

Banking Sector Development and Corporate Leverage: Empirical Evidence from South African Firms

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Abstract

The banking sector in Africa dominates the financial system which makes bank credit an important source of external finance for firms within the economy. For this reason, financial policy makers and regulators implement development measures in the banking sector to ease a firm's access to bank credit. This paper investigates the effect of banking sector development on capital structure decisions of publicly listed firms in South Africa with the use of a dynamic panel data estimator. We use the two-step system generalised method of moments (GMM) in the investigation and find that as the banking sector develops, publicly listed firms in South Africa use less debt in their capital structure. This is consistent with the notion that as the banking sector develops in emerging markets; the resultant risk management process which tightens lending process gives a better pricing for risk and makes the cost of bank credit higher. The policy implication for financial policy makers and regulatory bodies is that they should implement policies that will put in place an efficient risk management process which at the same time, reduces cost of bank credit.

Keywords: banking sector development, capital structure, dynamic panel data

1. Introduction

Financing decision is one of the most important decisions in corporate finance. Apart from having to make a choice between external and internal source of financing, a firm must also decide on the proportion of debt and equity it will have in its capital structure. Corporate finance theory suggests that apart from firm specific factors that explain the rationale behind a firm's capital structure composition, the level of development of the financial market of an economy also helps in explaining a firm's capital structure. For instance, Murinde (2012) shows that transaction costs in developed financial markets are lower than in developing / underdeveloped financial markets. This is because of low information asymmetry present in the developed markets. The resultant effect is that an efficient avenue where the exchange of information takes place between firms, financial institutions and financial markets is established in developed markets. This further leads to an efficient channelling of resources from surplus units to deficits in the economy for productive use. However, in developing markets, there is difficulty in obtaining financial information from borrowers thereby creating asymmetric information which may result to moral hazards and adverse selection (Chami et al., 2010).

Bank credit plays an important source of external finance for firms in developing countries and as noted by Chami et al. (2010) that though the banks are at a developing stage, the few ones that exist are large relative to the firms in the economy and therefore, can easily meet up with their credit requirements. However due to frictions that arise as a result of high transaction costs and asymmetric information, getting the required credit by the firms may still is a problem. In other studies; Faulkender and Peterson (2006) and Frank and Goyal (2009) notes that in underdeveloped financial markets, restriction on access to credit often make firms that need external financing to rely on the equity market with less debt being issued. Banking sector reforms that will ease access to bank credit are thus introduced. Senbet (2001) also identify that higher cost of fund prevail in the African banking sector. They attribute this to the demand for higher interest rate because of the absence of a favourable operating environment that results from asymmetric information and the non-performance of financial intermediation role by the banking sector.

Financial markets according to Islam and Mozumdar (2007) are able to channel funds to their most productive use in the corporate sector but when imperfections exist in such markets, firms seek for an alternative source of financing for its investments. They (Islam & Mozumdar, 2007) find that this is common in countries with less developed markets and that financing decisions are sensitive to internal funds. This implies that the source of capital is important in capital structure decisions.

Previous literature examined how differences in financial market development affects financing choice of firms in a panel study of several countries with varying levels of development without examining developments specific to a particular country. This study fills in that gap by investigating how banking sector development in South Africa influences capital structure decision of firms listed on the Johannesburg Stock Exchange (JSE) within a dynamic framework. According to Akinboade and Makina (2010), the business and economic environments in South Africa have undergone rapid changes over the years. This makes firms capital structure decisions to change in tune with the dictates of the movements of the business cycles.

The next section reviews the banking sector reforms and development in South Africa over a ten-year period (2003–2013). Section 3 reviews the theoretical background and literature. Section 4 discusses the data, variables and method of estimation. Section 5 presents the results of the study while section 6 concludes.

2. Overview of Banking Sector Development in South Africa

The financial sector inclusive of the Banking sector in South Africa is considered to be more developed than its peers in the African region. This can be attributed to the series of reform made in the sector such as technology, consolidation and innovation to meet up with the ever increasing needs in the sector. The recent inclusion of South Africa in the BRIC (Note 1) group of countries to become BRICS indicates its leadership status over other economies in the region. The 2012/2013 World Economic Forum competitive survey rates South African banks 2nd in 144 countries for soundness and 3rd in the area of financial sector development. In order to improve foreign participation, the sector was opened up to allow foreign investors to participate in local banking in 2005. Efforts to improve the risk management practices of the banks were also put in place with the implementation of Basel III which took place in early 2013.

Table 1. Banking sector reforms in South Africa (2003–2012)

Year	Reforms Aimed at Improving Banking Sector Competitiveness and Efficiency.
2003	Banks to develop a risk matrix to verify clients' identities, as per Finance Intelligence Centre Act (FICA) i.e. making effective legislation against money laundering.
2005	Foreign banks were allowed to participate in domestic banking business. South African banks, in turn, were allowed to establish branch offices, subsidiaries and representative offices outside South Africa.
2007	The Banking Association of South Africa unveiled a code of conduct, agreed to by all major consumer lending banks, setting out a standard to which banks undertake to adhere with respect to lending practices.
2008	Implementation by the Bank of Phase 1 of the Integrated Cash Management System (ICMS) to improve efficiency. Implementation of Basel II.
2010	Ease in retail and investment bank lending standards.
2011	Implementation of the twin peaks financial regulatory mode to further strengthen and maintain stability in the financial system.
2012	Implementation of Basel 2.5
2013	Implementation of Basel III

Source: Adapted from Kasekende et al. (2009) and Financial Stability Review of the South African Reserve Bank (different years obtained from www.resbank.co.za).

The banking sector reforms in South Africa as adapted from Kasekende et al. (2009) are as highlighted in Table 1. The table shows a gradual reform process aimed at improving competition, efficiency and risk management process in the banking sector.

Banking sector development indicators in South Africa for the period 2003 to 2012 are as shown in Figure 1 and 2. The figures show ratio of broad money to GDP and ratio of domestic credit to the private sector to GDP. The indicators are selected from Beck et al. (2008).

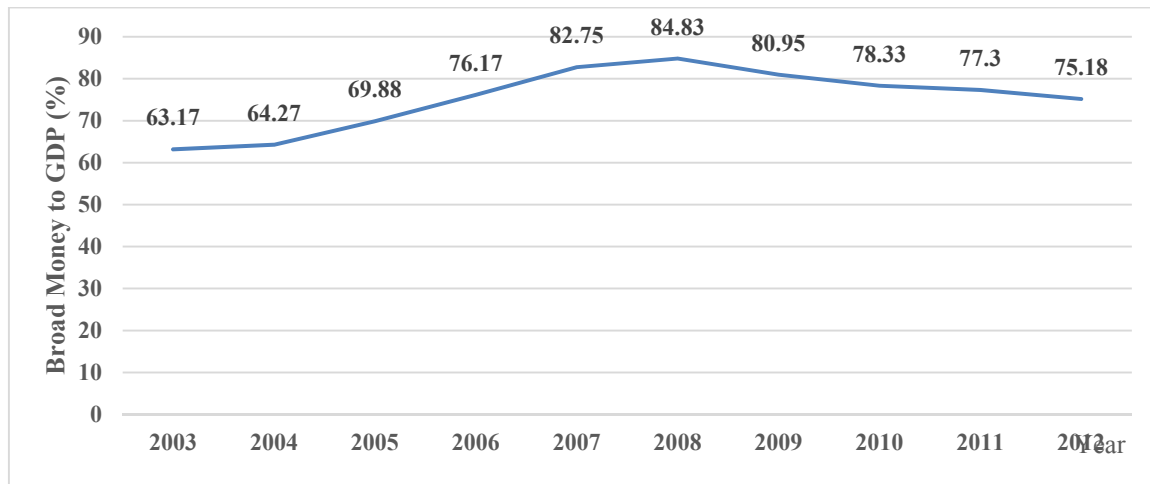


Figure 1. Broad Money to GDP (%)

Source: World DataBank, World Development Indicators (2013).

The ratio of broad money to GDP is an indicator of the size of the banking sector in relation to the economy as a whole and shows the level of liquidity provided by the banking sector. Unlike the domestic credit to the private sector, it does not show how savings are allocated to investments and does not exclude private sector credits (Saci & Holden, 2008). Figure 1 shows rising trend from 63.17% in 2003 to 84.83% in 2008. It thereafter declined to 80.95% in 2009. The decline continued till 2013 at 75.18% as at the period of this study. This suggests a decline in the level of liquidity that is provided by the banking sector.

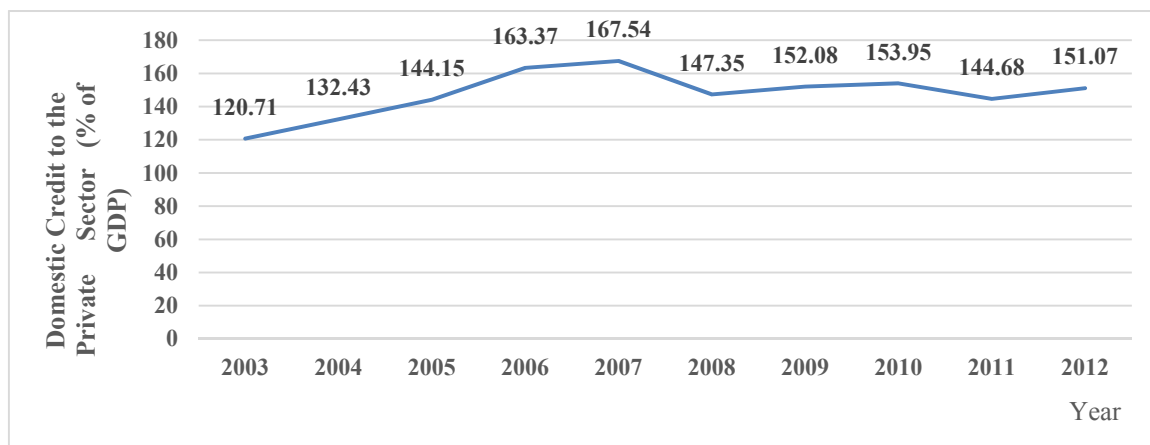


Figure 2. Domestic credit to the private sector

Source: World DataBank, World Development Indicators (2013).

Domestic credit to private sector ratio indicates the role of banks in providing long term financing to the private sector and the extent to which savings are transferred into investments. Savings are transferred into investments through the process of information evaluation and identification of profitable investments (Beck & Levin, 2004; Saci & Holden, 2008). Higher levels of the ratio suggest that transaction costs are low and an increased level of financial intermediation (Saci & Holden, 2008). Figure 2 shows that there was a gradual increase from 120.71% in 2003 to 167.54% in 2007 and thereafter a decline to 147.35% in 2008. The value of the ratio increased to 152.08% in 2009, 153.95% in 2010, fell to 144.68% in 2011 and closed with an increase to 151.07% in 2012. The increase in the ratio over the period of this study suggests that South African banking sector has been able to reduce transaction costs and improve the financial intermediation role played by the banks.

3. Theoretical Background and Literature Review

Theoretical literature on financial intermediation focuses on the role played by banking sector development in

reducing frictions caused by information asymmetry and transaction cost. These two factors are relevant when explaining how banking sector development affects corporate leverage. According to Klein (1971), in perfect credit markets, costs are reduced when there is an increase in competition. Explaining further, Schmukler and Vesperoni (2006) assert that banking sector development leads to the provision of an alternative finance option for firms. This in turn increases competition in the industry. The increase in competition further leads to a reduction in transaction costs and thus an increase in the availability of bank credit. In another study, Bokpin (2010) argues that the role played by Banks in the reduction of costs associated with the acquisition and processing of information about potential investments leads to an increase in the availability of debt financing. This encourages firms to seek for finance from the banks at a lower cost.

Reduction in asymmetric information in credit markets improve and increase credit availability especially in developing financial markets but Petersen and Rajan (1995) show that information asymmetry between borrowers and lenders reduces lending even though there is an increase in credit market competition. This is because increased competition in markets with asymmetric information lowers the benefits a bank derives from having a tight credit relationship with the borrower and thus the ability of the bank to improve upon its relationship with the firm in order to ease the firm's access to credit (Gonzalez & Gonzalez, 2014). In a similar study, Agca et al. (2013) show that the efficiency that occurs as a result of increase in bank competition following banking sector reforms in a sample of fifteen emerging markets lead to a reduction in transaction costs in credit markets. However, at the same time, reforms that lead to better pricing of risk increase the cost of borrowing.

In extant literature, different theories are used in explaining how a firm determine its corporate capital structure. Notable among them is the trade-off theory and the pecking order theory. The trade-off theory implies that a firm will have to balance the corporate tax advantage of debt financing against costs that are associated with financial distress. This comes up because of bankruptcy risks and agency costs (Brounen et al., 2006; Frank & Goyal, 2003; Graham, 2003; De Jong et al., 2008; Shyam-Sunder & Myers, 1999). In the pecking order theory, the firm has a specific financing hierarchy that it follows. The theory states that a firm will only use debt financing when retained earnings are inadequate to fund a firm's financing needs. Here, equity financing is seen as a last resort for the firm and target leverage does not exist. Equity financing is seen to be riskier than debt financing and firms that follow the pecking order theory prefer internal financing to external financing (Antoniou et al., 2008; Frank & Goyal, 2003; Myres & Majluf, 1984; Shayam-Sunder & Myers, 1999).

Frank and Goyal (2009) and Rajan and Zingales (1995) specifically identify the main firm specific determinants of corporate capital structure as growth opportunity, tangibility of assets, profitability, firm size and tax. The trade-off theory predicts a negative relationship between growth opportunity and corporate leverage due to the effect of financial distress costs and effect of information asymmetry. Increase in financial distress costs which might arise because of growth makes firm managers to reduce the debt level in the capital structure. So also, if overvaluation which results from information asymmetry is expected to cause growth, then firm managers will rather issue equity than issue debt. On the other hand, the pecking order predicts a positive relationship between a firm's leverage and growth opportunity because firms with more investments are expected to accumulate more debt over time (Antoniou et al., 2008).

Tangibility of assets under the trade-off theory is expected to have a positive relationship with leverage. This is because the more tangible assets a firm has, the lesser the risks associated with lending to such a firm. This leads to a lower risk premium demanded by the lenders (Frank & Goyal, 2009). Another reason for the positive relationship is given in Stulz and Johnson (1985) who assert that the ability of a firm to substitute assets a lending relationship is reduced by secured debts. This in turn reduces agency cost and thus cost of borrowing. With the pecking order theory, an inverse relationship is expected between tangibility of assets and leverage. The low information asymmetry associated with tangible assets makes equity issuance costs to be low. However, as explained in Frank and Goyal (2009), tangibility can also lead to an increase in adverse selection which leads to an increase in the use of debt.

A positive relationship is predicted between leverage and profitability under the trade-off theory. This is because profitable firms tend to have lower financial distress costs and derive the benefits associated with interest tax shields. However as shown by Kayhan and Titman (2007) and Tsyplakov (2008), the relationship can be a negative one when a dynamic specification of leverage is incorporated in the model. The pecking order conversely predicts a negative relationship with leverage because firms prefer internal finance to external finance. Therefore, with fixed investments and fixed dividends, a profitable firm will overtime, become less levered.

The relationship between firm size and leverage is expected to be a positive under the trade-off theory. It is

generally believed that larger firms can take on more debt in their capital structure than smaller firms can and therefore will borrow more. The positive relationship is also explained as a result of the lower information asymmetry linked with large firms. They are thus able to have easy access to the debt market at a reduced cost thus giving them an advantage over smaller firms in the debt market. The pecking order conversely predicts a negative relationship because small firms are expected to use lesser amount of debt in their capital structure (Frank & Goyal, 2009). Firms that have high tangible fixed assets (which generate high depreciation such that non-debt tax shields consist mainly of depreciation) are able to take on more debt due to the collateral value attached to the assets and are able to utilise tax savings.

Macro-economic variables also affect the capital structure choice of firms as shown in literature. Inflation is expected to have an inverse relationship with leverage because real values of tax deduction are higher during periods of high inflation. During periods of expansion, firm borrowings go up as a result of reduced bankruptcy costs and increase in taxable income (Frank & Goyal, 2009).

There exist a few empirical studies on the relationship between financial market development and capital structure decisions. One of such is Agarwal and Mohtadi (2004), who show evidence of financial market development (equity and banking sector) having an impact on financing decisions of firms in developing markets. The findings of the study reveal that debt financing is favoured by developments in the banking sector while equity financing is favoured by stock market development. The study utilized a dynamic panel approach on aggregated firm level data on a sample of 21 developing countries for the period 1980–1997. However, the study was a panel study and was not country specific i.e. did not bring out specific country implications. Also, although the study used ratio of bank's liabilities (M3) to GDP and ratio of bank deposit of domestic assets to GDP as measures for banking sector development, these variables do not exclude the credit granted to the government and public sector, hence it is difficult to separate the credit specifically meant for the private sector (Beck & Levine, 2004). Bokpin (2010) also examined the effect of financial market development on a panel sample of 34 emerging markets. The results obtained are similar to that of Agarwal and Mohtadi (2004) that the level of financial market development and macroeconomic variables impacts on capital structure decisions. The study like Agarwal and Mohtadi, pools the countries into a single regression equation. The process of pooling the countries into a single regression equation according to De Jong et al. (2008) is not valid for testing the effect of country specific factors because it assumes that the cross-country firm specific factors are the same across the countries.

In a more recent study, Agca et al. (2013), show that non-financial firms in a sample of emerging financial markets use less debt in their capital structure following banking sector reforms that focus on bank supervision, allocation of credit and removal of control on interest rates. They attribute this to the better risk management process put in place after the reforms. This tightens the lending criteria and increases the cost of bank credit. The firms, because of the increased cost of bank credit, employ less debt in their financial structure. The study however did not determine country specific effects of the reforms on firms in each country that was sampled.

The present study improves on previous studies by investigating the effect of banking sector development on the capital structure decision of non-financial firms in South Africa to determine country specific effects. The study also uses domestic credit to the private sector credit as a ratio of GDP to measure banking sector development. Beck and Levine (2004) argue that this ratio is appropriate to determine the extent of credit made available to firms in the economy because it excludes government and public sector lending unlike other banking sector development indicators.

4. Data, Variable Description and Methodology

We use annual data from 2003 to 2012 obtained from two main sources. Data for banking sector development, inflation and growth rate of GDP are obtained from World DataBank, World Development Indicators. Annual firm-level data is obtained from Datastream. The study uses a sample of 244 firms that are listed on the JSE with 2,440 observations and excludes financial firms, real estate, holding asset management companies and other regulated firms. These sets of firms are excluded because they are highly regulated and require stringent capital requirements (Ramjee & Gwatidzo, 2012). The panel data is unbalanced because some of the firms have missing data in some years. We winsorize the dependent and explanatory variables at the 1st and 99th percentile to reduce the impact of outliers (Flannery & Hankins, 2013).

The dependent variable is leverage while the main explanatory variable is banking sector development. Other firm-level variables are tangibility of assets, size of the firm, profitability of the firm, non-debt tax shield and growth opportunity. Inflation and growth rate of GDP are the two control variables we employ in the study. The variables used are taken from previous studies on capital structure and financial market development.

We use two variables to measure leverage. We define leverage1 (*Lev*) as ratio of book value of total debt to book value of total assets and leverage2 (*Lev2*) as ratio of long-term debt to book value of total assets (Note 2). Non-debt tax shield (*Ndts*) is ratio of depreciation to book value of total assets. Profitability (*Prof*) is ratio of operating income to total assets. Size is the natural logarithm of total sales. Tangibility of assets (*Tan*) is ratio of net fixed assets to book value of total assets. Growth opportunity (*Grw*) is ratio of capital expenditure to the book value of total assets (Note 3). Inflation (*Inf*) is the annual change in consumer price index as at the end of the year. Banking sector development (*Bcr*) is domestic credit to the private sector by deposit money banks as ratio of the gross domestic product. Gross domestic product growth rates (*Gdp*) is the annual change in the gross domestic product.

We use panel data for the study due to the advantages of using panel data over other types of data such as cross sectional data and time series data. Some of the advantages include the tackling of more complex problems such as heterogeneity of data (which takes into consideration the effect of any omitted variable), provision of more observation with different individual cross sectional units, ensures less collinearity among the variables and allows for a better dynamic study of the unit of interest (Baltagi, 2008).

We investigate the effect of banking sector development on capital structure decision of South African firms within a dynamic panel data framework because both the business and economic environments of firms in South Africa operate in a dynamic context (Akinboade & Makina, 2010). For this reason, we expect that capital structure decisions too will be dynamic. This necessitate that we include a lagged dependent variable in our estimation. The introduction of a lagged dependent variable raises concerns about endogeneity, a situation where the error term is correlated with the lagged dependent variable. Certain firm level characteristics may also be excluded from the model such as managerial ability, corporate governance, cash flow etc. the absence of which may bias the result of the estimations (Flannery & Hankins, 2013; Matemilola et al., 2013). To fix this problem, Lemmon et al. (2008) suggest the use of fixed effect to control for the unobservable time invariant features of the firm.

The introduction of a lagged dependent variable and fixed effects into the estimation equation according to Flannery and Hankins (2013) will make the coefficients of the estimates to be substantially biased especially for short panels. For this reason, they suggest using an instrumental variable technique such as the difference Generalised Method of Moments (GMM) to estimate the equation. The difference GMM as put forward by Arellano and Bond (1991) use lagged values and lagged differences to estimate dynamic panel coefficients. This enables it to address the endogeneity and fixed effects problem. The difference GMM does this by using the lagged levels of the explanatory variable (which is lagged two or more periods) as instruments (Sala & Trivin, 2014).

Despite the fact that the difference GMM overcomes the problem of endogeneity and fixed effects, Arellano and Bover (1995) and Blundell and Bond (1998) argue that the instruments used in the estimation are weak. To overcome this, they propose the use of the system GMM. The system GMM uses additional instruments in difference which is presumed to be uncorrelated with the unobservable fixed effects in the level equation. The efficiency of the system GMM rests on the validity of the additional moment's condition which requires that the correlation between unobservable fixed effects in the level equation and difference be equal to zero (Matemilola et al., 2013). In addition, Blundel and Bond (1998) show that the system GMM is a more efficient estimator in situations where the difference GMM's performance is poor such as in short sample periods and persistent data. This according to Antoniou et al. (2008) is applicable when the coefficient of the lagged dependent variable in equation 1 tends towards one and ratio of variance (μ_i) / variance of (ε_{it}) increases. For this reasons, we use the two-step system GMM to estimate the coefficients in our model.

Following Antoniou et al. (2008), we model *Lev* and *Lev2* as a one period lagged dependent variable model of firm-specific, banking sector development and control variables as earlier defined. We use equation 1 for our estimation.

$$Y_{it} = \alpha_0 + \alpha_1 Y_{i,t-1} + \sum_{k=1}^k \gamma_k X_{k,it} + \mu_i + \eta_t + \varepsilon_{it} \quad (1)$$

Where Y_{it} is the leverage ratio measure of firm i in year t , X is a vector of k explanatory variables, μ_i is the time invariant unobservable firm specific fixed effects, η_t is time specific effects, α_0 and α_1 are coefficients to be estimated and ε_{it} is the time varying error term.

5. Empirical Results and Discussion

Table 2 shows the summary statistics of the dependent, explanatory and control variables. Panel A in table 2 gives the mean, standard deviation, minimum and maximum values for the variables. Panel B shows the result of

the correlation statistics.

Table 2. Descriptive statistics

Panel A. Mean, standard deviation, minimum and maximum

	Lev	Lev2	Ndts	Prof	Size	Tan	Grw	Inf	Bcr	Gdp
Mean	0.164	0.086	0.035	0.096	0.964	0.285	0.086	0.054	1.485	0.039
Std. dev	0.133	0.089	0.021	0.934	1.970	0.217	0.082	0.014	0.102	0.011
Minimum	0	0	0.007	-0.062	10.797	0.033	0.001	0.034	1.324	0.026
Maximum	0	0.265	0.073	0.244	16.880	0.663	0.266	0.071	1.634	0.055

Panel B. Correlation coefficients

	Lev	Lev2	Ndts	Prof	Size	Tan	Grw	Inf	Bcr	Gdp
Lev	1.000									
Lev2	0.055	1.000								
Ndts	0.112	0.105	1.000							
Prof	-0.123	-0.004	0.058	1.000						
Size	0.024	0.052	0.098	0.172	1.000					
Tan	0.230	0.158	0.437	0.023	0.207	1.000				
Grw	0.142	0.065	0.334	0.138	0.018	0.517	1.000			
Inf	-0.015	-0.037	-0.119	0.058	0.041	-0.028	0.060	1.000		
Bcr	-0.045	-0.002	-0.125	0.084	0.032	-0.017	-0.125	0.327	1.000	
Gdp	-0.013	0.003	-0.012	0.136	-0.099	-0.008	0.027	-0.303	0.315	1.000

The variables are as defined in the previous section. The correlation results in Panel B reveal a weak association between the variables. Hence, the problem of multicollinearity between the variables does not arise.

Table 3. Results of two-step system generalised method of moments estimates

Explanatory Variables	Total Debt		Long-term debt	
	Coeff.	[Prob.]	Coeff.	[Prob.]
$Y_{i,t-1}$	0.626	[0.000]	0.605	[0.000]
Size	0.006	[0.007]	0.004	[0.000]
Prof	-0.148	[0.000]	-0.026	[0.208]
Tan	0.208	[0.003]	0.077	[0.000]
Ndts	0.023	[0.375]	0.449	[0.000]
Grw	0.228	[0.621]	0.075	[0.000]
Bcr	-0.073	[0.000]	-0.039	[0.008]
Inf	-0.531	[0.001]	-0.277	[0.000]
Gdp	-0.108	[0.566]	-0.916	[0.382]
AR (1) (<i>p</i> -values)		0.000		0.000
AR (2) (<i>p</i> values)		0.316		0.206
Sargan (<i>p</i> -values)		0.587		0.368
Wald test (<i>p</i> -values)		0.000		0.000

Note. $Y_{i,t-1}$ is the lagged leverage; other variables are as defined in previous section; second order correlation that has N (0, 1) distribution, but null uncorrelated with errors; standard errors are robust for system GMM results; Sargan (1958) over identification test and null that instruments are valid; difference Sargan (1958) test run if the error are GMM type.

Table 3 reports the estimates of the coefficients in equation 1 together with the results of diagnostics tests when total debt as a ratio of total assets and long-term debt as a ratio of total assets are used to proxy leverage (dependent variable). We find that the estimated coefficients of the main independent variable (*Bcr*) in both estimation results are significant and have an inverse relationship with leverage i.e. banking sector development is negatively related to leverage. This suggests that as the banking sector in South Africa develops, firms in South Africa make use of less debt in their capital structure. This is consistent with Agca et al. (2013) who show

that although banking sector reforms in the area of bank competition and privatization lowers the transaction costs for banks, and hence, more bank credit is available, reforms in banking supervision that lead to better pricing of risk increase the cost of borrowing for corporations especially in emerging markets.

Although Figure 2 (Domestic Credit to the Private Sector) suggests an improved financial intermediation and a gradual reduction in transaction costs for South African banks and hence, an increase in availability of debt financing, the estimation results do not show that this is the case. The results indicate that as the sector develops, there is less use of debt financing by South African publicly listed firms. This is contrary to the hypothesis that developments in the banking sector should increase the availability of debt financing. This may be as result of reforms and developments in the risk management process in the sector as seen in table 1.

Consistent with the trade-off theory, a significant and positive relationship is seen between leverage and size and leverage and asset tangibility in both models. This suggests that as asset tangibility increases leverage also increases. A positive relationship between asset tangibility and leverage implies the more assets a firm owns; the more debt financing it uses to fulfil the external finance requirements. The assets are readily pledged as collateral for the debt because they have good market values thus reducing the risk of lending to firms with tangible assets (Antoniou et al., 2008; Rajan & Zingales, 1995). Noting that the South African financial system is a bank-oriented system as highlighted in the first section, the significance of asset tangibility also supports the notion that collateral plays an important role in bank-dominated economies (Antoniou et al., 2008). The significance of the size variable suggests that as the size of the firm increase, the debt ratio also increases. This is consistent with the findings in Flannery and Rangan (2006) and Antoniou et al. (2008) that the larger a firm is, the lesser the likelihood of default and bankruptcy risk which makes the firm have the capacity to take on more loans. Larger firms also have lower information asymmetry and are able to borrow at a lower cost than smaller firms.

The significant and inverse relationship between leverage and profitability when *Lev* is measured as ratio of total debt to total assets in the result suggests that the pecking order theory is also applicable to the firms unlike when *Lev2* is used. This implies that firms in South Africa retain more of their profit to reduce the need for external financing as predicted by the pecking order theory (Flannery & Rangan, 2006; Matemilola et al., 2012, Ramjee & Gwatidzo, 2012). On the other hand, the inverse and significant relationship between leverage and profitability indicates the presence of the dynamic trade-off theory. This arises because of using a dynamic model of leverage in the estimation as argued by Tsyplakov (2008) and Kayhan and Titman (2007). According to the two studies, this happens when firms build up profits in order to acquire physical capital and the process shows a decline in leverage. Conversely, leverage increases when the physical capital is purchased. Another evidence of the pecking order is in the positive and significant relationship between growth opportunity and leverage when leverage is measured as ratio of long-term debt to total assets. This implies that a firm will issue debt before equity when external finance is required.

A positive effect is seen between *Lev2* and non-debt tax shields. This may be due to the non-debt tax shield consisting mainly of depreciation generated from tangible assets and tangible assets with collateral value enable the firm to take on more debt (Antoniou et al., 2008). However, *Lev* is not significant.

The positive and high significance of the lagged dependent variable in both the difference and system GMM implies that the model is dynamic and exhibits some level of target optimal debt ratio as predicted by the dynamic trade-off theory. This is consistent with the findings of Ramjee and Gwatidzo (2012) where South African firms are seen to adjust towards target leverage.

Inflation has a negative and significant relationship with leverage consistent with Fan et al. (2012) who find a similar relationship in developing countries.

6. Conclusion

This study examines the impact of banking sector development on the capital structure decisions of 244 South African firms listed on the JSE for the period 2003–2012. The empirical investigation was done with the use of the two-step system GMM to estimate the coefficients and significance of the variables of interest. The results suggest that there is an inverse relationship between banking sector development and leverage ratio. This may be because of reforms in the sector that made the risk management process more efficient and thus a better pricing of risk which increases cost of borrowing. We therefore propose that while putting in place an efficient risk management process, the regulators and policy makers in the financial system should also put in place, measures that will reduce the cost of borrowing.

The results also show evidence that publicly listed firms in South Africa follow the trade-off theory and pecking

order theory of capital structure.

However, the results should be interpreted with caution for several reasons. One is that the study made use of only publicly listed firms thus a study of privately held firms may give a different result. The second reason is that the study did not separate the firms into industrial sectors and as such, separating the firms into industrial sectors may have an effect on the capital structure choice.

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Notes

Note 1. BRIC is an acronym usually used in grouping economies of Brazil, Russia, India and China. These countries are assumed to be at the same level of economic development. The inclusion of South Africa turned the acronym to BRICS.

Note 2. There are various arguments as to whether to use book or market leverage in capital structure studies. For example, Fama and French (2002) and Thies and Klock (1992) argue that because book ratios are independent of factors not under the control of firms, book leverage should be used in capital structure studies. Matemilola et al. (2012) also argue that leverage measured, as ratio of book value of total debt to total assets is a broader and more stable measure of leverage when compared to market leverage.

Note 3. Although this ratio is not widely used, the ratio is adopted from Goyal et al. (2002) who use 5 different proxies to examine the effect of growth opportunities on corporate debt policy in the US defence industry.

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