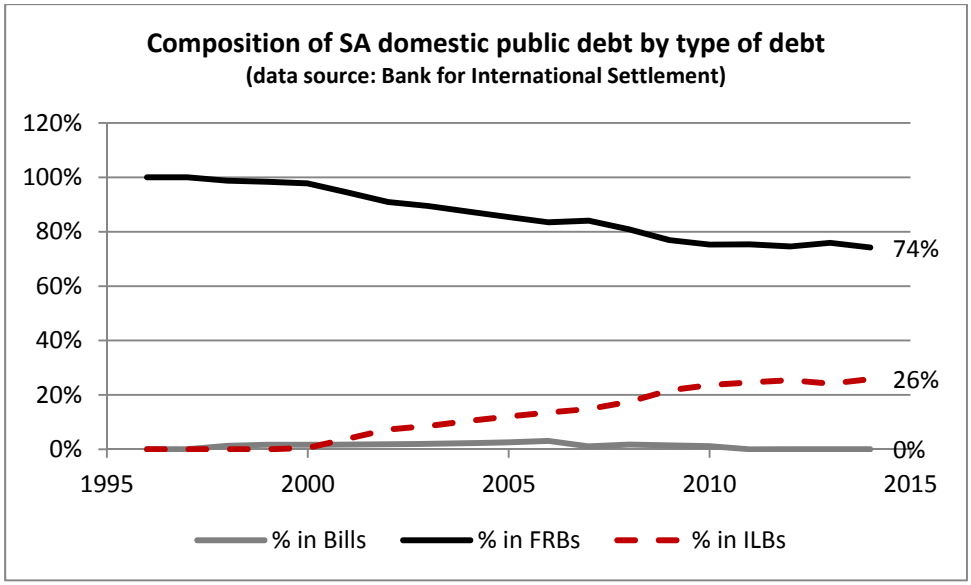
3.k – bond maturity profile (source: SA National Treasury, 2014/15, p. 35



Source: National Treasury
**Excluding CPD and retail savings bonds*

The government has relied on 4 types[10] of debt instruments: treasury bills (Bills), fixed coupon bond (FRBs), an inflation-linked bonds (ILBs), and a so-called three-legged bond (3LB). All are standard industry instruments save the 3LB. A 3LB is like a FRB in having a fixed cash payment but has "three maturity dates… Two years prior to the maturity of the bond, investors are given the option to split the bond into three maturities where the principal amount is split equally. Following the redemption date of the first maturity, the split becomes automatic" (National Treasury, 2014/15,p. 6). One could consider the 3LB as a FRB with an embedded option for the investor to extend the bond. Figure 3.l show the percentage composition of SA debt by instrument type. The 3LB has been included as a FRB. As we can see, the FRB is the dominant instrument, but the government has also come to rely more on ILBs lately.

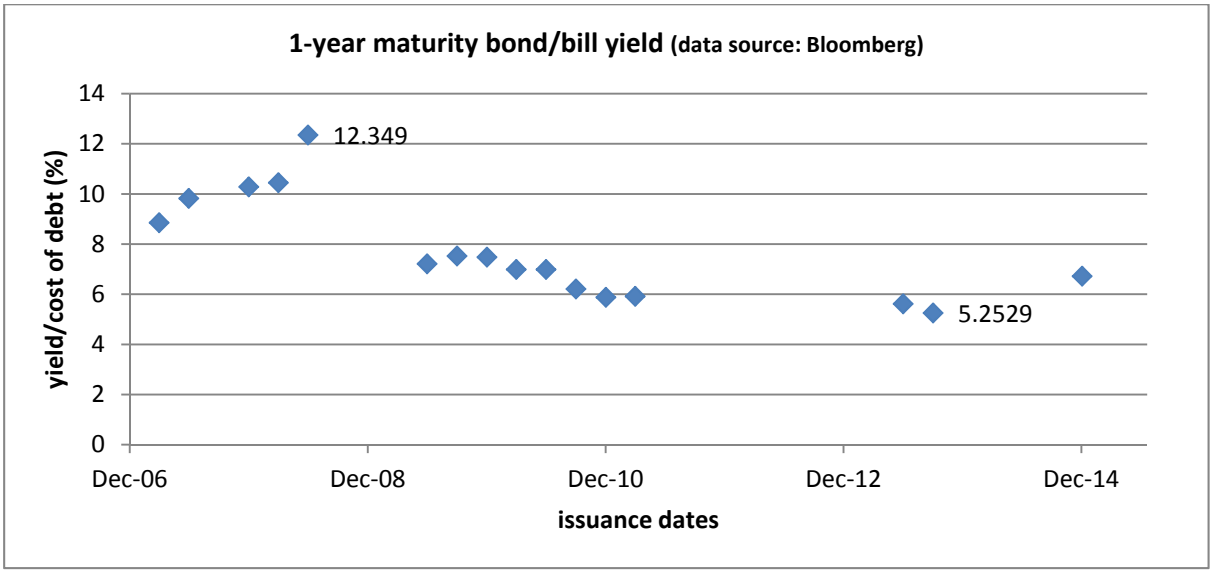
Figure 3.l – percentage issuance by type of bond instruments - data source: BIS



In terms of the resultant risks, FRBs provide the borrower with cash cost certainty whereas Bills and ILBs expose the borrower to uncertainty. This is because the government cannot know what the refinancing cost on the Bill or the cash interest (coupon) rate payment of the ILB until the Bill maturity date and the ILB interest rate reset dates. To appreciate the magnitude of this sc-called interest rate risk, consider the volatility of the one-year maturity bond/Bill as shown in Figure 3.m. Over the seven year period shown, the change in cost of one-year debt was just above 7 percent.

[10] In 2015, SA issued a sukuk bond but it is outside my period of study

Figure 3.m – change in yield of on-the-run 1-year maturity bond/bill (data source: Bloomberg)



The ramifications of the various risks, foreign exchange, refinancing and interest rate, will be discussed in Chapter 6 as part of answering the research questions. For now, to complete the motivations for government debt, I turn briefly to SOEs.

3.4 – State owned enterprises and their issuances

A discussion of SOEs really warrants its own in-depth paper, but a brief inclusion is necessary to provide a more complete picture of the domestic bond supply.

The SA government classify SOEs into three categories as summarised in Table 3.c.

Table 3.c– SOEs (category, description and credit ratings source: National Treasury, 2014/15, p.37 & 42)

Category (description)	Main entities	Credit rating agency ratings (S&P/Moody's/Fitch)
Schedule 2 (major public entities allowed to issue own debt as directed by governance board in conjunction with the National Treasury)	Eskom	BB+ negative outlook/ Ba1 stable/ BBB+ negative outlook
	Transnet Limited (Transnet)	Not rated/ Not rated/ AA negative outlook
	The Airports Company of South Africa (ACSA)	
	Trans-Caledon Tunnel Authority (TCTA)	

Schedule 3A (national public entities funded from national revenue or regulated levies allowed to issue debt in "exception circumstances"	South African National Roads Agency (SANRAL)	Not rated/ A3 stable/ Not rated
	National Housing Finance Corporation	
Schedule 3B (national business enterprises with operational and financial autonomy)	Rand Water	
	Umgeni Water	
	Development Bank of South Africa (DBSA)	Not rated/ Baa2 stable/ AA+ stable

Under current development and fiscal policy, the SOEs are mandated to be the government's drivers of economic development. Their capital expenditure budget and actual spend are provided in Table 3.d, extracted from the Ministry of Finance's debt management report

Table 3.d – capital expenditure of SOEs (source: SA National Treasury report, 2014/15, p. 38)

Table 13: Capital expenditure by state-owned companies, 2014/15

R million	Budget	2014/15 Outcome	% of budget
Capital expenditure	**109 600**	**103 700**	**95**
Of which:			
Eskom	*55 100*	*54 400*	*99*
Transnet	*30 600*	*33 900*	*111*
*SANRAL**	*9 700*	*7 300*	*75*
TCTA	*3 600*	*1 600*	*45*

Source: National Treasury
** Unaudited*

The capital investment programme requires funding of R103.7 billion which, including debt renewal , required debt issuance of R113.3 billion for the year. Of this, R74.5 billion or 61.3 percent, was sourced from the domestic market, including from commercial paper, domestic bonds and loans from domestic banks. The rest was financed internationally with foreign bonds as well as loans from development finance institutions. The composition of funding is shown by Table 3.e given by the Ministry of Finance's debt management report (SA National Treasury, 2014/15, p.38).

Table 3.e – funding composition of SOEs for budget year 2014/15 (source: SA National Treasury report, 2014/15, p. 38)

Table 14: Borrowing by state-owned companies, 2014/15

R million	2013/14 Outcome	2014/15 Budget	2014/15 Outcome
Domestic loans (gross)	**64 900**	**69 500**	**74 500**
Short-term	27 000	29 800	36 300
Long-term	37 900	39 700	38 200
Foreign loans (gross)	**37 500**	**43 800**	**29 200**
of which:			
Multilateral institutions	*10 300*	*8 500*	*15 200*
Export credit agency financing	*8 700*	*17 400*	*1 700*
Total	**102 400**	**113 300**	**103 700**
As percentage of:			
Domestic loans	*63.1*	*61.3*	*71.8*
Foreign loans	*37.2*	*38.7*	*28.2*

Source: National Treasury

Focusing on domestic bonds, Bloomberg shows the following outstanding amounts in Table 3.f

Table 3.f – outstanding bonds (data source: Bloomberg, as of November 2015).

Issuing entity	**Currency**	**Amount outstanding (millions)**
Airports Company South Africa	ZAR	891.5
Development Bank of South Africa	ZAR	5,121.6
Eskom group[11]	ZAR	25,762.6
Industrial Development Corp of South Africa	ZAR	803.3
Infrastructure Finance Corp	ZAR	25.3
South African National Road Agency	ZAR	4,286.7

The size of SOE debt is important in several respects. One is that the government guarantees some of that debt. This amounts to R485.1 billion, of which R224.9 billion is utilised, with Eskom usage 72.2 percent of the total (SA National Treasury, 2014/15, p. 40). Inclusion of the guarantees effectively raises the level of government debt, as previously mentioned.

Even though this paper's focus is on domestic debt, I need to flag that the foreign borrowings of Eskom, the only SOE to issue foreign debt, also potentially raises the level of foreign exchange risk for the government. In Euro-denominated debt, the Eskom group issuance is greater than the SA government's, at EUR 3,224 million versus the government's EUR 673 million . In US dollar-denominated debt, Eskom's U.S. $ 8.5 billion of debt is near the SA government's U.S. $ 10.4 billion

[11] Eskom issues under different legal entity names such as Eskom Holdings SOC Ltd, Edcon Holdings Ltd and Edcon Ltd. For the table I have amalgamated all as group debt.

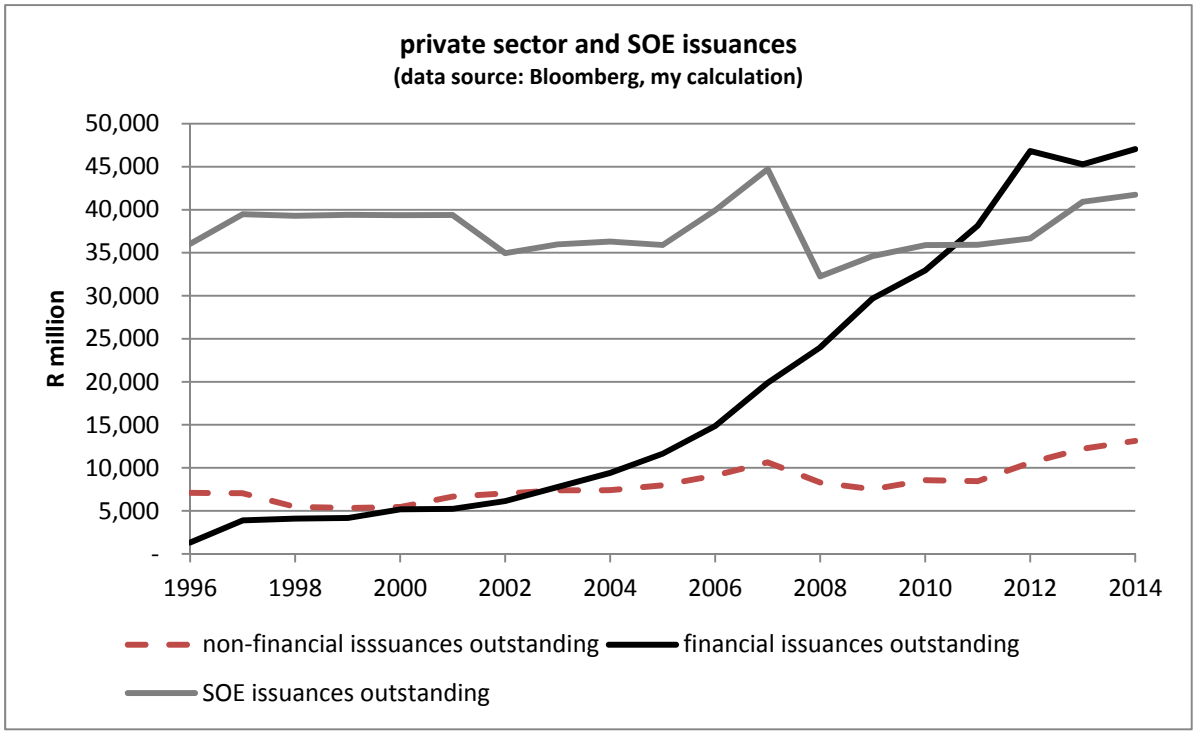
of issuance. In fiscal year 2014/15, Eskom issued U.S. $ 1.25 billion in debt of 10-year maturity with a cost of debt of 7.37 percent. Recently the bond traded to a yield of 8.56 percent which was a spread of circa 4 percent to the SA U.S. $ 10-year maturity bond.

Another risk is that the government and the SOEs 'crowd out' the other. In terms of managing that risk from a timing perspective, the National Treasury "monitors their progress, all SOCs are required to submit annual borrowing plans and quarterly updates on funding progress" (SA National Treasury, 2014/15, p. 37). There is also the risk that the SOE bonds 'crowd out' private sector bonds. I will discuss this further in Chapter 6, but to help answer that question, I turn next to private sector issuance.

3.5 – Private sector issuances

Figure 3.N shows the primary issuance history of the private sector, distinguished between the 'financial' and the 'non-financial' sectors. I have included the bonds of SOEs for the sake of comparison. It should be noted that these issuances are only those listed on the JSE, that is only publicly-traded bonds, and does not include any private issuances, that is where the contracts are bilateral between creditor and borrower. As Figure 3.n shows, in 1996, at the exchange's beginning, most issuances were by the SOEs, but from 2000 onwards, there has been a rise in private sector issuance (data on issuance by issuance year by issuer type summarised in Appendix 1, Table 1).

Figure 3.n – private sector issuance by year of issuance (data source: Bloomberg, my calculation).



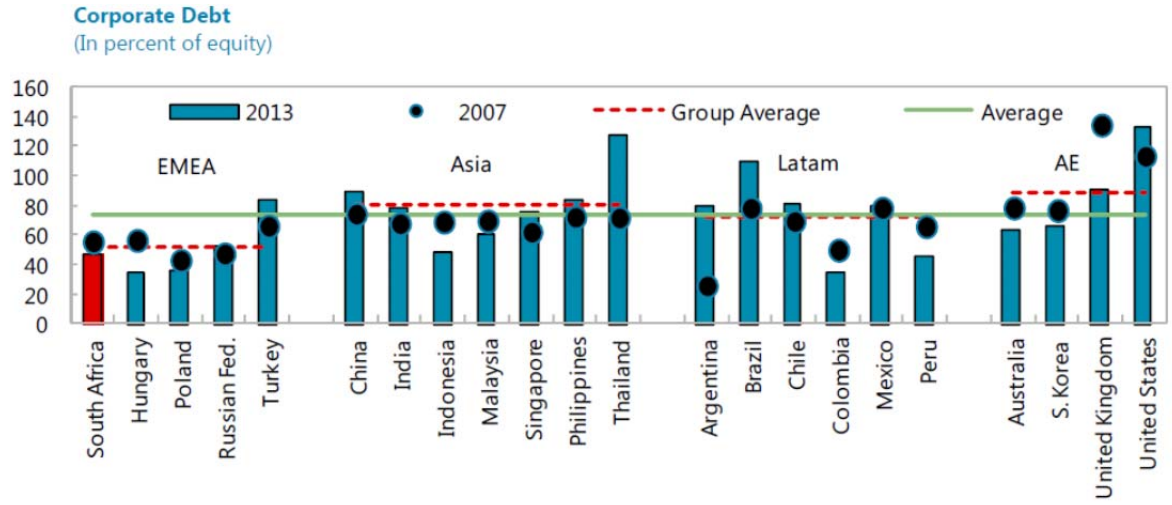
The domestic bond issuance of financials now outstrips SOE's. This is less a result of the number of issuers as their greater frequency of issuance. The banks are a major member of the sector and the motives for their issuance will be discussed in Chapter 5.

I turn to non-financial issuances, which whilst growing, is not at the same pace as the financials (or even the SOEs). Moreover the number of issuers and the issuance by industry has and continues to decline. There are many plausible reasons for this.

Literature suggests that private sector debt may be 'crowded out' by the size of the public sector borrowing, and certainly the low savings rate in SA and the large public debt provides intuitive reason that this could be a cause. Nevertheless the SA case does not match the statistical evidence of some of the research. For one, interest rates have been going down despite the increase in government supply, making that component of the cost of debt at least more affordable, not less, to potential issuers. There is also no clear evidence that domestic investors have moved away from the risky private sector to the less risky sovereign given the rate of bank bond issuance. In fact there is a possibility that the reverse is true, that SOE issuance paved the way or 'crowded in' non-bank issuance, at least in the early days of the bond market.

Another possibility is the relatively low demand for debt by South African corporates in general. As the IMF graph, Figure 3.o shows, South African corporate indebtedness is below the average for those of other emerging and middle income countries as well as the United Kingdom and United States.

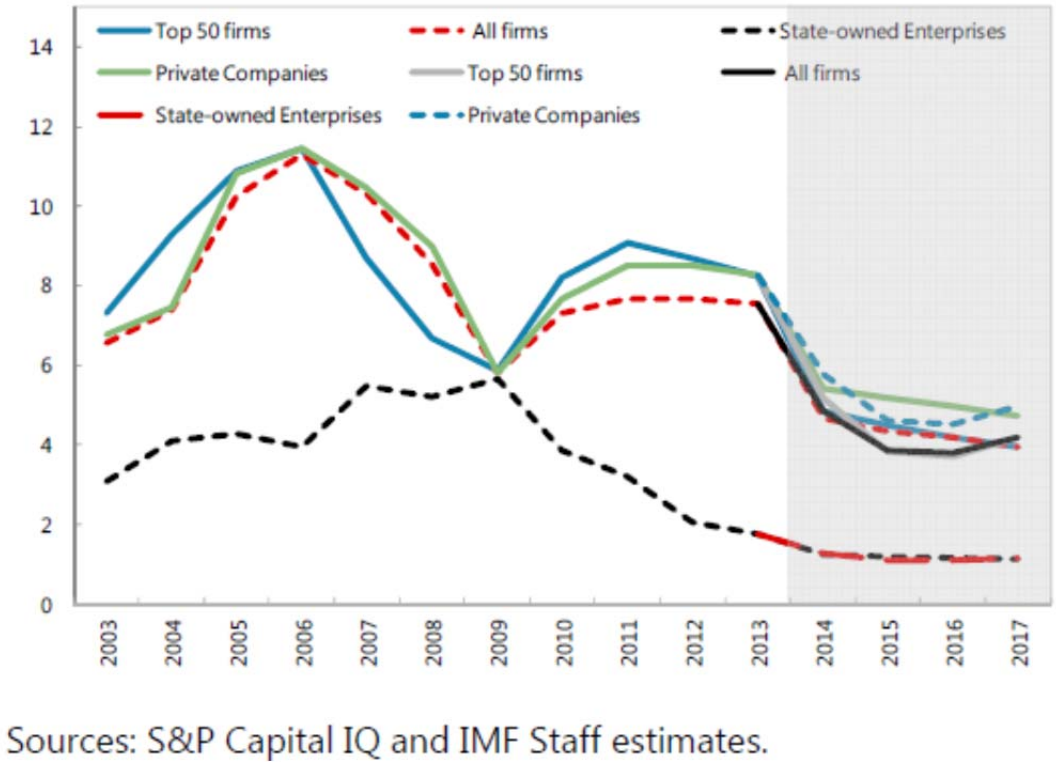
Figure 3.o – source: IMF, 2014, p. 15



Sources: Bankscope, BIS, BIS Triennial Central Bank Survey 2013, CVU , IMF, International Financial Statistics, and IMF Staff calculations.

The level of indebtedness can also be assessed via the level of potential debt capacity as measured by a leverage ratio like the interest coverage ratio (ICR). The ICR compares annual cash earnings to annual interest expense; the higher the ratio, the less vulnerable the borrower is to not servicing its debt and therefore the greater the capacity to borrow more. Figure 3.p shows an IMF study on the ICR of SA companies, including SOEs. From the figure, it can be seen that the private sector (the label 'Private Companies') have a coverage level of circa 6 times in 2013, which, all else the same, means a company can borrow more and still remain investment-grade in credit risk. (Note that in contrast, SOEs are far more vulnerable with coverage ratio closer to one time than two times meaning all else the same their debt is already below investment-grade level).

Figure 3.p – interest coverage ratios for SA companies (data source: IMF, 2014, p. 22).



Sources: S&P Capital IQ and IMF Staff estimates.

Another explanation may lie in the large sizes of the competing bank and equity markets. Whilst the bond market is 57 percent of GDP, the equity market is 288 percent and the bank market 112 percent (IMF, 2014, p. 12 & 33).

The public equity market, the Johannesburg Stock Exchange (JSE) is a far older and thus more established market than the domestic bond market. It was opened in 1887, one year after the discovery of gold to effectively fund the gold rush. As mining requires more capital than agriculture or trade - the main drivers of growth for other emerging markets – its funding propelled the rapid growth of the JSE (Hassan, 2013). In 2002, the JSE formed a strategic alliance with the London Stock

Exchange (LSE), with benefits such as the use of the LSE's trading platform, "more than just a change in technology platforms, this change improved the international visibility and acceptability of the JSE" which brought in greater trading volume (Mboweni, 2006, p. 10). Today, as Hassan (2013) notes the JSE is in the top 20 global stock exchanges by size and "is larger than the bourses of, for example, Mexico, Indonesia and Turkey – significantly larger economies" (p.1) - despite the various market downturns that followed the financial crisis.

In terms of valuation, the JSE equity market capitalisation exceeds the nation's GDP. There are only two other equity markets, Hong Kong's and Singapore's, that exhibit this type of valuation and whilst Hassan may find it "abnormal" (p.5) he also admits there is no reason for it to be lower until it is lower. The impact of this is that it provides a liquid and high valuation for companies wishing to raise funds.

For those companies not wishing to dilute ownership, there is also the large bank market. As Chapter 2 mentioned, banks offer intermediation that may be more beneficial to some borrowers. As the banks are a major and more direct competitor to the bond market, I will reserve deeper discussion for the sector in Chapter 5. Suffice it to say that the corporate bond market is at a severe disadvantage size-wise to the two more dominant funding markets.

I do not wish to make it appear as if choosing between the three sources of funding, equity, bank and bond are a choice of one or another. Indeed the markets are highly correlated, at least for the years from 2000 to 2014 as shown in Table 3.g. Though interestingly, a regression analysis shows weaker statistical relationships between all but GDP growth and growth in bank credit (see Appendix 1, Table 2)

Table 3.g – correlation study of movements in the JSE equity and bond markets, bank credit and GDP

Correlation	JSE all share index market capitalisation	Bank credit to the private sector	Financial and corporate bonds	GDP
JSE all share index market capitalisation	1.000			
Bank credit to the private sector	0.925	1.000		
Financial and corporate bonds	0.965	0.974	1.000	
GDP	0.896	0.992	0.954	1.000

The bond market itself as well as regulation may also impact the supply of non-financial issuance, and I will discuss these factors in Chapter 4 when I discuss factors that inhibit local demand.

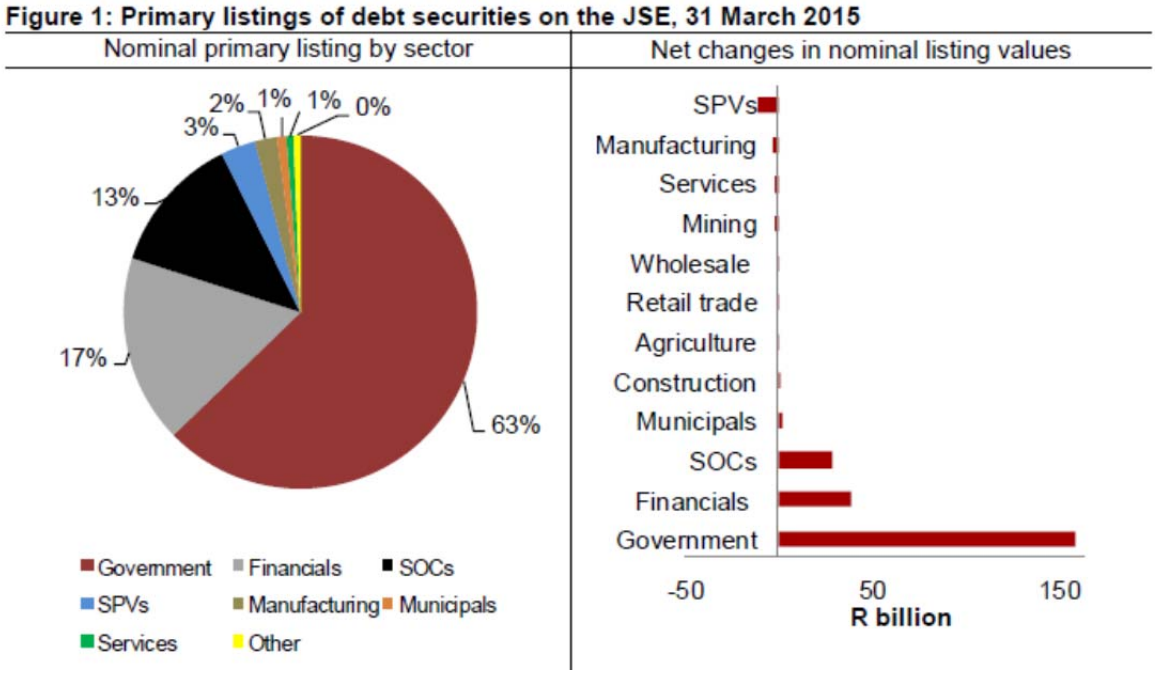
3.6 – summary of SA local bond supply

The foregoing discussion brings out a few key descriptions about the SA local bond market

- It is heavily dominated by government issuances driven by the need to fund the fiscus
- The SOEs are large borrowers and are at vulnerable levels of indebtedness
- The financial private sector, whilst few in issuing entities, are frequent issuers such that the size of their bonds outstanding now outstrip SOEs
- Issuance by the non-financial private sector has grown at a much slower pace than the other types of issuers. Moreover, the number of issuers and of industry has been declining.

This can be summed up visually with Figure 3.q from the SA Debt Management report.

Figure 3.q (data source: SA National Treasury, 2014/15, p.3)



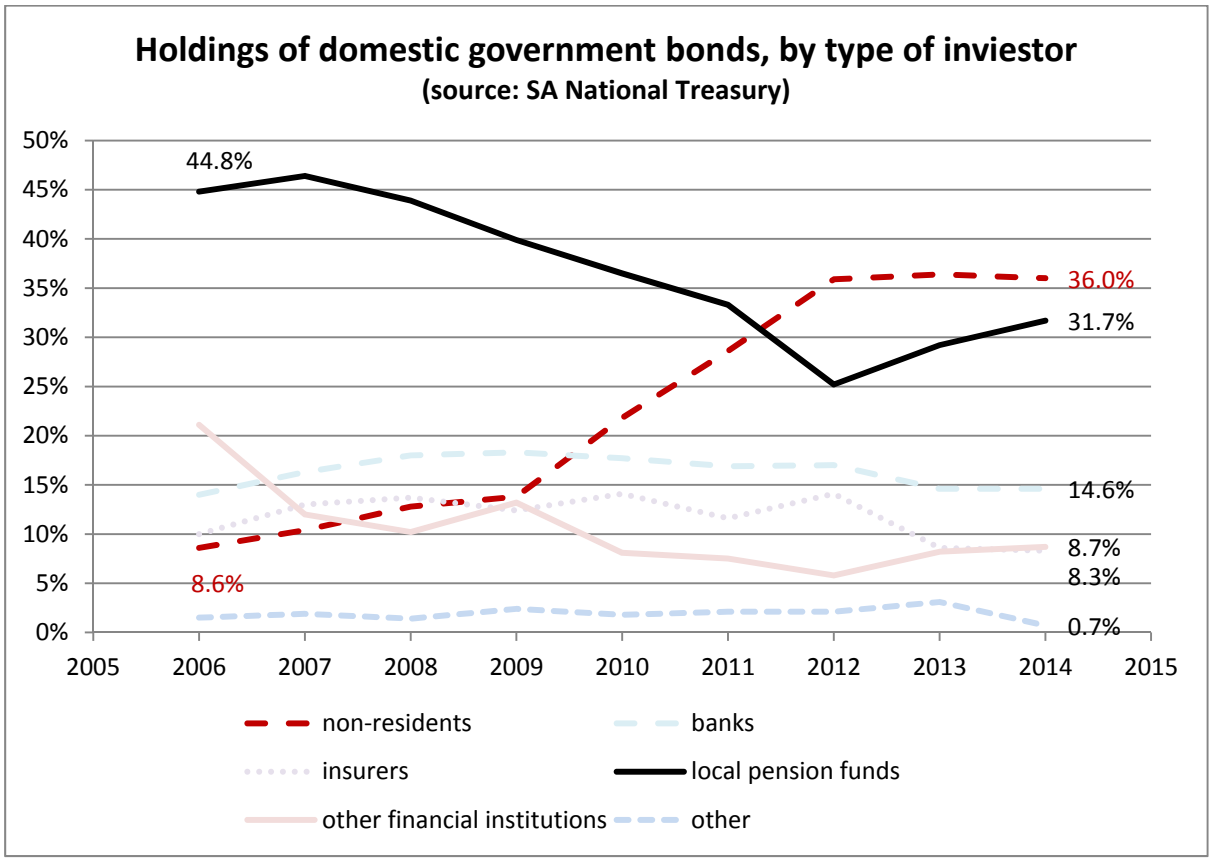
Chapter 4 – South African government bond investors

A market is the actions of suppliers and demanders, this chapter addresses the demanders or investors in SA local bonds. I will start with an overview of investors (Section 4.1) before looking at domestic investors (Section 4.2) and foreign investors (Section 4.3).

4.1 – overview of investor demand for South African local currency debt

South African domestic bonds are held by both South African residents and non-residents as shown in Figure 4.a.

Figure 4.a - holdings of domestic government bonds by type of investor.



Some may express surprise that foreigners hold local bonds as the use of the description 'domestic' and 'local' may suggest bonds issued for domestic or local investors only, but foreigners may hold the bonds too, openness of capital flows allowing. This is not just the case in emerging countries but also in developed countries, "Foreign investors hold at least 20 percent of government bonds in markets as diverse as Canada, Sweden and the United States" (Bae et al, 2006, p. 102). In the case

of South Africa, foreigners have come to hold a significant amount of domestic bonds, at 36 percent, indeed they have become the largest group of investor.

SA residents hold 64 percent of government bonds. Of these, the largest group is the pension funds, though as a percentage its holdings have been declining. In 2006, pensions held 44.8 percent of bonds but this has dropped to 31.7 percent by 2014. The next largest domestic group is the domestic banks, though it should be said that they hold not so much to invest but as part of their primary and secondary dealership, for central bank reserve requirements, and as collateral for interbank trades or 'repo' type trades. The group labelled 'Other financial institutions' includes mutual funds and 'Other' includes retail investors.

Next, let us consider what the investors are investing in. As mentioned, the SA government uses four types of instruments, but the two most important are FRBs and ILBs. As Table 4.a shows, FRBs are the bulk of issuance, at a ratio of approximately four to one ILB. The table also shows that ILBs are mainly held by local investors, with the pension funds holding 64 percent – assuming "Private self-administered funds" are personally-managed pension funds. In contrast, the largest group holding FRBs are foreigners, at 42 percent of total, or 50 percent of FRBs not held by the Monetary authority (for monetary policy management).

Table 4.a (data source: National Treasury including sector categorisation as of end September 2015, my calculations)

Sectors	ILBs (R million)	*% holdings of ILBs*	Fixed rate bonds (R million)	*% holdings of FRBs*	% total holdings
Foreign sector	8,037.89	*3%*	458,430.26	*42%*	34%
Monetary authorities	47,383.87	*18%*	186,839.95	*17%*	17%
Long-term insurers	11,746.06	*5%*	94,801.67	*9%*	8%
Short-term insurers	1,818.65	*1%*	6,651.63	*1%*	1%
Private self-administered funds	36,284.90	*14%*	34,821.63	*3%*	5%
Official pension funds	129,373.38	*50%*	217,125.99	*20%*	26%
Other financial institutions	19,280.12	*7%*	95,525.11	*9%*	8%
Other sector	3,209.24	*1%*	6,287.53	*1%*	1%
Total	257,134.10		1,100,483.78		

In the next two sections, I will consider why residents and non-residents prefer different bond types.

4.2 – Local savings market

4.2.a – who are the local investors?

The South African savings rate is low compared to its peers, see Figure 4.b and Table 4.b, which impacts the level of domestic investment potentially restraining economic development. "In general, the spending and saving behaviour of individuals is determined by various factors such as their material needs, traditions, standard of living, existing indebtedness, net worth, disposable income, the stance of the business cycle, institutional and regulatory considerations and fiscal and monetary policy" (Mnyande, 2010, p. 3).

Figure 4.b – Gross national savings as percent of GDP (data source: IMF World Economic Outlook database)

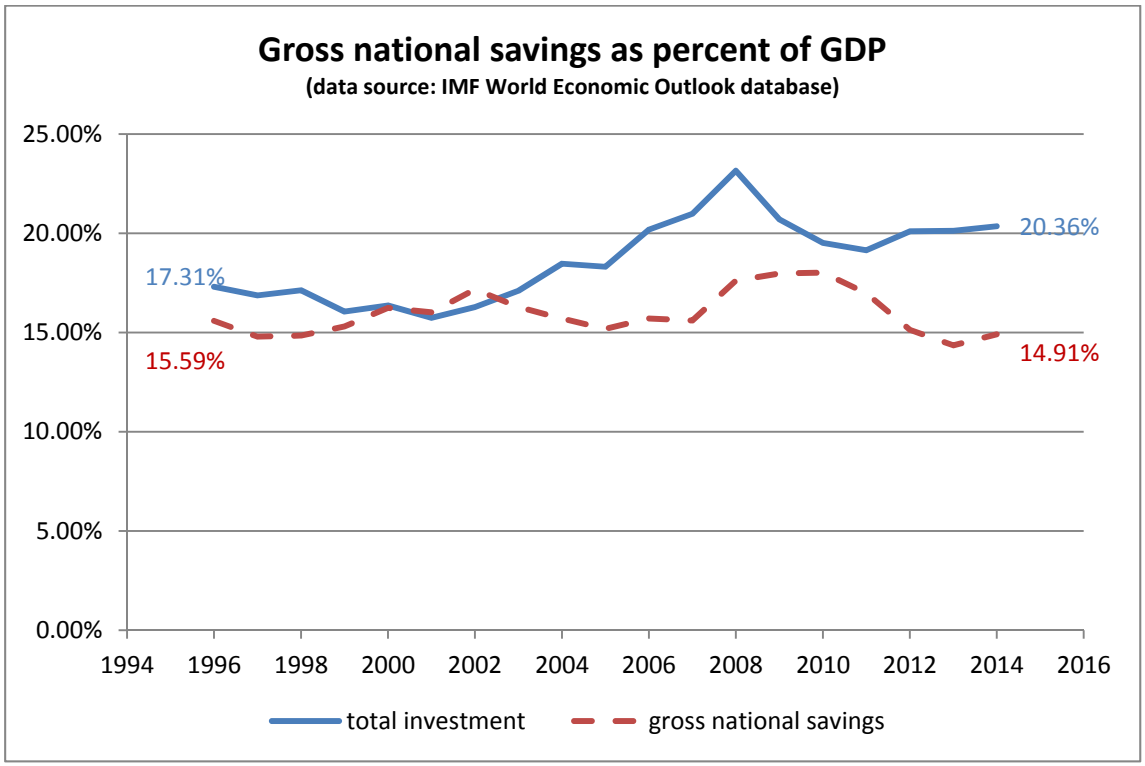
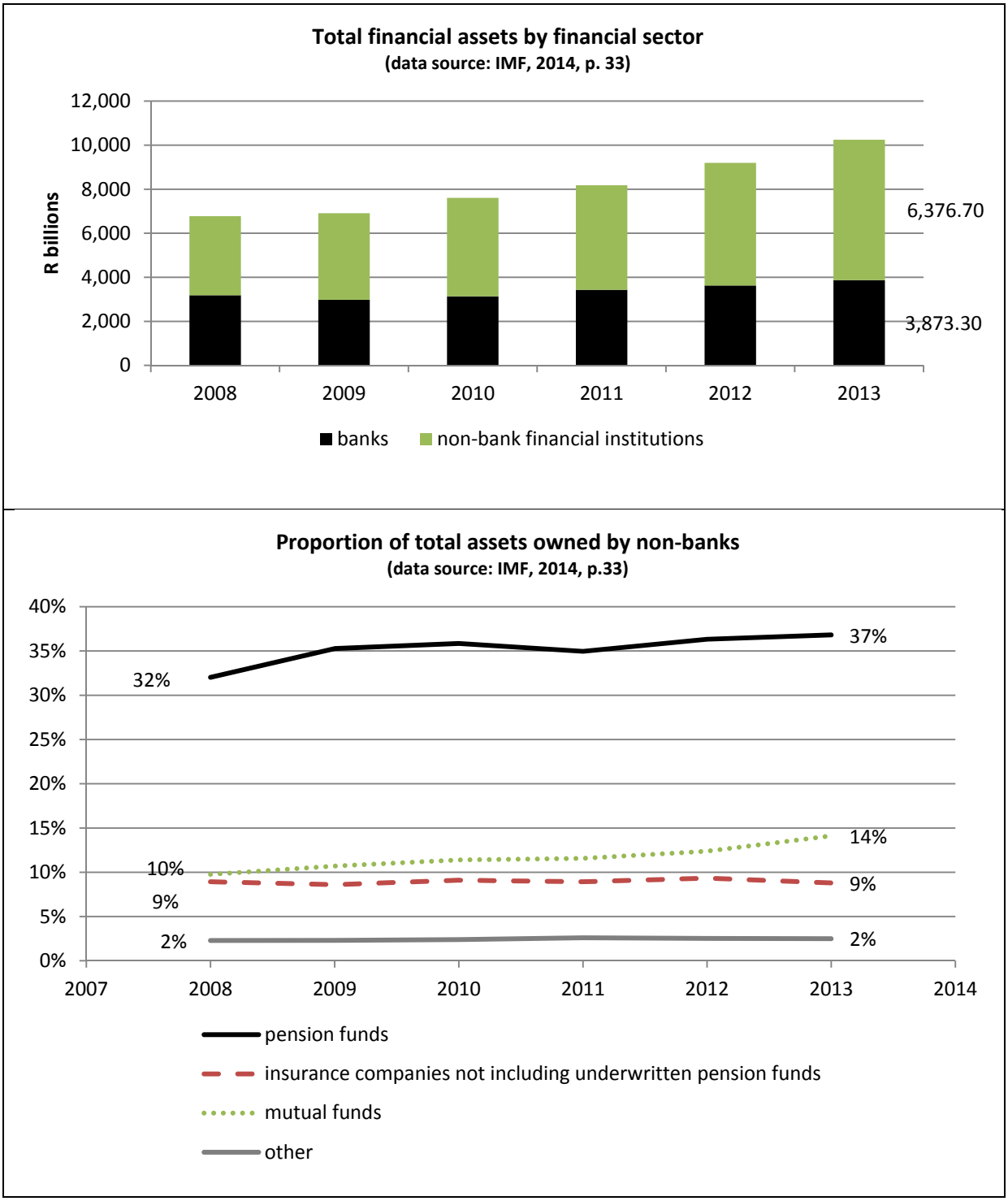


Table 4.b – comparison investment and gross national savings of High middle income countries (data source: World Bank)

High middle income country	Total investment (% of GDP)	GNS (% of GDP)
Brazil	20.04%	16.16%
Bulgaria	21.55%	21.60%
China	46.85%	48.87%
Columbia	24.44%	19.43%
Costa Rica	18.75%	14.29%
Dominican Republic	21.20%	18.07%
Equador	28.00%	27.17%
Gabon	25.68%	36.84%
Jordan	21.33%	14.31%
Malaysia	25.20%	29.83%
Mexico	21.93%	19.86%
Namibia	30.02%	23.42%
Paraguay	15.24%	15.29%
Peru	26.80%	22.74%
Romania	23.01%	22.55%
South Africa	20.36%	14.91%
Thailand	25.61%	29.41%
Turkey	19.03%	13.35%
average	*24.17%*	*22.67%*
median	*22.47%*	*20.73%*

The two figures of Figure 4.c show the distribution of financial assets. The first show the distribution between bank and non-bank and that the non-bank sector dominates. The second figure shows the breakdown of the different non-bank segment including percent ownership of total assets. Pension funds are the largest group followed by mutual funds and then insurance companies. Note these types of funds are typically managed by professional money managers, in other words asset managers manage 60 percent of savings in SA.

Figure 4.c – Total financial assets by bank versus non-bank financial sector (data: IMF, 2014, p.33) (top); Proportion of non-bank assets by type of fund (data: IMF, 2014, p.33) (bottom)



The pension funds are regulated, with the key act the Pension Funds Act, Regulation 28. Amongst its regulations is a limit on foreign assets. This was raised to 25 percent from 15 as of 2011, but still makes pensions an effective captive domestic investor.

Of the pension funds, the largest is the Government Employee Pension Fund (GEPF) which manages its money through the Public Investment Corporation (PIC). PIC managed assets comprise 41 percent of total pension assets as of 2013 (IMF, 2014, p.33). Because the PIC is so significant, I will discuss it in greater detail in Chapter 5. For now, I will not distinguish them from general pension funds.

4.2.b – the appeal of FRBs and ILBs

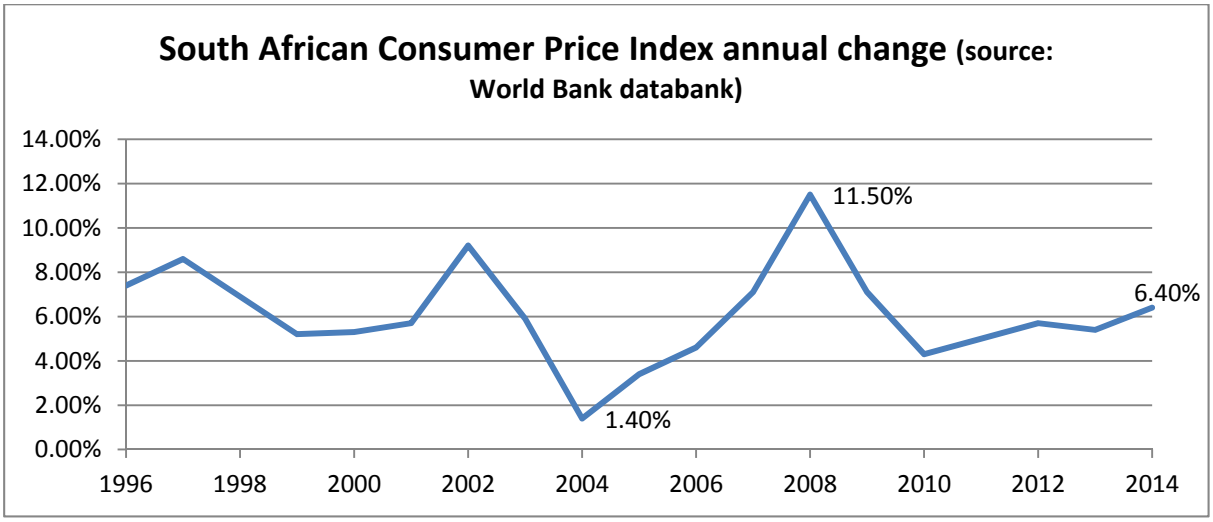
The two most common forms of bonds are FRBs and ILBs.

The main appeal of FRBs is its so-called 'fixed income' nature[12]. This makes the asset suitable for investors needing some degree of surety of cash flows. This may include risk-adverse investors and specialists funds such as insurance and defined benefit pension funds that have deterministic minimum cash liabilities. Bonds also offer risk diversification in a portfolio of mixed assets which may include equity and commodities.

At the same time a local investor may be concerned that inflation eats away at the spending value of the 'fixed income' investment. Indeed, research finds that domestic investors are unwilling to lend long-term in the face of high inflation (Rogoff and Reinhart, 2009) or domestic investors prefer to hold their country's debt in foreign-currency debt "to hedge themselves against inflation risks" (Mehrotra, 2013, p. 36). This concern is not without merit for South Africa. Whilst its inflation rate is not high relative to other emerging countries, it has displayed volatility such as a swing by more than 10 percent from 2004 to 2008, see Figure 4.d.

[12] in that cash flows are pre-set, with cash returns pre-determined by a 'coupon' rate on principal to be paid on pre-determined dates and principal returned on a pre-agreed 'redemption' or 'maturity' date.

Figure 4.d – South African Consumer Price Index annual change (source: World Bank database)



This concern may thus explain the prevalence of ILBs in SA. For ILBs offer inflation protection for local investors. Of course, this means that the risk is borne by the governmental debt management office.

The first ILB was issued in 2000 (SA National Treasury, 2011/12, p. 7) and issuance to date is shown in Table 4.c. ILBs are issued on a mutually beneficial basis to both the government and the investor. Unlike FRBs, which are sold at regularly scheduled auctions to primary dealers who are obliged to bid, ILBs issuances are not scheduled and there are no primary dealers. Instead ILBs are issued directly to end investors who are not obliged to bid but at the same time the government is also not obliged to issue the full amount (SA National Treasury, 2011/12). Even though ILBs are labelled 'marketable' meaning tradable on the JSE, the liquidity in the secondary market is very low. The highest turnover ratio, which measures the trading volume as compared to the outstanding amount, for any ILB issue was six times whereas the lowest ratio for any FRB issue was eight times (SA National Treasury, 2012/13, p. 5). The low level of trading is despite government efforts to improve liquidity with a 'repo' facility which allows an investor to borrow against the ILB for up to 28 days (SA National Treasury, 2012/13, p. 6). Effectively the ILB is not a general investment instrument but the purview of the pension fund industry.

Table 4.c – history of issuance of ILBs (data source: Bloomberg)

issue date	ILBs issuance (R million)
20-Mar-00	4,212.67
30-May-01	4,156.12
2-May-02	568.62
20-Aug-03	4,786.09
27-Sep-07	3,761.29
9-Jun-10	2,257.67
17-Jun-10	3,009.19
4-Jul-12	3,462.79
4-Jul-12	3,788.42
11-Jul-12	3,569.12
17-Jul-13	2,114.39
15-Jul-15	321.98

4.2.C – other factors that affect local demand

There are two market infrastructure factors that impacts local demand. One is the JSE bond indices and the other is regulation.

Bond indices in general are important to investors globally but I believe them to play an outsized role in SA. An index is important because its performance is usually used as a short hand for the performance of the market as a whole. In this way, the performance of the index casts its shadow over the entire market – for instance if an index is said to have gone down, in the first instance investors will assume all bonds including those not in the index have gone down, and may price and trade accordingly. Secondly, investors cannot allocate research and other investment resources to all potential assets and must choose which assets to follow, those followed have a far greater chance of investment than those that are not followed. The assets that are prioritised are those in the index. This is especially the case for fund managers who are 'benchmarked', or whose performance is gauged, to an index, and as discussed, the SA saving landscape is dominated by fund managers.

In SA, the main bond index is the JSE Composite All Bond Index (ALBI) which tracks 20 national government bonds and "other", where the "other" is dominated by SOE issuances due to the inclusion criteria of bond liquidity and market capitalisation which favour large issuances (source: JSE

website[13]). The ALBI tracks fixed rate bonds, and there is a version that tracks floating rate bonds, the Composite Inflation Linked Index (CILI) though this only follows 15 bonds, also dominated by government and SOE issuances (see Appendix 2 Table 1 for composites of both the ALBI and CILI). The ALBI or the CILI is likely to be a popular benchmark for institutional fund managers. It is also trying to attract mutual fund attention. On 18 March 2015, fund manager STANLIB launched a "passive" mutual bond fund that tracks the ALBI accompanied by the following statement: "The changes to the method of calculating indices now make them appropriate for index funds, where previously bond indices included illiquid assets and were not replicable. For this reason, bond index funds are a relatively new phenomenon in South Africa, but are poised for growth" (source: Stanlib website[14]).

The JSE has introduced two other indices to cover the non-governmental sector which includes bonds of SOEs that do not enjoy an explicit government guarantee (JSE website, 2015). In August 2014 the Top 30 Credit Index was launched. It consists of the 30 bonds that are both largest by issue size and historical liquidity, but capped at 6 bonds per issuer and 15 percent weighting by issuer. There is both a fixed rate bond and a floating rate bond version (see Appendix 2 Table 1 for components of the Top 30 Credit Index). As the Credit Indices were set up only a few months before the end of my study period, it is difficult to evaluate their significance on the SA investment landscape. Nevertheless it should be noted that the state still consists of circa half the index in the form of bonds issued by municipalities, state-controlled utilities, and SOEs though their bonds do not have implicit government guarantees. The other half of the index is made up of the private sector, with the largest industry the banks (JSE, 2015).

As investors are predetermined to focus on the bonds in the index they follow, this means market focus is biased towards government, SOE and bank issuances and biased against those issuers not in the index which are the non-financial issuers. This means non-financials enjoy less visibility and market support which may dis-incentivise to further issuances.

Regulation also impacts local demand, or at least the large pension sector which is large. As mentioned, Regulation 28 governs pension funds and was amended in 2011. It raised the maximum that a pension fund can invest in bonds to the same level as for equity, 75 percent, but only for government debt and bank debt. The ceiling for listed bonds of SOEs and non-bank companies is lower at 50 percent (Republic of SA, Regulation 28, amendment 7 March 2011). In other words, a pension can invest up to 75 percent of its assets in either bank equity or debt, 75 percent in non-

[13] https://www.jse.co.za/services/market-data/indices/fixed-income-index-series/all-bond-indices
[14] http://www.stanlib.com/newsatstanlib/Pages/STANLIBlaunchesBondIndexALBITrackingFund.aspx

bank company equity but only 50 percent in non-bank company debt. The regulation thus creates negative bias for non-bank bonds.

4.3 – foreign investors

4.3.a – Foreign demand for emerging market local bonds since the global financial crisis of 2008

Before we consider foreign investment in South Africa, it would be useful to consider foreign ownership of emerging market bonds since the global financial crisis of 2008.

First, we must recognise that foreign investors' motivations and risk concerns of local bonds differ from local investors'. For one, inflation plays a lower or indirect role[15]. The bond's primary appeal is the returns above that of investing in the developed market, the so-called 'spread'[16]. Foreign investors are concerned about currency volatility as the emerging market currency cash flows need to be converted back to the investors' currency of domicile (Fabozzi and Garlicki, 1987) and the likely volatility of the spread. Traditionally, foreign investment in emerging markets considered this risk and benefit as part of the management of a global asset portfolio.

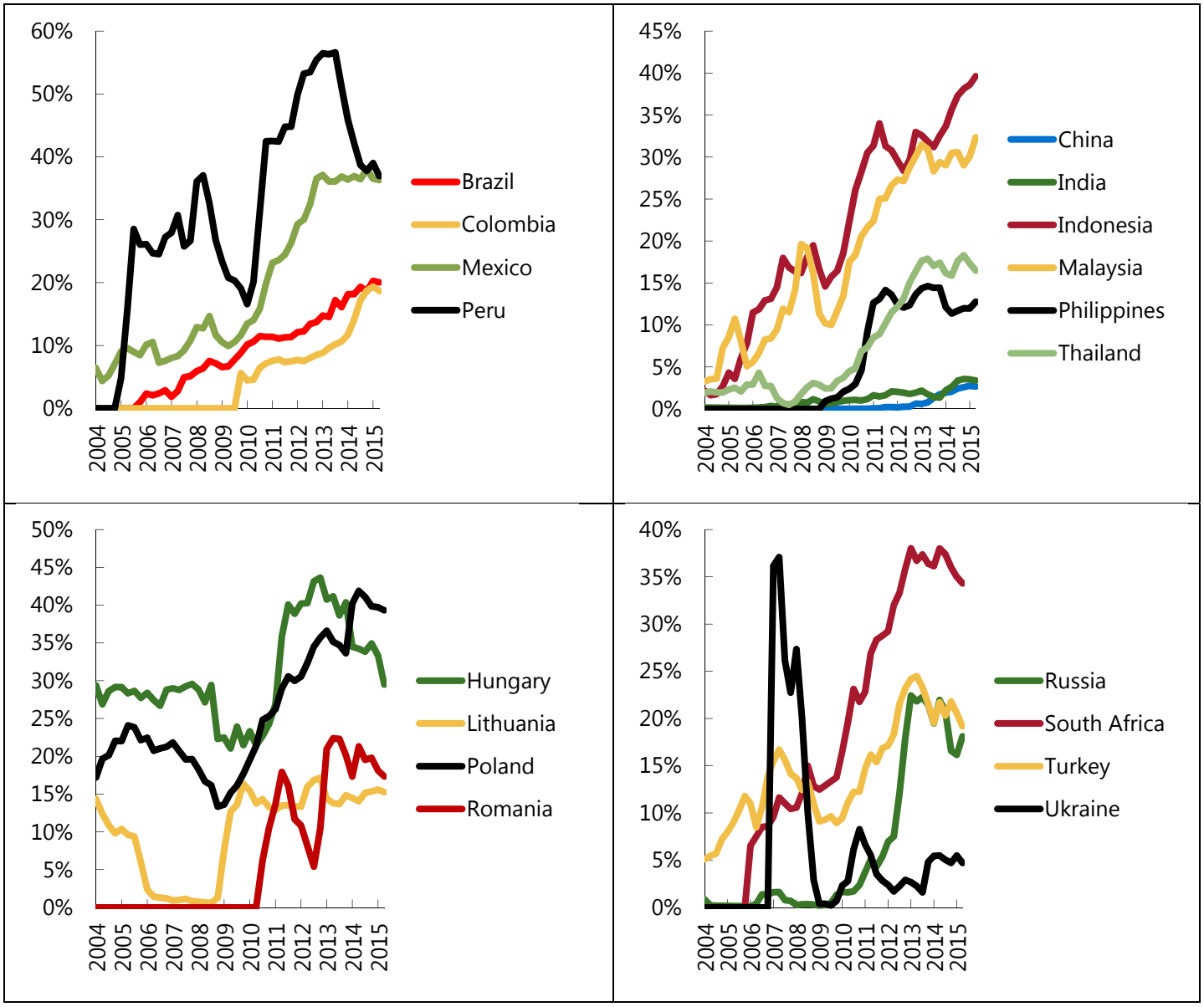
This strategy changed significantly from 2008 when the global financial crisis took hold. For returns on developed markets fell as a consequence of actions by central banks attempting to re-stimulate their economies – such as the Quantitative Easing programme of the U.S. This left large holes in those savings portfolios. As Felman et al (2014) of the Pew Center on the States observed, in 2010 "there was a US$ 1 trillion gap between the US$3.4 trillion in pension, health care, and other retirement benefits that States have promised their workers and the US$2.4 trillion that they have set aside to pay for them" (p. 70). A search for a way to fill that gap was needed by the pension – and non-pension – funds. Investors turned to emerging markets to try to fill that gap.

Between 2010 to 2012, Arslanalp and Tsuda (2014) find that foreign investors invested half a trillion U.S. dollars into emerging market bonds, not just foreign bonds but also local currency bonds. Figure 4.e shows the rate of investment in emerging market local currency bonds.

[15] The local inflation rate is not necessarily a primary risk for foreign investors since it does not affect their spending power, though inflation's feedthrough to nominal rates may also negatively affect marking-to-markets for foreign investor too.

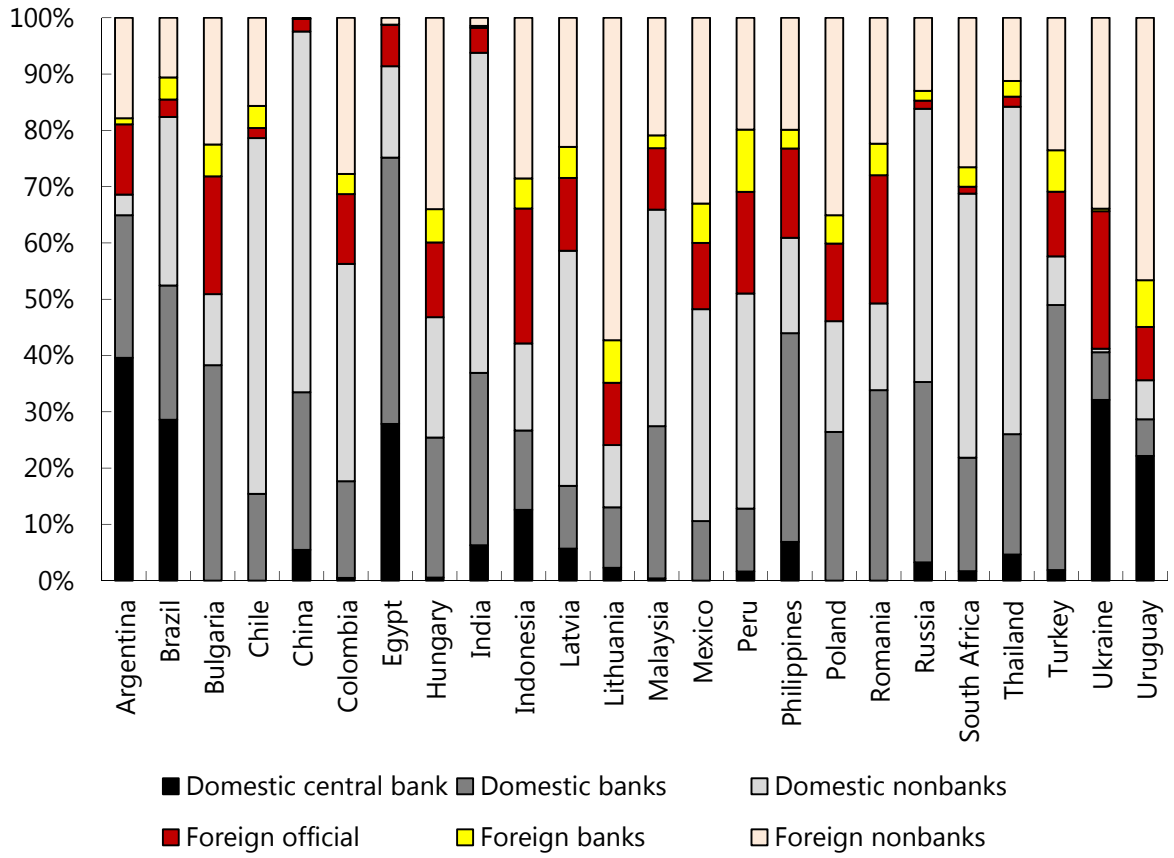
[16] The "spread" is calculated using different methodologies resulting in some variations of values. But for intents and purposes of this paper, I will ignore these subtle differences and speak of the general calculation used by Bloomberg.

Figure 4.e – Foreign holdings of local-currency emerging market government bonds as percent of total (source: Arslanalp and Tsuda, website found http://www.imf.org/external/pubs/ft/wp/2014/Data/wp1439.zip)



With few exceptions, the rates of investment were positive or constant for all the emerging countries. Such degree of rapid inflow disturbs the previous balance of domestic versus foreign investors, such that as Figure 4.f shows, some countries like Lithuania saw 63 percent of their local bonds owned by foreign asset managers. (To be clear, foreigners had been holding a significant proportion of Lithuania's bonds pre-crisis, at 33 percent in 2004, but the point is that holding has close to doubled percentage-wise). For South Africa, as Figure 4.A above already showed, foreign ownership rose from 8.6 percent in 2006 to 36 percent by 2014 – with the greatest rate of increase between 2009 and 2012 – suggesting the South African experience is in line with that of many of the other emerging markets.

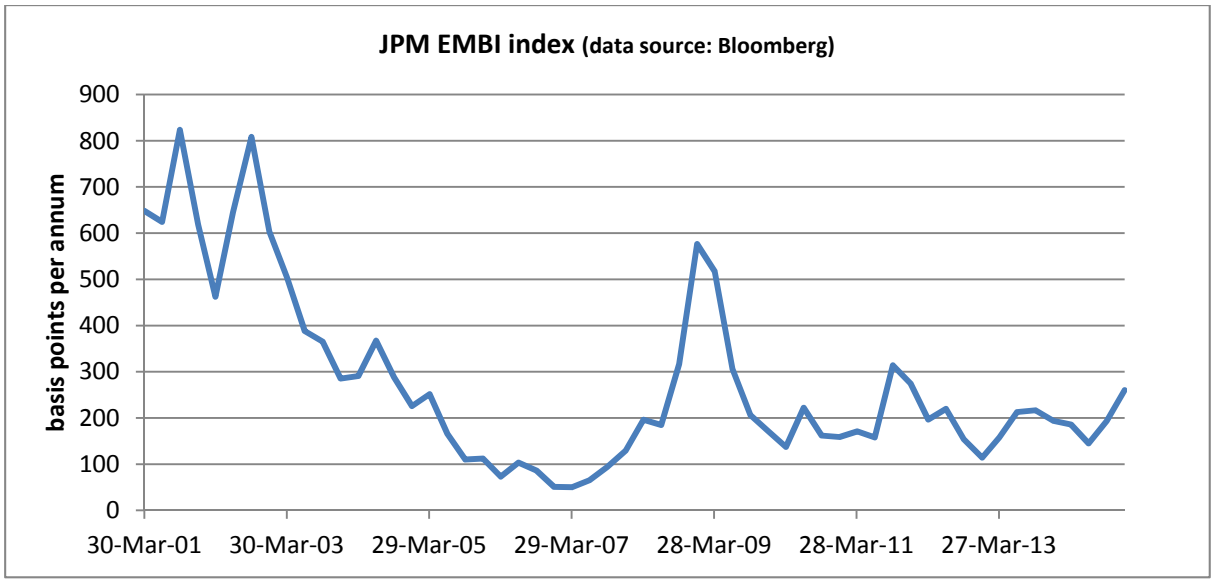
Figure 4.f– Percentage investment by type of investor of emerging market debt (local and foreign currencies) as of second quarter 2015, source: http://www.imf.org/external/pubs/ft/wp/2014/Data/wp1439.zip



For the invested countries, there are benefits and disadvantages of foreign holdings. The benefits of having foreigners own your bonds include a lowering of the cost of debt. For one, foreigners raise demand over and above domestic demand putting price pressure upwards and thus yields – or cost of debt – downwards (Arslanalp and Tsuda, 2014). Felman et al (2014) refers to a Peiris (2010) study that finds that for every 10 percentage point increase in foreign holdings, the cost of debt declines by about 60 basis points. For another, it improves liquidity, as discussed in Chapter 2, which should reduce the illiquidity premium demanded. Thirdly, with foreign professional asset managers (the 'Foreign nonbank' category of Figure 4.F), their "desire for portfolio diversification, can lead to a convergence in real interest rates" (Felman et al, 2014, p. 4).

One way to observe a composite of emerging market costs of debt is via the spread of a much-followed index like the JPMorgan Emerging Market Bond Index (EMBI) to a benchmark U.S. Treasury. This is shown in Figure 4.g.

Figure 4.g – JPMorgan EMBI index spread to U.S. Treasury bonds (data source: Bloomberg)



The crash of the U.S. sub-prime housing market (summer of 2007) saw the EMBI spread increase following a number of years of decline. The sharp spike in the spread in 2008 coincides with the bankruptcy of Lehmann Brothers which saw the crisis spread across the globe. It remained elevated as investors remained cautious but then fell as the half of U.S. $ 1 trillion came to be invested in emerging market bonds.

The major risk of foreign investment is that the surge in foreign inflow could result in a surge back out (Felman et al 2014). This risk is greater the more investors are motivated by the low yield in the developed markets rather than the 'investment story' of the invested country for investors who are indiscriminate going in are likely to be indiscriminate going out. Arslanalp and Tsuda (2014) believe the half a trillion U.S. dollar worth of investments are "less differentiated" (p.4) based on inflows to all but the most politically unstable countries. But countering this is the fact that many of these countries saw their economic outlook improve and many saw their credit rating agency creditworthiness scores improve – though it must be acknowledged that the credit improvement could have been due to capital inflows in the first place. An IMF survey of fund managers (2011) also reports that fund managers claim to be "more risk conscious, including regarding the risks associated with liquidity and sovereign credit" (IMF 2011, p.1 of Chapter 2).

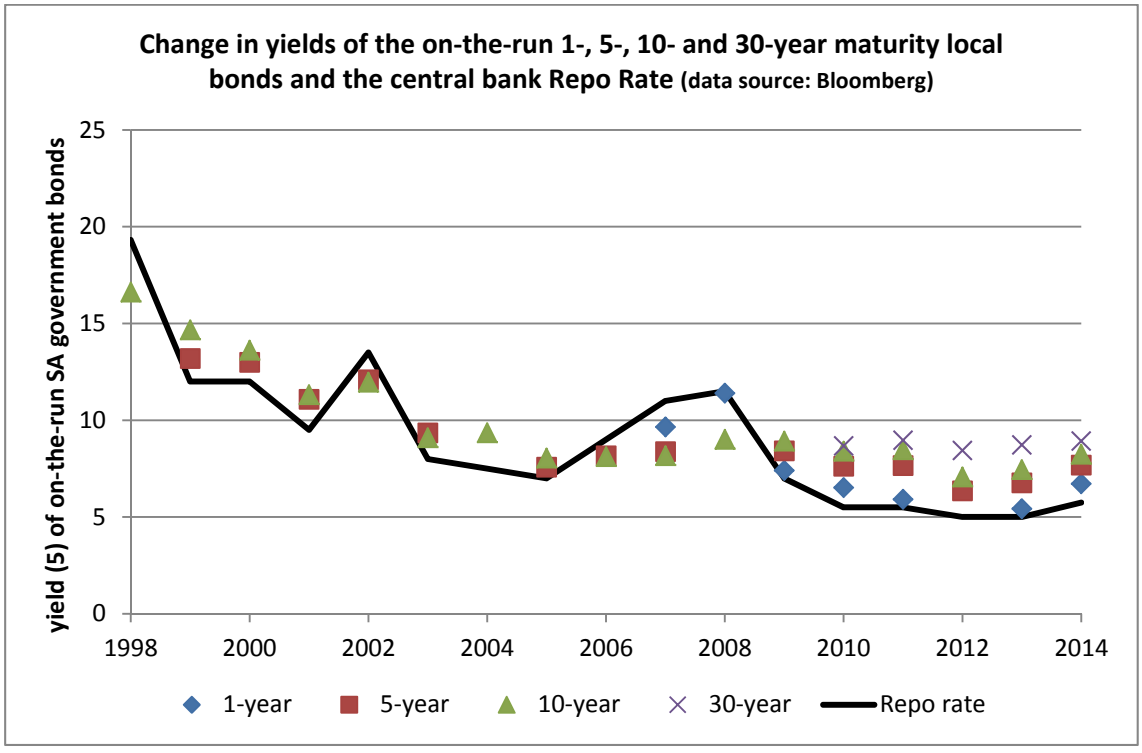
Returning to South Africa, the key question is to what degree has foreign investment in local bonds been driven by the South African 'story' versus indiscriminate, broad-based emerging market investment?

4.3.b – the appeal of SA bonds to foreign investors

Let us take a look at the appeal of SA local bonds through the eyes of discerning foreign investors, i.e. try to identify the appeal of the SA 'investment story'.

First, let us consider the return on investment. Figure 4.h shows the yields of the so-called 'on-the-run' bonds of constant maturities of one, five, ten and 30 years, where data is available.

Figure 4.h – yields in SA one-, five-, ten-, and 30-year maturity 'on-the-run' bonds with the SA Reserve Bank Repo rate (data source: Bloomberg)



Yields in general have been on a downward trend. The one-year maturity bond yield more or less tracks the Repo rate as they are mostly held by the domestic "Monetary Authorities" – circa 62 percent as of 2014 (National Treasury data, 2015) - for cash management and monetary policy management purposes. The other maturity bonds do not appear to have as strong a relationship.

We can also consider the bonds' spreads to the U.S. Treasury bond as this is important to investors. Figure 4.i shows the spreads of three benchmark SA bonds, the 10.5%-coupon bond maturing in 2026 (named R187), the 7.25%-coupon bond maturing in 2020 (named R207) and the 8.75%-coupon bond maturing 2048 (named 2048), to their appropriate U.S. Treasury bond benchmarks, where data is available. The spread of the EMBI is also shown for comparison sake. Below this is Figure 4.j which shows the percentage of ownership of the bonds by type of investor – note the different percentage holdings by foreign investors.

Figure 4.i – Spreads of SA bonds R186, R207 and 2048 to respective U.S. Treasury benchmarks and the EMBI index spread (data source: Bloomberg).

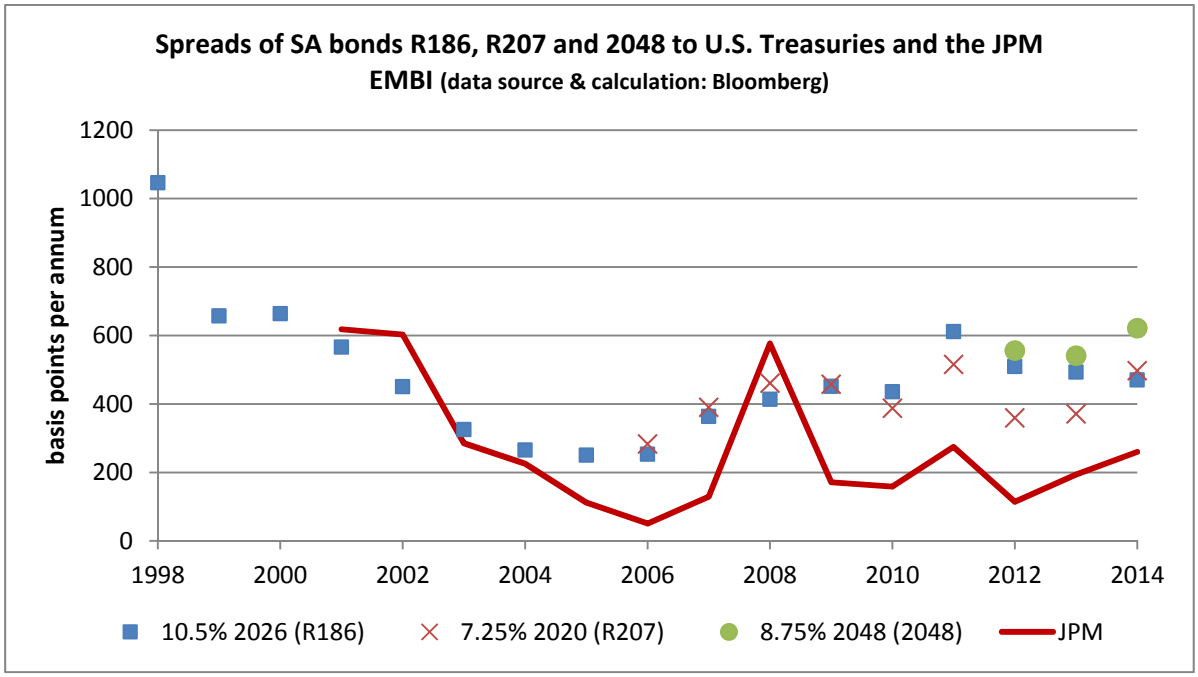
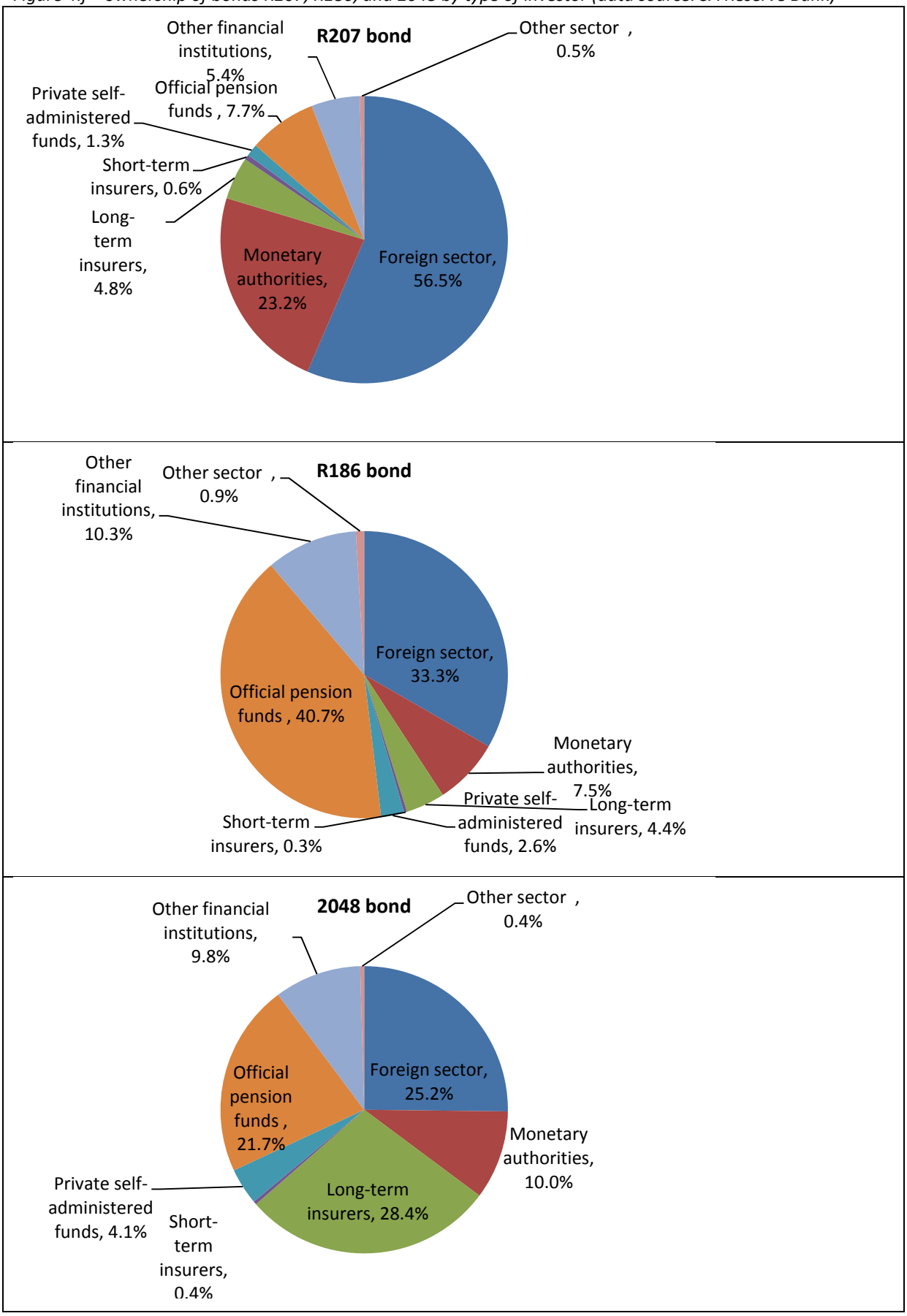


Figure 4.j – ownership of bonds R207, R186, and 2048 by type of investor (data source: SA Reserve Bank)



From Figure 4.i we can see that there is some relationship between the bonds spread and the EMBI spread, but not so much as to suggest that the SA bonds were indiscriminately tracking the EMBI.

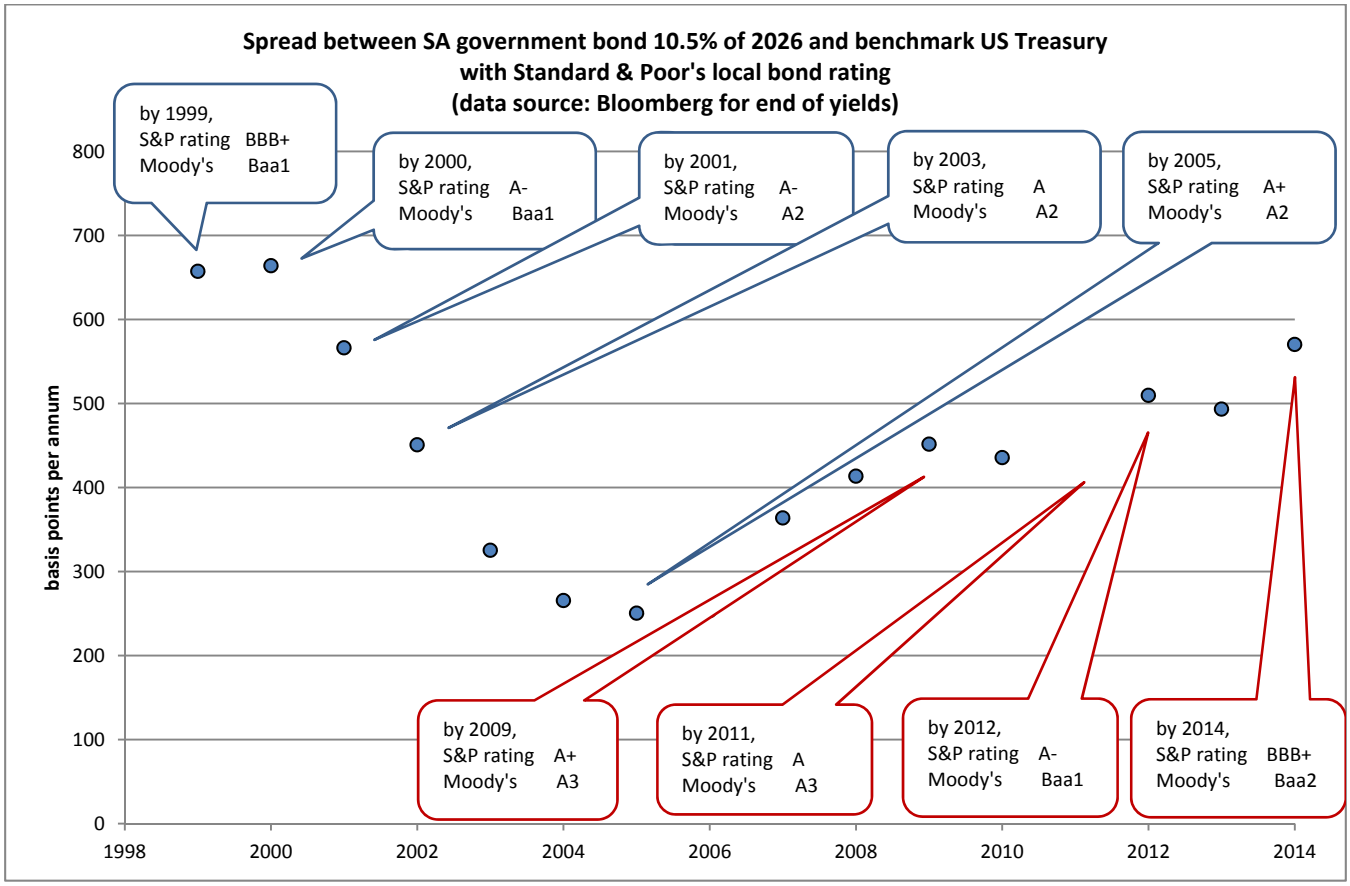
Next let us turn to risk as the spread is theoretically the compensation investors receive for the additional risk of borrower default relative to a less risky borrower like the U.S. Treasury. We expect to see some relationship between changes in the risk of default and the spreads. All investors should have their own opinions of this risk but most asset managers also monitor (and some wholly adapt) the risk scorings of the major public rating agencies Standard & Poor's (S&P), Moody's Rating Agency (Moody's) and Fitch Rating. SA's local bonds were first rated by these agencies in 1998. The history of SA's ratings by S&P and Moody's is shown in Table 4.d. Currently the S&P rating is BBB+ or 3 'notches' or ratings above the investment grade sub-investment grade rating divide, and the Moody's rating is Baa2 or 2 'notches' above the divide.

Table 4.d – changes to SA local-currency senior unsecured bond ratings (data source: Bloomberg). The notation 'IG/Sub-IG divide' means the investment-grade and the sub-investment grade ratings divide.

Quarter in which ratings were changed	Standard & Poor's rating	Moody's Rating Agency rating
Q1 1999		Baa1 (3 ratings above the IG/Sub-IG divide)
Q4 1999	BBB+ (3 ratings above the IG/Sub-IG divide)	
Q1 2000	A- (4 ratings above the IG/Sub-IG divide)	
Q4 2001		A2 (5 ratings above the IG/Sub-IG divide)
Q2 2003	A (5 ratings above the IG/Sub-IG divide)	
Q3 2005	A+ (6 ratings above the IG/Sub-IG divide)	
Q3 2009		A3 (4 ratings above the IG/Sub-IG divide)
Q1 2011	A (5 ratings above the IG/Sub-IG divide)	
Q4 2012	A- (4 ratings above the IG/Sub-IG divide)	Baa1 (3 ratings above the IG/Sub-IG divide)
Q2 2014	BBB+ (3 ratings above the IG/Sub-IG divide)	
Q3 2014		Baa2 (2 ratings above the IG/Sub-IG divide)

Superimposing these credit scores to the R186 bond spreads gives us Figure 4.k. It shows there is a relationship between rating and spread changes.

Figure 4.k – the spread between the 10 ½% coupon 2026 SA bond and its benchmark U.S. Treasury, with the credit ratings assigned by rating agencies Standard & Poor's and Moody's – upgrades by one or both agencies in blue outline; downgrades by one or both agencies in red (data source: Bloomberg)

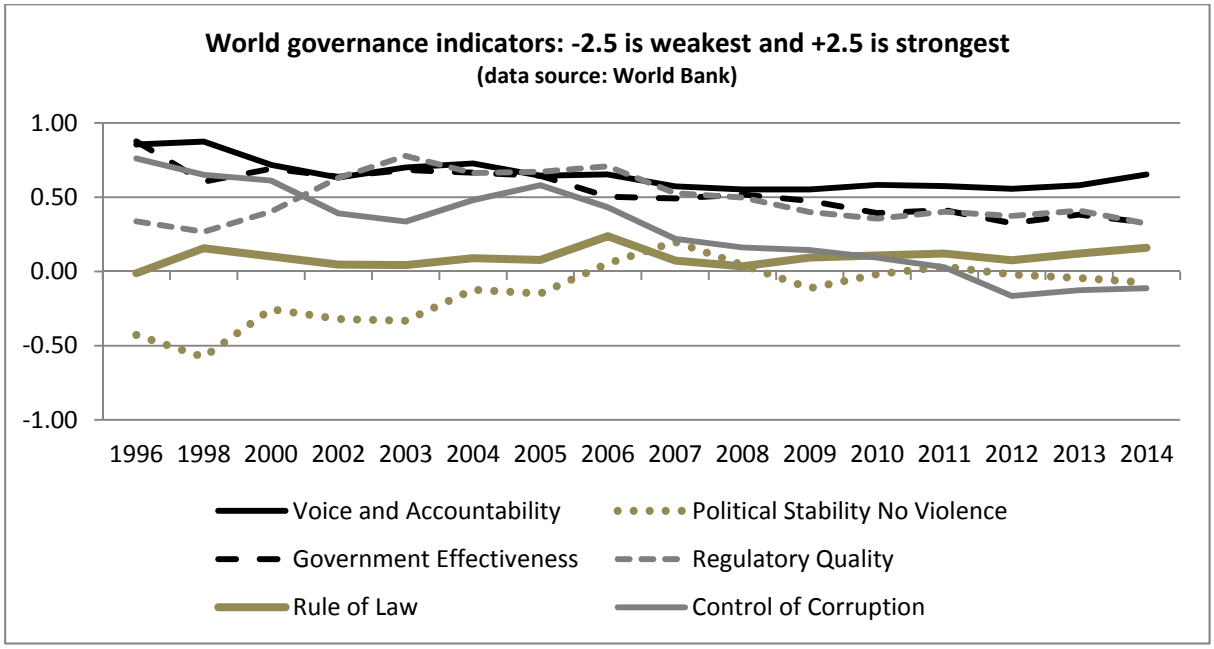


Another important reason for bringing up the credit scores is it introduced a new source of foreign demand. In September 2012 SA was included in the Citibank World Government Bond Index (WGBI). It is a widely followed index that tracks the performance of local currency bonds issued by 20 investment-grade countries (source: Citibank WGBI website[17]) The inclusion of 12 of SA's local currency bonds, even with a small index weighting of 0.44 percent, meant global fund managers needed to purchase "between $4 billion and $7 billion" of the tracked bonds, according to the Mail & Guardian, a South African newspaper (Fisher-French, 13 July 2012).

Research discussed in Chapter 2 suggests the importance of quality of law and order to foreign investors. SA's track record in the World Governance Indicators is presented in Figure 4.l. It shows mixed result with some indicators improving whilst others worsened. As a total score the indicator declined by 47 percent from 1996 to 2014.

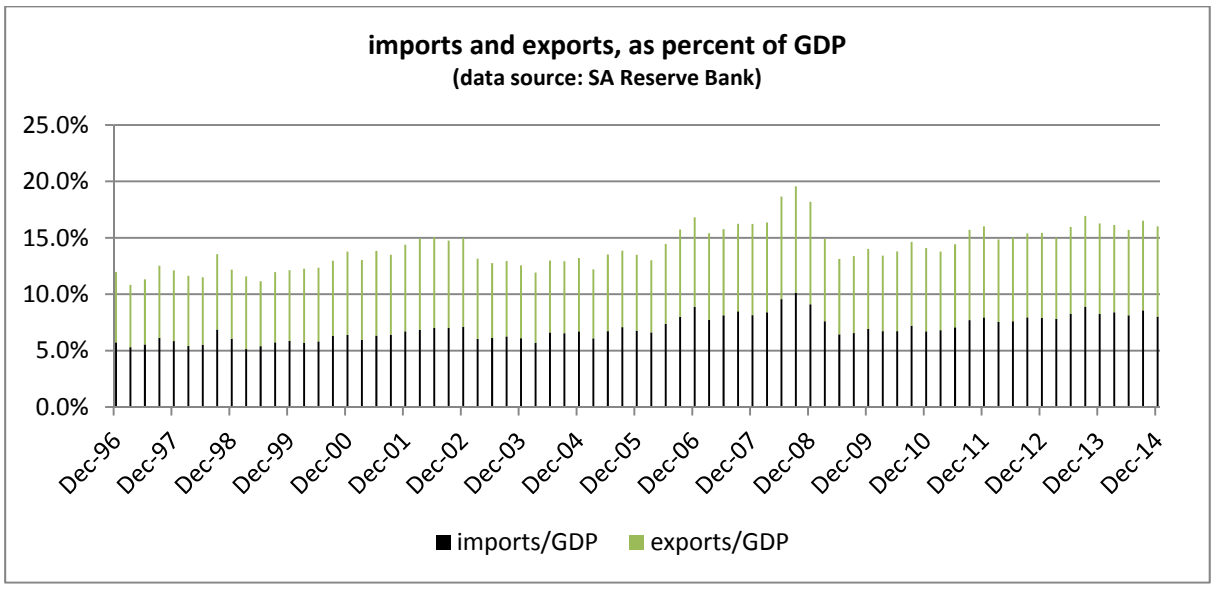
[17] (source: citigroup news www.citigroup.com/citi/news/2012/121001b.htm).

Figure 4.l – SA scoring in the World Governance Indicators (data source: World Bank)



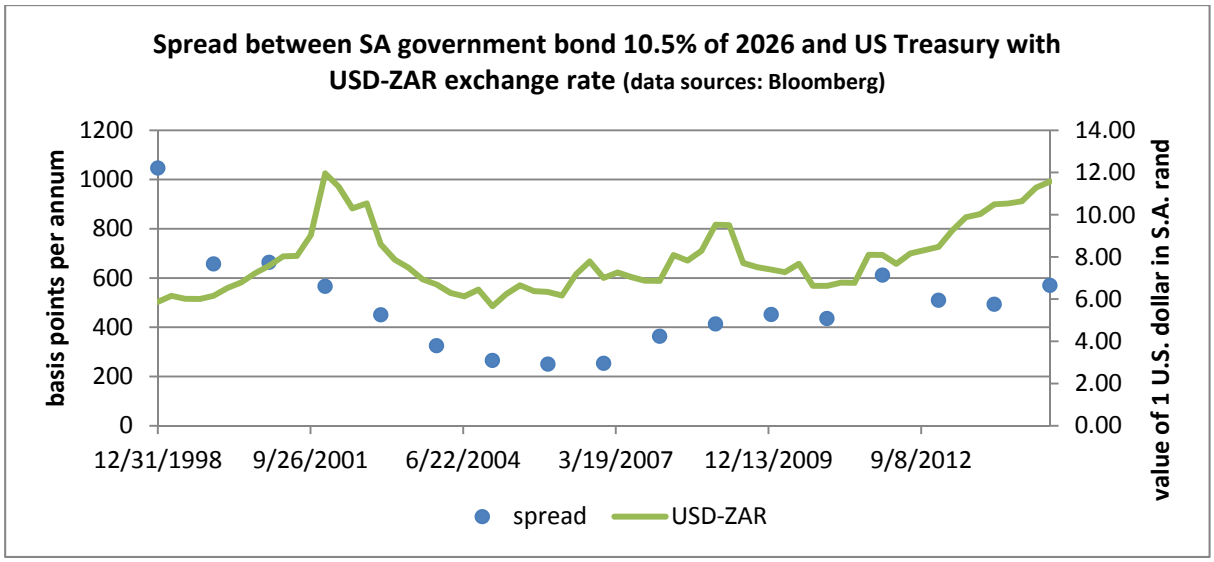
A country's "openness" could also be an important factor. Following in other researchers' footsteps I show this using trade. However, rather than showing net imports, I present both imports and exports to better show the two-way trade SA enjoys. See Figure 4.m

Figure 4.m – imports and exports, as percent of GDP (data source: SA Reserve Bank)



The value of the rand is another consideration, for foreign investors need to convert the rand cash flows back to their currencies of domicile[18]. If the rand strengthens, the returns in the domestic currency would improve; conversely if the rand weakens, the returns would be worse. Figure 4.n shows the spread of the R186 bond (left axis) with the U.S. dollar South African rand exchange rate (USD-ZAR) (right axis). It shows that in fact the movement of the rand since 2009 has hurt rather than ameliorate returns in U.S. dollar terms (in other words, the bond spread needed to have been higher – in hindsight – to compensate for returns eroded by the weakening rand). It shows that for certain periods, in particular between 2001 and 2009, there was a positive relationship (i.e. weak strengthened and yields fell) but this relationship appears to have weakened and indeed gone negative from 2009 until 2013.

Figure 4.n – USD-ZAR exchange rate and the spread of the 10.5% coupon 2026 maturity SA bond spread to the U.S. Treasury (data source: Bloomberg).



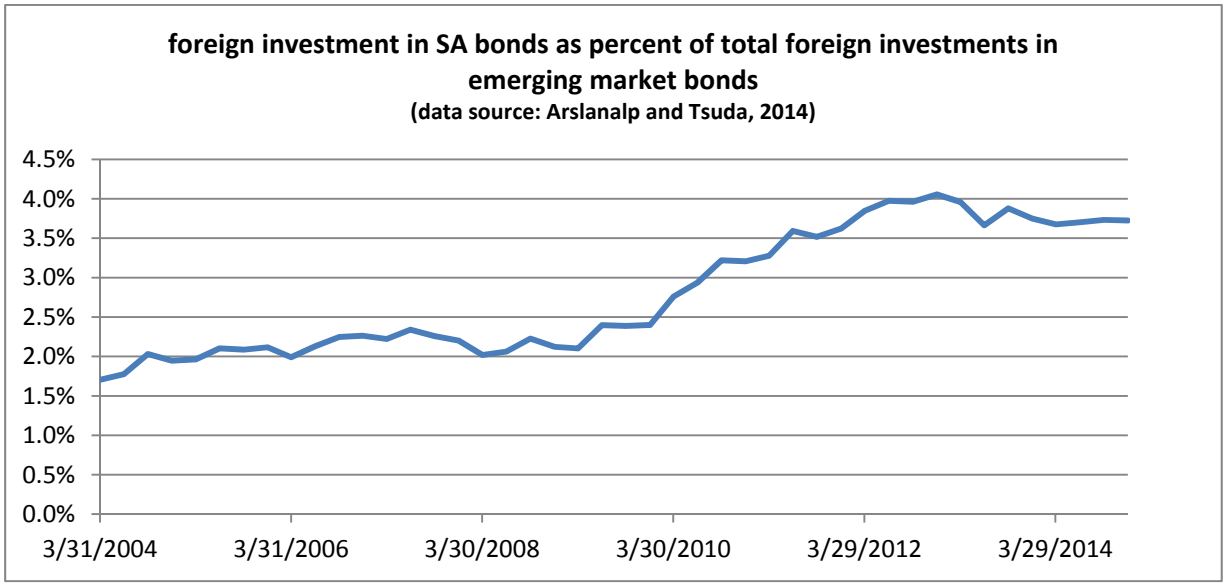
4.3.C – statistical analysis

We can also try to test the foregoing analysis on whether foreign investors are discerning in their investment of SA local bonds or not empirically through multiple regressions using the factors discussed as independent variables.

[18] Hedging all of the rand cash flows with cross-currency swaps and or foreign exchange forwards would result in the same effective yield as if the investor had invested in the domestic currency benchmark in the first place due to interest rate parity and arbitrage-pricing used in pricing the hedges so many "unhedged" funds do not hedge.

The independent variable is the proportion of SA local bonds relative to other emerging market bonds from the Arslanap and Tsuda (2014) data base. This is graphically shown in Figure 4.o

Figure 4.o – foreign investment in SA bonds as percentage of total investments in emerging market bonds (data source: Arslanalp and Tsuda, 2014)



Before I run the regressions, let me set up out the predictions for the independent variables that would suggest discernment for SA.

- x_1 is the risk-adjusted return for the R186 bond. This is based on the "Sharpe Ratio" used by asset managers (Sharpe, 1994) and is a ratio of the bond's spread (its remuneration) to its probability of a rating change and or a default (its risk). The latter is based on S&P's sovereign transition and default data (2003-2010 data set). I expect to see a positive relationship as better risk-adjusted returns should attract more investors.
- x_2 is the risk-adjusted return for the R207 bond. I present the same argument as for the R186 bond, I expect a positive result.
- x_3 is the price of the rand in U.S. dollars. An appreciation of the rand's nominal value to the U.S. dollar should result in an increase in investment in SA bonds
- x_4 is the EMBI spread. Here I expect to see a negative relationship meaning as the EMBI spreads decline, I expect funds to shift to out of other emerging market bonds and into SA instead.
- x_5 is improvements in law and order using the World Governance Indicators
- x_6 is "openness" as measured by the sum of imports and exports, to GDP

Data is from 2006 to 2014 as the fullest period to get complete data for all the variables. Data observations are annual due to access to information, with the acknowledgement that higher frequency would likely improve the analysis.

The first model tests only for three factors, the spread of bonds R186 and R207[19] – note, the variable is the bonds' spreads not the risk-adjusted returns - and the price of the rand in U.S. dollars.

The second model substitutes in the risk-adjusted returns for bonds R186 and R207 and finds it to be a better fit (improvement in F-score and significance F). This suggests that the default risk of the bonds does matter to foreign investors suggesting discrimination of SA bonds.

However, inclusion of the World Governance Indicators slightly worsens the relevance of the model, as did inclusion of trade to GDP values. I believe that it is because even though these factors are import, investors do not continuously monitor them but rather set minimum levels of quality below which they would not invest. Thus, so long as a country's law and order quality is above the investment criteria any further changes will have minimal impact on investment.

The third and last regression models looks at the two bonds risk-adjusted returns, the nominal value of the rand and the spread of the EMBI, and it results in the most statistically relevant model of all – higher co-efficient of determination (96.5 percent) and large F statistic which allows rejection of the null hypothesis that the model is invalid. (see Appendix 2 Table 2 for relevant data & regression outcome)

What this model reveals is that there is a positive relationship between foreign investment in SA and the risk-adjusted return of the R186 bond return but a negative relationship to the risk-adjusted return of R207 bond. Looking back at Figure 4.I, which shows the historical yields of R186 and R207 bonds, it can be seen that the R207 yields fell more than the R186 from 2009 onwards and visually the R207 bond tracked the EMBI more than the R186 bond. Looking back at Figure 4.J, foreigners hold proportionally more of the R207 than the R186 (see Figure 4.J). All this suggests that investors in R207 bond were less discriminating in South Africa relative to investors in the R186 bond. Possible reasons for this include the fact that the R186 bond has longer maturity than the R207 bond which subjects investors to greater risk where more discernment is recommended, and or the proportions

[19] Technical note: the use of 2 bonds, not 1, means the assessment is more likely to include wider range of investors since investors are also focused on the duration (proxied by maturity) of a bond. This is also supported by running the regressions with only the R186 bond (which allows for 2 more years of data) where the models have not improved in relevance.

of the foreign investment reflects the cumulative relative weights of the two bonds in the various indices mentioned, including the JPM EMBI and the Citibank WGBI[20].

Looking at the relevance of the rand, the results of the second and third models suggest there is likely to be a relationship between foreign investment and the level of the rand, but that this relationship is less relevant in the face of other considerations. Looking back at Figure 4.N it does appear the relationship weakened from 2009 onwards. Perhaps the investors not discerning between SA and other emerging market countries are equally unfazed by any particular currency.

The model also suggests a negative relationship with the EMBI spreads overall but the relationship is weak (at least for a linear relationship) – suggesting that whilst inclusion of the EMBI as a consideration strengthens the model, the variable itself is not necessarily a major factor. This is not inconsistent with the discussion on the different yield paths for the R207 and R186 bonds.

In sum, there is argument to support that **some** foreign investors have not been discriminate in their investment in South Africa but **some others** have been - it would be misleading to try to quantify the exact amount. It can also be hypothesised that the split of the two types of investors are different for different bonds. The ramifications of this will be discussed in Chapter 6.

4.4 – summary of Chapter 4

The key points raised in the foregoing discussion include the following:

- The savings rate in SA is low such that the local bonds need to be supported by foreign investors – especially given the amount of bonds issued
- The local savings landscape is dominated by professional fund managers with the pension fund sector the largest investor. Whilst they hold a significant amount of bonds in general, they hold an outsized amount of ILBs.
- After government bonds, the second largest issuer group are the financials (recently surpassing the SOE). Market infrastructure such as the JSE index and regulation may bias market support against non-financial bonds

[20] It was not possible to find out the actual bond weightings of the compositions of the indices as such information was available to paid subscribers only

- Foreign investors hold 36 percent of SA local bonds. Some of these are driven by the low yields offered in the developed markets but there is evidence to suggest some are also driven by the SA ‘investment story’.

Chapter 5 – key South African financial participants

The previous chapters highlight how important two market participants in particular are, the GEPF/PIC as the largest pension fund of the large pension fund investor group, and the banks who are competition of and also major issuers on the market. This chapter takes a closer look at them.

5.1 – SA banks

5.1.a – history of the South African banking industry

First, let us start with the history of the banks, for the South African banking sector is fairly unique amongst emerging markets in having a banking sector that is developed to be "comparable to those of developed countries" (Akinboade & Makina, 2010, p. 3804), and this is a legacy of its history.

The beginning of the country's banking industry is effectively the story of the expansion of the banks of its British coloniser. Because even though 30 private national banks were established in the very beginning, between 1837 and 1882, they were soon taken over by the so-called 'imperialist' banks who were expanding abroad. Indeed, by 1892 only one independent bank remained. The British banks were the amongst the most sophisticated at the time, and their strength was attributable to their "[having] a strong capital basis, conservative, skilled and professional bank management, and adherence to commercial bank functions throughout periods of fluctuating business cycles" (Singleton and Verhoef, 2010, p. 541). They offered their clients "sophisticated international services" (p. 538). By the 1930s two of the banks had come to dominate, the Standard Bank of British South Africa, antecedent to today's Standard Bank, and Barclays Bank Dominion Colonial & Overseas, antecedent to today's First National Bank. Indeed, such was their strength that only one non-British bank, an 'Afrikaner' capital bank, the Trust Bank, could come close to challenging them.

South Africa's apartheid history also played a role in the banks development. For one, the trade embargoes imposed on the country lead to exits by foreign banks reducing competition – and the aforementioned British banks sold their stakes in their South African concerns (Singleton and Verhoef 2010; Akinboade et al 2013). 1985 saw a crisis in the industry when the SA banks' correspondent banks, led by Chase Manhatten Bank, withdrew their credit lines. As the banks' foreign borrowings were large, 44 percent of total borrowings (as compared to governmental borrowing of 16 percent), it necessitated the government to declare a debt standstill.

This crisis led the government to judge the banks too strategic to lose and various protective legislatures were put in place. This included restrictions on foreign banks, which were not lifted until 1994, with the amendment of The Banks Act 1990 allowing foreign banks to open branches. There was also legislature to try to increase competition between the domestic banks but some of these ended up having the opposite effect. For instance, the De Kock Commission of 1985 removed the specialist finance category that had segregated the finance industry, with the idea of allowing all financial enterprises to broaden their business portfolios. Instead, as building societies became banks they were subsequently taken over by larger banks. Such that the 47 active banking institutions of 1985 – 15 commercial banks, 10 merchant banks and 22 general banks – became 34 entities offering a variety of financial services with four dominating the banking sector by 2000 (Singleton and Verhoef citing SARB 2000 p.42).

Today, those four banks – the so-called "Big 4" - ABSA Bank, Standard Bank, First Rand Group and Nedbank Group still dominate with 83% of total banking assets as of end 2014 (SARB 2014, data from Appendix 2 p.42, my calculation). Table 5.a provides a snapshot of the banking landscape with a break down between local banks and foreign banks and the Big 4's share of the market.

Table 5.a – Profile of SA banking sector (data source: SARB Annual Report of Bank Supervision 2014; my calculation)

	number of entities	total assets at end 2014 (R million)	percent of total assets
total Registered banks and Mutual Banks	19	**3,937,635.00**	**94%**
The Standard Bank of South Africa Limited		*1,099,503.00*	*26%*
FirstRand Bank Limited		*856,911.00*	*21%*
Absa Bank Limited		*807,118.00*	*19%*
Nedbank Limited		*714,408.00*	*17%*
sub-total "Big 4"		*3,477,940.00*	*83%*
total Registered local branches of Foreign banks	14	**241,617.00**	**6%**
total	33	4,179,252.00	100%

Unlike at the beginning of the industry's history however, the dominance of the few banks is not characterised by sophistry and service to its clients. Because as Mlambo and Mthule (2011) find, the industry is a "monopolistic competition [where] there is room for improving bank efficiency" (2011, p. 13). They note their criticism is in line with the Competition Commission on Banking who find that the large banks "tend to avoid outright competition against each other" (citing the Commission's report of 2008, p.13). Or, as the IMF puts it "this concentrated structure gives major financial institutions significant pricing power and enables them to achieve returns on equity and assets higher than in competitive economies" (IMF, 2014, p. 10).

Bank regulation was amended in 2013, with South Africa moving towards a "Twin Peaks" model of financial regulation. This means that the South African Reserve Bank "will be the Prudential Authority responsible for the prudential oversight of banks, insurers, financial conglomerates and financial market infrastructures, and will also become the Resolution Authority. The Financial Services Board will become the Financial Sector Conduct Authority (FSCA) and will be responsible for supervising the market conduct of all financial services institutions, including banks" (p. 8). This splits the supervision of the resilience and stability of the banks from the consumer protection and market conduct practices.

5.1.b – South African banks provision of credit

South African bank assets comprise 112.8 percent of GDP at end 2013 according to the IMF (IMF, 2014, p. 33). Figure 5.a shows the growth of bank credit to the private sector. The private sector in this context means to households and businesses. According to the consulting firm PwC, the split is 36 percent of bank credit is to businesses, see Figure 5.b.

Figure 5.a – bank credit to the private sector as measured by bank credit outstanding and M3 money supply (data source: SARB)

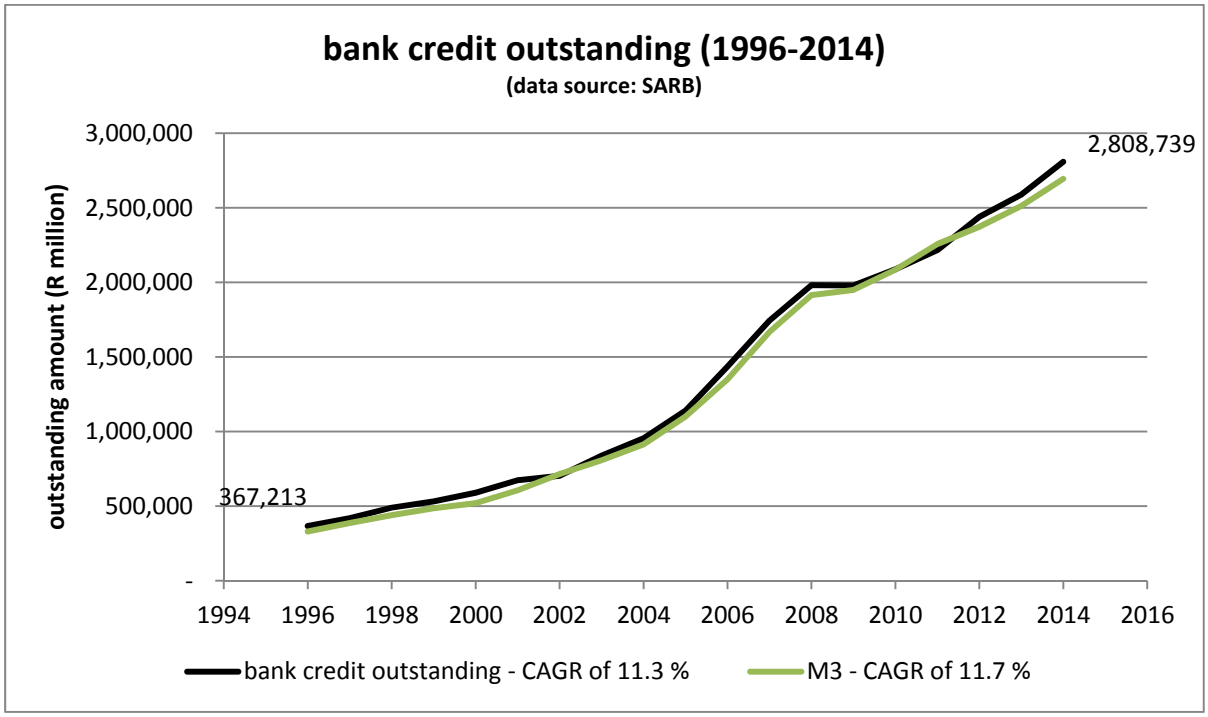
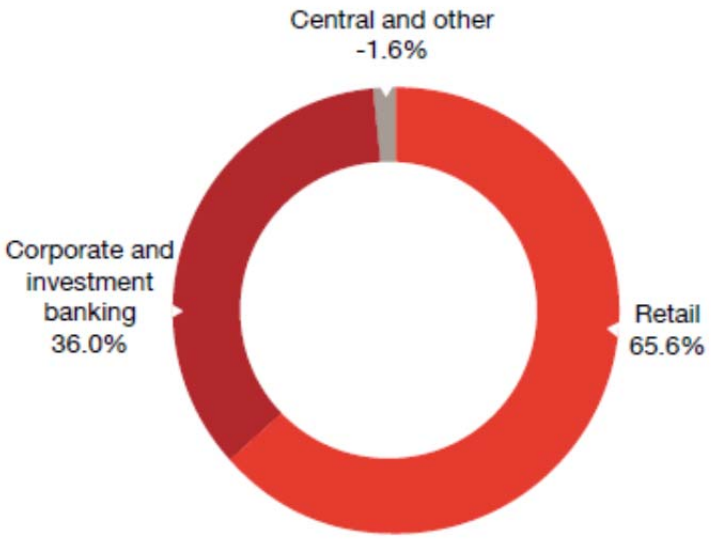


Figure 5.b – proportion of bank credit to business and households (data source: PwC, 2015, p. 23)

Figure 6.2 Combined loans and advances by product

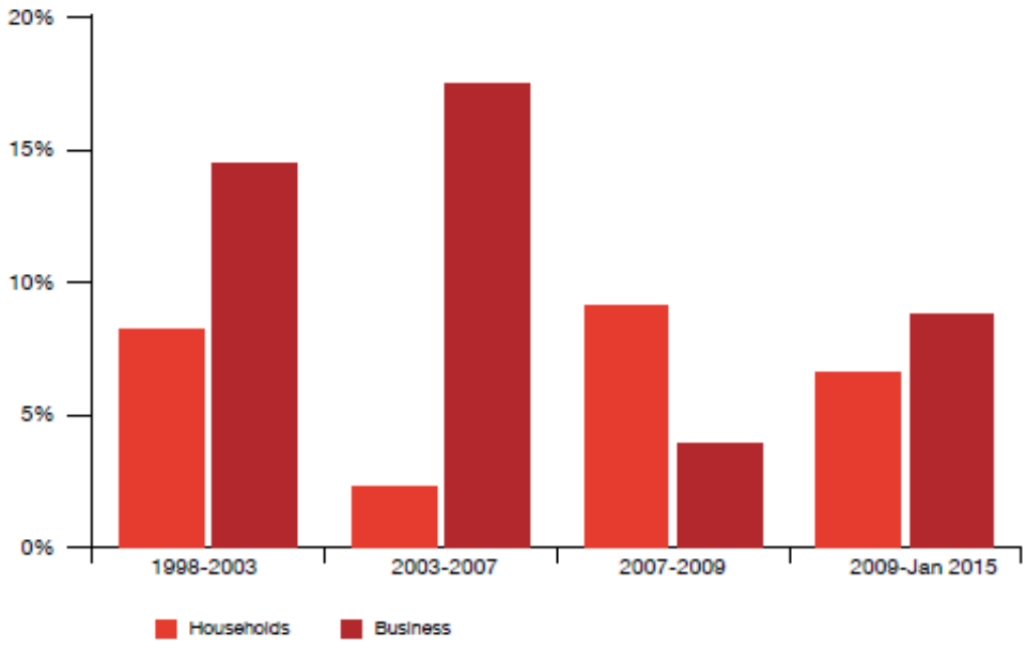


Source: PwC analysis

Figure 5.c shows the average growth rates of credit to businesses and households by buckets of time.

Figure 5.c – Business and household credit grow rates (source: PwC, 2015, p. 12)

Figure 2.1 Average annual growth rates in credit extension – households and businesses



Source: SARB, PwC analysis

From Figure 5.c, business credit appears to be linked to the business cycle. The GDP growth years of 1998 to 2007 saw increasing growth which fell off from 2007 to 2009. This is also borne out by research (Akinboade and Makina, 2010, citing Farmer, 1985, 1988; Zarnowitz, 1985; Greenwald and Stiglitz, 1993; Gorton and Kan, 1993; Smith, 1995; Asea and Blomberg, 1997, 1998).

Credit for households is greatly affected by housing prices since 29 percent of bank credit consists of mortgages (PwC, 2015, p.21). This is driven by mortgage rates, which is affected by the central bank's Repo Rate since most mortgages are indexed to it. It is also driven by the lack of supply in the country. This is in part due to the country's taxes. In particular, the capital gains tax which

encourages “middle class households to accumulate their investments in asset markets i.e. houses and equities” against which they rather borrow than sell (Mnyande, 2010, p.4).

The result is total bank credit growth at a compound annual rate of 11.3 percent from 1996 to 2014, as shown in Figure 5.1, which clearly outstrips GDP growth. Akinboade and Makina (2010) see a classic banking cycle over their period of study which goes up to 2009. They note that SA suffered a banking crisis from 1999 to 2002 with the collapse of a few small banks. The regulatory actions that followed allowed for a return to “normality” (p. 3806). But then, an expansion in loan credit from 2004 led to a “lending booms – banks increasing lending” stage (p. 3806). International players buying stakes then lead to the next stages of the cycle “new competitors, banking mergers and acquisitions” and “excess liquidity, increased investment, business confidence grows” (p.3806). Their conclusion and concern was that this build up would ultimately lead to an “overheating of the economy” (p.3806), with the potential risk of a banking crisis beyond 2009. The global financial crisis helped to deflate that risk somewhat, and bank credit growth for the period from 2009 to 2014 has been slower than for the period from 1996 to 2009 (at 7.2 percent versus 12.8 percent) though it is still a higher rate than GDP growth.

Funding for the assets is 87 percent from short-term deposits, with a majority from a concentrate of depositors (IMF, 2014, p. 10). This gives rise to IMF’s warnings that the banks have high “vulnerability to liquidity shortfalls” (p.7). “In aggregate, banks experience a liquidity shortfall in less than 20 days” (p.20) which is below the IMF recommended minimum level of 30 days, and none but one of the major banks meet the Basel Accord net stable funding ratio (NSFR).

One way to reduce the risk is to extend the maturity of liabilities. As we know from Chapter 3 the banks have been the second largest group of issuers behind the government on the local bond market. Their issuances are shown in Table 5.b.

Table 5.b – issuances by financials (bond data source: Bloomberg; bank credit supply: SARB)

issuance year	issuance of financials for the year (R million)	total issuance for the year (R million)	Financials issuance/total bond issuance	Bank credit supply growth for the year
1996	-	14,730	0%	4%
1997	-	19,722	0%	14%
1998	-	42,908	0%	17%
1999	0	11,632	0%	9%
2000	864	22,033	4%	11%
2001	550	25,665	2%	14%
2002	816	17,342	5%	4%
2003	551	21,538	3%	19%
2004	1,776	45,826	4%	14%
2005	2,926	57,377	5%	19%
2006	4,234	56,621	7%	26%
2007	6,084	40,421	15%	22%
2008	5,831	40,849	14%	14%
2009	7,261	57,949	13%	0%
2010	6,966	91,154	8%	5%
2011	10,976	62,760	17%	6%
2012	15,250	122,063	12%	10%
2013	8,124	103,134	8%	6%
2014	6,194	74,283	8%	8%
Total	78,403	928,007	8%	

As the banks are still failing the liquidity tests as at the end of 2013, one can expect that conditions allowing the banks will continue their pace of bond issuances.

One question that springs to mind, is whether foreign investors who are buying local currency government bonds are also buying the banks' local bonds too? This is not implausible considering that 50 percent of the nominal value of the South African banking sector shares are owned by foreigners, although the 63.5 percent ownership of Absa Bank is a considerable chunk of that (Bank Supervision Department of SARB, 2014, p. 2). If so, then the risk of a 'sudden stop' of foreign capital discussed for the government is just as much a risk for the banks.

5.2 – Public Investment Corporation

The Public Investment Corporation (PIC) is a government-owned entity, with the Minister of Finance as stakeholder representative. It manages the funds of – amongst other public funds – the

Government Employee Pension Fund (GEPF) (Kaniki and Ntuli 2011). As one rand out of every five paid as in salary goes to a government employee – as discussed in Chapter 3 – it is not surprising that the PIC is the largest fund manager in SA. Its assets under management (AUM) and public sector salaries are shown in Table 5.c. It currently manages R1.8 trillion… almost one-third of the South African GDP" as of 31 March 2015 (PIC, 2015, p. 2), the growth rate is shown in Table 5.C. It also makes the PIC, in its own words, "the most influential organisation in the South African economy" (2015, p.2).

Table 5.c – data source: PIC, 2014, p.3 and Statistics SA, my calculations

year end	PIC AUM (R million)	public sector salaries (R million)
2005/6	598	181,765
2006/7	719	196,420
2007/8	786	220,257
2008/9	739	257,245
2009/10	910	301,744
2010/11	1,030	347,326
2011/12	1,170	388,536
2012/13	1,404	416,538
2013/14	1,605	459,691
2014/15	1,813	498,035
CAGR	13%	12%

The PIC has a dual mandate, to meet the required defined benefit pension obligations and to play a developmental role. It has this to say of the latter role: "the developmental investment theme remains paramount for the PIC and its broad stakeholders. This theme is congruent with key Government priorities of economic development, as expressed in various policy documents, such as the National Development Plan, the Industrial Policy Action Plan, as well as the New Growth Path" (2015, p. 5). It summarises its PIC Vision 2030 as becoming "a leader in development investing" whilst generating "sustainable returns for the clients" (2015, p.5). It is interesting to ruminate on what might happen if there is a conflict or trade off in attaining both goals, which might dominate?

There are no academic papers interrogating this, but newspapers such at the Financial Times and Finweek have questioned whether the fund has been politically motivated[21]

The stated financial benchmark for the GEPF funds is CPI plus 300 basis points per annum (PIC, 2015, p. 36). The benchmark link to inflation means it is not surprising to see that bonds play a significant role in the PIC's portfolio as shown in Table 5.d.

Table 5.d – PIC assets (source: PIC, 2015, p. 11)

Asset Class	%
Local Equity	48.68
Local Bonds	34.31
Cash and Money Market	4.46
Properties	5.19
Offshore Equity	3.91
Offshore Bonds	1.40
Africa Equity (EX SA)	0.65
Isibaya	1.40
TOTAL	100.00

Details of the PIC's local bond management strategy in its annual report are few: "The fixed income portfolio consists of bonds and money market instruments, is managed in-house. The team's responsibility is to ensure that the portfolio is managed in line with benchmark expectations and a very low tracking error" (p. 47); "with client mandates … we have seen greater emphasis on increasing allocations towards inflation-linked bonds and therefore the PIC continued to purchase these instruments…" (p. 58); and "the PIC continued to support SOEs funding mainly through their regular bond auctions" (p.58). But from this and other previously mentioned observations we can make a few inferences. That PIC is likely the largest investor in inflation-linked bonds, both those of the government and the private sector. The PIC supports the borrowings of SOEs possibly to meet its dual mandate.

[21] From the Financial Times: "Unlike its American peers, which are seen as unambiguously private enterprises managing public pension money, the PIC at times struggles to shed the perception that political considerations as much as financial ones guide its investment decisions" (England & Blas, 2014). The Finweek raises questions on the motivation behind investments in Lonmin, AfriSam, Vodacom, CAMAC Group, Independent News and Media, Adcock Ingram and Telkom (Klein, 2015).

Chapter 6

This chapter pulls together discussions from the previous chapters to answer the three research questions.

6.1 – research question 1

Has the development of the domestic bond market allowed the SA government to raise funds more effectively?

As discussed in Chapter 3, the ability of the government to increase expenditure from 2008 onwards despite a worsening tax base is a direct result of its ability to raise funds in the domestic bond market – and the international bond market. By 2014 government was able to issue 3.2 times more domestic debt than in 2006, see Table 6.a. So the instant answer to the research question must be a resounding yes. However, further reflection is required to consider the impact over the longer term, and to do that I must assess what existing risks have worsened – or improved – and what new risks may have arisen.

Table 6.a – holdings of domestic government bonds by locals and foreigners, as a percent of GDP (data source: SARB)

year	domestic bonds (R million)	domestic bonds held by locals as % of GDP	domestic bonds held by foreigners as % of GDP
2006	489,179	18%	2%
2007	490,593	18%	2%
2008	526,552	18%	3%
2009	655,218	23%	4%
2010	835,553	26%	7%
2011	1,010,218	29%	12%
2012	1,184,533	30%	17%
2013	1,378,830	35%	20%
2014	1,578,609	41%	23%

To assess risk methodically I will use the WB-IMF public debt management framework (WB & IMF, 2014, p. 18) which delineates risk into components. These include interest rate, foreign exchange and refinancing risks.

Interest rate risk "refers to the risk of increases in the cost of the debt arising from changes in interest rates" (p. 18). Interest rate pressures can be internal or external. An example of internal pressure is higher inflation, which we know from the Literature Review is significant for highly-

indebted countries. An example of an external factor is a rise in U.S. Treasury yields which may result in a rise in SA bond yields. One because it would be necessary to keep the risk premium, or spread, unchanged. For another, the foreign investors who are investing in SA bonds because the developed market yields were too low will start to repatriate funds back into the developed markets, pushing down SA bond prices pushing rates up. Witness the drop in emerging markets following an increase in U.S. Treasury yields earlier in 2015 when investors changed their expectations of when the Federal Reserve would raise its rate. Change in the spread itself is another risk if investors perceive greater SA credit risk and demand more remuneration. For instance, when President Zuma fired respected Minister of Finance Nene without explanation (, the market reacted negatively. Even the hiring of the previous Minister of Finance did not calm the markets as it raised the question of the soundness of fiscal policy coming from the very top, as a result SA rates have stayed elevated.

Interest rate risk is greater for Bills and ILBs than FRBs, because Bills need to be refinanced frequently and ILB interest is linked to market rates whereas FRBs face a new cost of debt only at maturity when it must be refinanced. Whilst the bulk of government borrowing is in FRBs, it should be noted that issuance of ILBs had been rising, possibly due to negotiating strength of the domestic pension funds.

Interest rate risk is inherent in the act of borrowing but the high level of debt means the economy's sensitivity to it has been magnified.

Exchange rate risk "refers to the risk of increases in the cost of the debt arising from changes in exchange rates" (p.18). This risk has been reduced by the issuance of domestic bonds. For, by selling foreigners domestic bonds rather than international bonds, the government did not need to take on foreign exchange risk on the borrowing. The risk would have been significant as Table 6.A above also shows, as foreign ownership of domestic bonds is 23 percent of GDP. Instead, that currency risk is effectively passed on to the foreign investors.

The WB and IMF define refinancing risk as the risk that the debt will be refinanced at an "unusually high cost or, in extreme cases, cannot be refinanced at all" (p. 18). This risk is more difficult to model than the previous two as it depends on such factors as the so-called 'investor sentiment'. That is, investors' perception of a borrower's credit risk, which in the case of foreign investors could be in the context of global factors not just endogenous factors. In Chapter 4, I discussed reasons for the strong foreign investment in SA bonds. There was an undeniable global drive for yield in the emerging markets in the absence of acceptable yield in the developed markets. There is also sufficient evidence that some investors were actively choosing SA investments. There are thus two

different types of 'investor sentiment' risks. The more investors are indiscriminate, the more their decision is driven by exogenous factors and thus the greater the risk that they will stop investing in SA bonds as suddenly as they had started, creating a 'sudden shock' of foreign capital outflow. The more investors actively chose SA, the more endogenous factors will play a role in their willingness to continue investing. It should be noted that the two investor camps are not static or mutually exclusive as one camp may change to the other's investment strategy and or adapt a pragmatic blend of the two.

Refinancing risk is also inherent to borrowing and as with interest rate risk the size of the debt has also increased this risk for the country. However, the urgency of the refinancing risk has been reduced by the extension of the maturity of the bonds issued, which pushes the risk out over and further in time (thus giving government more time to consider its options). As discussed in Chapter 3, the weighted-average bond maturity in 2014 is 14.2 years (nearly 1.7 times longer than it was in 2006).

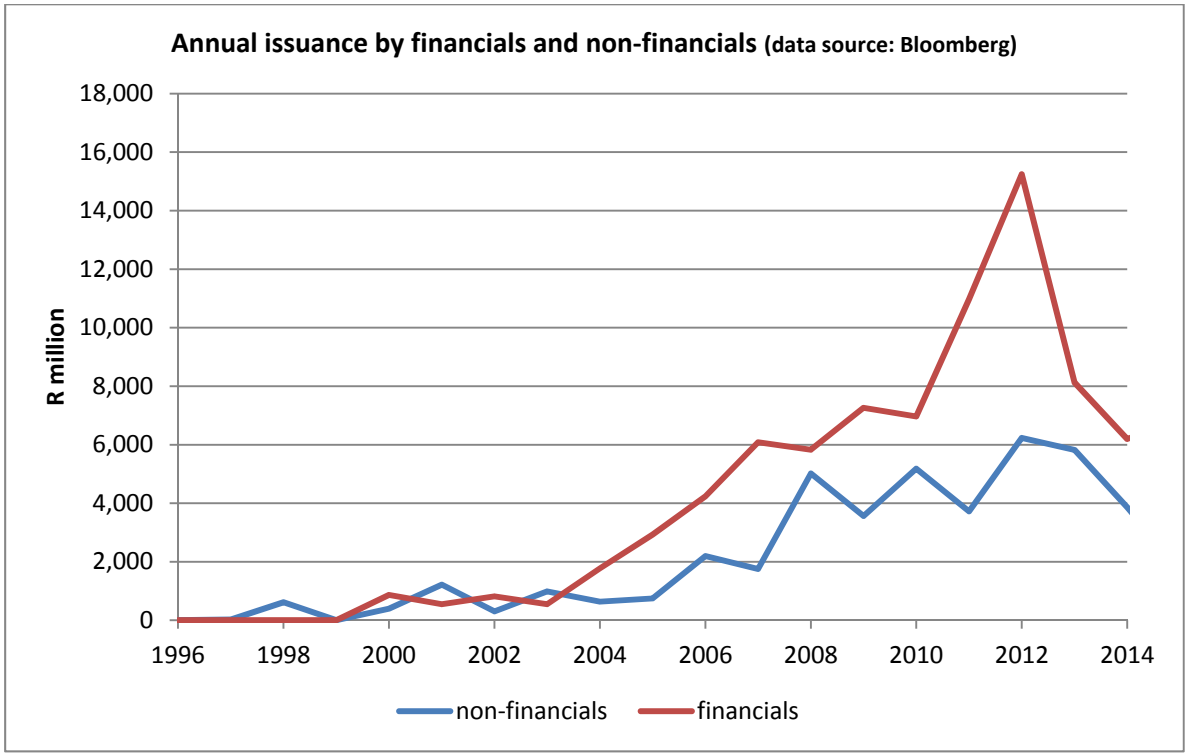
The outcome of these risks depends on the economic performance of the country as it must generate enough cash to service the debt and convince investors of the benefit of staying invested and at a reasonable level of interest rate. As research shows, the relationship between debt and economic growth is complex. Some debt spent where the multiplier effect is positive over the long term will help develop the economy. But too high debt spent where the multiplier effect is positive only over the short term or is in fact negative risks negatively impacting the economy. The former may have been the motivation behind the government's expenditure and the resultant debt. But the reality is there is much greater risk of that the reality is the latter.

6.2 – research question 2

Has the development of the market allowed the SA private sector to raise funds more effectively?

I have been splitting the private sector between the banks and the non-banks and shall continue to do the same here. Figure 6.a is provided for ease of reference to remind of the two sectors different rates of bond issuance.

Figure 6.a – Annual issuance by financial and non-financials (data source: Bloomberg)



The banks' primary source of funding is short-term deposits creating a very large liquidity risk. It has been able to reduce some of this risk by issuing longer term local bonds. So the answer to the research question is that the bond market has been useful to the banks.

However, the impact on the larger economy is more mixed. Since the economy is so dependent on the banks, reducing its liquidity risk is positive. At the same time, the level of bank bond issuances means that it has an outsized effect on the bond market by being the largest industry in the JSE credit indices, and this is likely to grow as the banks need to issue more bonds. This funding advantage can only help increase the banks' dominance. Whilst the banks' strength has benefited the economy in the past it is also leading to some of the advantages listed in the Literature Review, at the least it has been described as monopolistic.

Whilst non-bank issuance has grown it has been at a much slower rate than bank issuance especially since 2009. Chapter 3 discussed reasons why non-bank issuance may be low though it did not elaborate on the possibility of the banks competing away the credit business. Having now discussed the banks, we are in a position to detail this argument.

To do this, we need to refer back to two Figures, Figure 5.3 which shows the different growth rate of bank credit to businesses over time buckets and Figure 3.O which shows the growth of non-bank bonds. The two growth rates of the two markets over time are summarised in Table 6.b

Table 6.b – bank versus bond credit growth (bank credit data source: PwC, 2015, p.12; bond issuance data source: Bloomberg; my calculations)

years	Bank credit growth to businesses, average per annum	Bond issuances of non-financials, average per annum
2003 to 2007	~ 15 percent	77 percent
2007 to 2009	~ 4 percent	46 percent

What the information in Table 6.B suggests is that there was higher demand for bond issuances than for bank credit relatively speaking. It also suggests that whilst there was a general decline in demand for credit in 2007 to 2009, it was the supply of bank credit that fell more than the supply in the bond market.

In light of this the answer to the research question for non-bank companies is that the domestic bond market has served it well. However, poor market infrastructure support such as the unintended bias of the JSE credit indices against non-bank issuance and Regulation 28 which caps lower investment level in non-bank bonds for pensions threaten to undermine this.

As to supporting economic development, in light of the dominance of the banks, development of another credit to better compete with the banks can only benefit the economy.

6.3 – research question 3

In what way has domestic savers benefited from having access to investment in domestic bonds?

There are various criteria to try to gauge this, one being the improvement in savings overall. This has not been achieved since the savings rate as a percent of GDP has remained relatively the same over the period of study (see Figure 4.D). This may also have be an unrealistic ask given the conditions of the economy over the period of study, first the country coming out of an apartheid with all the ensuing political instability and the need to increase consumption, and then the global financial crisis which negatively affected the economy.

Instead I turn to other gauges pointed out in Literature Review, including improvements in law and order driven by savers wanting to improve their property rights and the provision of more appropriate investment instruments for the pension and insurance sectors.

As discussed in Chapter 4, SA's World Governance Indicators (WGI) deteriorated over the period of study, see Figure 4.L. So it does not appear that the increase in public debt has resulted in law and order improvements. I had theorised that foreign investors may be concerned about law and order so long as it passed a minimum level. As to local investors, I note that some researchers had not found the factor to be statistically significant in their studies. Could this also be the case for SA?

As Chapter 4 discussed, the most significant domestic investors in SA are the pension funds. They and the insurance funds are also the most important local investors of the government bonds. Research has suggested that these specialised investors benefit from having access to long term assets such as local bonds which manage the long term of their liabilities.

Table 6.c – investment of government bonds by pension funds and insurance companies, as percent of GDP (data source: IMF and SARB; my calculations)

year	Pension fund AUM (% GDP)	Insurance companies AUM (% GDP)	Pension fund holdings of local government bonds (% GDP)	Insurance companies holdings of local government bonds (% GDP)
2008	96.2	26.8	9%	3%
2009	101.3	24.6	10%	3%
2010	102.5	26	11%	4%
2011	98	25	12%	4%
2012	105.9	27.1	10%	6%
2013	109.9	26.3	14%	4%
CAGR (%)	3%	0%	10%	8%

Table 6.c shows that pension AUM and the insurance companies AUM have grown at a compound annual growth rate of 3 and 0 percent respectively from 2008 to 2013. In comparison, their holdings of local government bonds have grown at a higher rate, at 10 and 8 percent respectively. This suggests a shift in portfolio investment out of other assets into the bonds. As bonds are a more appropriate match for the long liabilities of these funds, as suggested in the Literature Review, this shift is beneficial to the sector.

As the PIC is the largest of the official pension funds, I need to address it specifically. The primary reason for the growth of the PIC is the growth in public sector salaries, as discussed in Chapters 3 and 5. Seminal research such as Solow (1956) hypothesises that an increase in savings which is channelled into investment should lead to faster economic growth. The growth in PIC assets certainly increases savings. But the amount invested back into the public sector, through government bonds, is arguably not productive investment to the degree of the amount of bonds

needed to fund the salaries in the first place. On the other hand, other countries' experiences in pension reform have galvanised their savings and growth prospects, as discussed in Chapter 2, so it may be that the growth of PIC can serve as an instrument to help boost other pensions and SA savings generally ultimately improve domestic investment.

I should also note that the local government bonds has allowed for retail savings bonds also aimed at promoting savings, but by individuals. So far the take up is low particularly in the segment of the population most needing to build its savings base (SA National Treasury, 2014/15).

In sum, the development of the bond market has not significantly helped to increase the savings market but it has allowed for an instrument that could better suit the country's important long term savers and allow for greater asset portfolio diversification.

Chapter 7 – Conclusions and recommendations

In conclusion, the impact of the development of the domestic bond market is mixed. It has enabled a large government deficit which has allowed for some counter-cyclical capital investment, a step up in social grants, but also a significant rise in civil service salary. On the plus side it has increased the capacity to fund in rand and for longer maturities, not just for the government and the SOEs, but also for the private sector. On the negative side, the high debt burden means the country has become more vulnerable to financial risks and continuing foreign investment.

Returning to the start of this paper, has the development of the bond market met the expectations behind the WB and other multilaterals call for the development of a domestic bond market? There is some evidence to suggest that the bond market acts as an alternative credit supplier to the bank market. On the other hand, as the banks dominate private sector bond issuance, there is high risk of financial contagion between the two markets. One can suppose a scenario where distress in the banking sector leads the banks to reduce their credit lines. At the same time, their bonds are sold off in the bond market leading to a decline in the credit index and a corresponding decline in other bonds' prices which negatively impacts the ability of issuers to issue more bonds. The greater the banks' distress the greater this risk of contagion, in short the bond market is unlikely to act as a buffer just when it is most needed.

As there is no improvement in the national savings rate, it cannot be said that the bond market development has increased savings. However, the bonds add investment asset that was missing from the financial market, and one well suited to the type of long term investor that dominates the SA savings landscape. Unintended market infrastructure barriers bias savings away from the non-financial sector, which arguably reduces the efficacy of turning savings into investment.

With this in mind, I propose the following recommendations:

- Private sector bonds, particularly non-bank issuances, could offer the conduit to link savings to investment which should help improve economic development. Efforts should be made to support it.
- The banks have and continue to be one of the financial back bones of the economy. But their dominance increases the risk that they become complacent and or they are 'too big to fail'. Issuances in the bond market improve the stability of the sector via reduction of liquidity risk, but in doing so it increases the likelihood of financial contagion between the bank and bond markets. I do not recommend limiting bank issuance but the promotion of non-bank issuance

- Promotion of non-bank issuance includes easier and more transparent access to market information for a start. I have discussed the role that indices play in promoting bonds, and whilst respecting the JSE strategy of building indices on the most liquid bonds, it should be recognised that the unintended consequence is to bias market visibility away from the less frequent, smaller issuance size issuers which include the non-financial issuers. One suggestion is to create other indices driven by other factors including 'diversification' which may appeal to investors seeking to reduce concentration of their portfolios or 'top non-financials'. As the JSE is a for-profit business, they may not agree that the social benefits of such recommendations justify their business spend, in which case government may consider the cost-benefit of supporting the effort.
- The current Regulation 28 is biased against non-financial sector bond issuance through the imposition of a lower ceiling for the sector's bonds. It is also inconsistent with the Regulation's desire to safeguard pension assets.

My final recommendation is for future studies: this could include developing a better database for other researchers, inclusion of industry-wide interviews and a comparative study with another High Middle Income Country(ies).

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Appendix 1 – data tables from Chapter 3

Table a – bond issuance by year and type of borrower (data source: Bloomberg, my allocation to borrower type)

Issuance year	unidentified issuer	non-financial issuer	financial issuer	government (national, municipal)	state-owned enterprise	Other Southern African country issuer	Grand Total
1972	-	-	-	111,719,619.60	57,332,250.00	-	169,051,869.60
1973	-	-	-	68,047,360.48	41,999,100.00	-	110,046,460.48
1974	-	-	-	89,876,340.87	169,753,450.00	-	259,629,790.87
1975	-	73,346,000.00	-	90,273,978.00	34,411,500.00	-	198,031,478.00
1976	-	-	-	295,573,366.00	45,940,000.00	-	341,513,366.00
1977	-	68,997,000.00	-	520,124,229.41	-	-	589,121,229.41
1978	-	276,051,600.00	-	799,169,663.85	-	-	1,075,221,263.85
1979	-	202,428,800.00	-	2,070,856,652.07	890,925,434.60	-	3,164,210,886.67
1980	-	-	-	5,413,343,155.10	70,357,369.88	93,035,628.00	5,576,736,152.98
1981	-	-	-	1,353,329,521.22	735,616,969.68	-	2,088,946,490.90
1982	-	-	-	6,162,060.00	3,124,769,802.41	18,825,177.60	3,149,757,040.01
1983	-	4,322,878,984.85	-	67,129,973.06	6,592,929,574.56	-	10,982,938,532.47

1984	-	2,045,456,392.59	-	7,165,370,357.74	-	9,293,030.25	9,220,119,780.58
1985	-	-	-	22,553,313.00	502,429,467.60	-	524,982,780.60
1986	-	-	-	1,470,173,866.50	-	-	1,470,173,866.50
1987	-	95,756,493.95	-	452,787,500.00	9,576,123,866.88	-	10,124,667,860.83
1989	-	-	-	87,569,086,827.56	883,758,092.00	-	88,452,844,919.56
1990	-	-	294,279.52	230,188,380.00	4,883,434,798.04	-	5,113,917,457.56
1991	-	285,231.50	10,325,257.36	48,068,735,814.00	35,587,200.00	-	48,114,933,502.85
1992	-	45,453.29	-	7,925,464,309.36	9,569,201,063.25	-	17,494,710,825.90
1993	-	-	-	3,045,008,987.29	1,327,432,500.00	1,293,049,560.00	5,665,491,047.29
1994	-	-	-	12,919,994,737.12	930,808,150.00	-	13,850,802,887.12
1995	-	-	-	6,347,687,066.80	-	-	6,347,687,066.80
1996	-	-	-	13,234,276,320.15	664,148,851.20	831,906,705.00	14,730,331,876.35
1997	-	22,336,400.00	-	13,515,738,216.29	6,183,792,674.90	-	19,721,867,291.19
1998	-	614,845,000.00	-	41,287,271,439.00	1,005,579,000.00	-	42,907,695,439.00
1999	-	-	66,166.58	11,307,549,700.00	323,958,500.00	-	11,631,574,366.58
2000	295,337,718.00	396,620,000.00	864,340,857.00	20,004,470,147.60	471,751,827.12	-	22,032,520,549.72

2001	-	1,216,711,000.00	549,792,000.00	22,506,068,030.40	1,392,421,400.00	-	25,664,992,430.40
2002	107,876,373.80	302,202,143.54	816,243,068.50	15,725,917,112.82	390,030,451.69	-	17,342,269,150.35
2003	252,362,200.00	986,194,834.92	550,948,711.14	17,390,922,875.80	2,357,474,057.43	-	21,537,902,679.29
2004	67,133,853.00	634,342,900.00	1,775,678,269.83	42,195,390,860.15	1,022,604,400.00	130,986,400.00	45,826,136,682.98
2005	-	746,059,600.00	2,926,325,626.64	53,482,083,263.60	222,548,942.00	-	57,377,017,432.24
2006	379,295,405.60	2,198,414,300.00	4,233,872,509.28	45,004,319,293.80	4,805,143,200.00	-	56,621,044,708.68
2007	313,849,579.75	1,755,235,600.05	6,083,805,657.38	26,890,074,945.44	5,378,531,150.00	-	40,421,496,932.62
2008	74,787,388.00	5,020,730,092.63	5,830,690,748.19	25,437,892,248.00	4,484,709,886.69	-	40,848,810,363.51
2009	70,813,005.00	3,564,114,314.70	7,260,859,384.60	42,125,971,934.00	4,927,038,135.30	-	57,948,796,773.60
2010	399,512,200.00	5,185,108,006.04	6,965,777,748.52	72,874,593,142.00	5,728,931,815.00	-	91,153,922,911.56
2011	-	3,719,568,143.00	10,975,912,034.69	46,773,757,274.00	1,290,854,185.47	-	62,760,091,637.16
2012	90,624,006.00	6,234,261,841.70	15,250,392,783.72	99,081,698,800.00	1,406,200,025.00	-	122,063,177,456.42
2013	187,425,604.00	5,822,221,129.17	8,124,477,119.09	84,129,417,085.39	4,870,766,364.30	-	103,134,307,301.94
2014	-	3,859,599,267.20	6,194,212,301.43	61,257,419,148.40	2,971,538,652.40	-	74,282,769,369.42
2015	-	1,738,700,518.20	6,874,062,355.55	25,656,114,869.10	393,990,300.70	-	34,662,868,043.55
Grand Total	2,239,017,333.15	51,102,511,047.32	85,288,076,879.01	965,983,603,784.96	89,764,824,408.11	2,377,096,500.85	1,196,755,129,953.40

Table b – bond, equity and bank market regression study

data

year	GDP (R million) (source: Stats SA)	Financial and corporate bonds (R million) (source: Bloomberg)	JSE all share index market capitalisation (R million) (source: Bloomberg)	Bank credit to the private sector (R million) (source: Stats SA)	mkt cap/GDP	bank credit/GDP	bond mkt/GDP
2000	1,955,118	6,327.50	1,554,568.63	590,063.00	80%	30%	0%
2001	2,007,906	8,071.67	1,569,495.75	674,047.00	78%	34%	0%
2002	2,082,206	9,190.05	1,604,345.75	703,581.00	77%	34%	0%
2003	2,143,612	10,084.81	1,857,945.13	838,500.00	87%	39%	0%
2004	2,241,244	11,784.13	2,028,027.75	954,224.00	90%	43%	1%
2005	2,359,516	14,427.19	2,960,363.00	1,140,195.00	125%	48%	1%
2006	2,491,296	19,238.79	4,142,015.50	1,434,873.00	166%	58%	1%
2007	2,624,841	25,922.04	2,767,829.50	1,743,858.00	105%	66%	1%
2008	2,708,601	26,174.21	3,378,540.75	1,981,865.00	125%	73%	1%
2009	2,666,940	30,625.53	4,515,819.00	1,979,517.00	169%	74%	1%
2010	2,748,008	35,124.39	5,286,510.00	2,087,865.00	192%	76%	1%
2011	2,836,287	40,848.88	6,091,328.50	2,216,668.00	215%	78%	1%
2012	2,899,247	52,022.42	7,425,516.50	2,439,476.00	256%	84%	2%
2013	2,963,389	52,210.76	8,866,592.00	2,589,003.00	299%	87%	2%
2014	3,008,576	54,010.39	9,742,719.00	2,808,739.00	324%	93%	2%

Regression analysis

Regression Statistics	
Multiple R	0.773396
R Square	0.598142
Adjusted R Square	0.477584
Standard Error	0.013333
Observations	14

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	3	0.002646	0.000882	4.961468	0.023117
Residual	10	0.001778	0.000178		
Total	13	0.004424			

	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*
Intercept	0.010878	0.008474	1.283617	0.228222	-0.008	0.02976
Growth rate Financial and corporate bonds	0.004307	0.038927	0.110646	0.914086	-0.08243	0.091041
Growth rate JSE all share index market capitalisation	-0.01329	0.019549	-0.67967	0.512141	-0.05684	0.03027
Growth rate Bank credit to the private sector	0.182149	0.057097	3.190169	0.009651	0.054929	0.309369

Appendix 2 – data for Chapter 4

Table a – JSE index components

Components of the JSE ALBI 20 as of 7 January 2015 (source: JSE)

JSE All bond index - of fixed rate bond - (ALBI 20)		
issuer	Bond code	Index weight
Republic of South Africa	R159	2.56%
	R203	8.48%
	R204	7.95%
	R207	8.28%
	R208	8.06%
	R2023	5.42%
	R2030	3.53%
	R186	15.99%
	R213	7.12%
	R2032	2.57%
	R209	6.31%
	R2037	3.43%
	R214	5.90%
	R2044	1.58%
	R2048	6.02%
Sub-total Republic of SA		***93.26%***
Eskom Holdings Limitied	ES18	0.99%
	ES23	1.14%
	ES26	1.60%
	ES33	2.10%
Development Bank of SA	DV23	0.97%
Total		***100.00%***
Inflation linked index – of floating rate bonds (CILI 15)		
Republic of SA	R211	6.26%
	R212	9.33%
	R197	21.27%

	I2025	6.39%
	R210	11.71%
	R202	19.76%
	I2038	7.83%
	I2046	3.63%
	I2050	6.60%
Sub-total Republic of SA		***92.78%***
The Standard Bank of SA Ltd	SBSI12	0.63%
	SBSI11	1.32%
Trans-Caledon Tunnel Authority	WS05	1.91%
SA National Roads Agency Ltd	HWAY23	1.43%
Eskom Holdings Ltd	EL28	0.99%
	EL30	0.94%
Total		***100.00%***

Components of the JSE Credit Top 30 index, fixed rate and floating rate bonds, as of 7 January 2015 (source: JSE)

JSE Credit Top 30 Index		
Fixed rate bond credit index (CFIX30) as of Q1 2015		
issuer	**Number of bonds**	**Index weight**
Firstrand Bank Ltd	3	15.0%
The Standard Bank of SA Ltd	6	15.0%
ABSA Bank Ltd	3	11.4%
Nedbank Ltd	2	6.0%
Sub-total Big 4 banks	***14***	***47.4%***
Transnet SOC Limited	6	15.0%
Development Bank of SA	2	8.1%
Airports Company of South Africa SOC Ltd	2	7.2%
DEVELOPMENT BANK OF SOUTHERN AFRICA	1	6.9%
City of Cape Town Metropolitan Municipality	1	4.2%

City of Johannesburg Metropolitan Municipality	1	3.2%
Imperial Group Ltd	1	2.8%
Rand Water Board	1	2.8%
Mobile Tel Networks Ltd	1	2.3%
Total	*30*	*100%*
Floating rate bonds credit index (CFLO30) as of Q1 2015		
Nedbank Ltd	6	15.0%
The Standard Bank of SA Ltd	6	15.0%
Firstrand Bank Ltd	3	14.8%
ABSA Bank Ltd	2	7.8%
Sub-total Big 4 banks	***17***	***52.6%***
Investec Bank Ltd	3	11.3%
Bidvestco Ltd	1	3.6%
Bank of China Ltd	1	2.8%
Transnet SOC Limited	2	12.1%
Mercedes-Benz SA Ltd	3	9.7%
Land & Agricultural Development Bank of SA	2	5.4%
Development Bank of SA	1	2.6%
Total	*30*	*100%*

Table 3 – Model 3 regression analysis factors affecting bond development

Data

	data				**Regression inputs**			
year	**investment in SA as % of total emerging mkts (source: Arslanalp & Tsuda database)**	**R186 spread (source: Bloomberg)**	**R207 spread (source: Bloomberg)**	***S&P rating at year end (source: Standard & Poor's)***	**USD-ZAR (source: Bloomberg)**	***S&P 3-year downside transition risk % (based on Standard & Poor's, 2015)***	**R186 spread ratio (= R186 spread/S&P transition risk)**	**R207 spread ratio (= R207 spread/S&P transition risk)**
2006	0.022616	253.4212	283.3416	*A+*	7.00599	*5.555*	45.62038	51.00659
2007	0.022016	363.7556	390.4385	*A+*	6.862429	*5.555*	65.48256	70.28596
2008	0.021221	413.5628	461.1249	*A+*	9.524354	*5.555*	74.44875	83.01078
2009	0.023986	451.6668	457.7924	*A+*	7.397872	*5.555*	81.30815	82.41087
2010	0.032062	435.6657	387.4827	*A+*	6.628091	*5.555*	78.42767	69.75386
2011	0.036205	611.6136	515.8525	*A*	8.08996	*5.663*	108.0017	91.09174
2012	0.040553	509.6016	359.5132	*A-*	8.472997	*8.666*	58.80471	41.48548
2013	0.037475	493.2318	371.1856	*BBB+*	10.49252	*9.6*	51.37831	38.66517
2014	0.037249	470.2292	497.1797	*BBB+*	11.57126	*9.6*	48.98221	51.78955

Regression

Regression Statistics	
Multiple R	0.953435
R Square	0.909039
Adjusted R Square	0.854462
Standard Error	0.002994
Observations	9

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	3	0.000448	0.000149	16.65618	0.004915
Residual	5	4.48E-05	8.96E-06		
Total	8	0.000493			

	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*
Intercept	0.016929	0.008041	2.105442	0.089136	-0.00374	0.037598
R186 spread ratio	0.000599	0.000106	5.653232	0.002406	0.000327	0.000872
R207 spread ratio	-0.00066	0.00011	-6.01391	0.001827	-0.00095	-0.00038
USD-ZAR	0.001819	0.000658	2.766762	0.039517	0.000129	0.00351