A Resource Dependency Theory Perspective on Low Savings, Cost of Equity and Bank Valuation in South Africa

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South Africa has one of the lowest savings rate of the emerging economies since 1985, due to causes including indebtedness culture, unemployment, welfare for low income and high dependency ratio. Despite this, prudential ratios requirements in capital (13 to 17%) and liquidity (66 to 133%) are exceeded by local banks. This study aims at determining whether low savings has any impact on South African banks' cost of capital and valuation from the lens of resource dependence theory. In term of this theory, environment constraints such as the scarcity of resource leads to interdependence between organizations, witch impacts their actions. The variables to explain low savings in terms of the theory include resources scarcity, interdependence and uncertainty, constraint and firm's actions. These variables are approximated by the ratios deposit to assets, loans to assets, capital adequacy, costs of equity (capital asset pricing model and profit to market value ratio), and bank valuation (Tobin's Q and market-to-book ratios). The data to estimate the model are from 2008 to 2018 are from the 6 major bank Groups in South Africa (ABSA Group Limited, Standard Bank Group Limited, Nedbank Group Limited, FirstRand Group Limited, Investec Limited Group and Capitec Bank Holding Limited). Using ordinary least square method adjusted by the Generalized Linear Model, the findings suggest that 5 groups' market values are not negatively impacted by low savings, while 1 Group's is. Secondly, low saving seems to have a negative impact on the cost of equity. The results imply that although low savings is costly, banks adapt by passing on the cost increase to customers who heavily rely on loans to sustain their consumption culture. Furthermore, these banks survive via their ability to network and source from contractual saving

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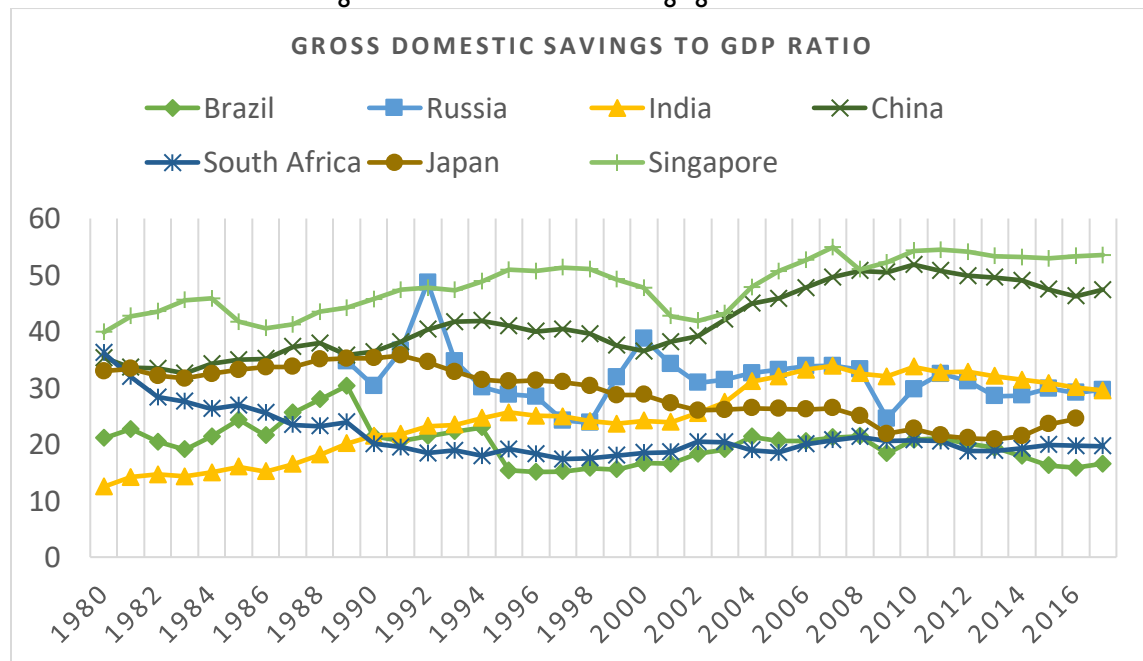[1] *corresponding author: nguepikasses@cput.ac.za or sca_kasse@yahoo.fr

institutions such as pensions funds. This study contributes to the literature on the determinants of cost of capital and bank firm value by including low savings, loans level and/or prudential ratios.

Key words: Low Savings; Cost of Capital; Bank Valuation; Resource Dependency Theory; South Africa.

Introduction

Research suggests that the determinants of savings across the world and specifically in developing countries are first of non-policy nature and include income inequality, growth, demographics and uncertainty. The second group of contributing factors is categorised as of economic polices' nature and these include fiscal policy, pension reform, financial liberalisation, external borrowing and foreign aid (Loayza, Schmidt-Hebbel and Servén, 2000). These authors also showed that between the 1960s and 1990s, East Asia countries such as Singapore, already have a level of saving rate that is double the level of sub-Sahara countries.

Table 1: Gross domestic saving to GDP ratio selected emerging economies

Source: World Bank and OECD Data

South Africa for example, has one of the lowest savings rate of the emerging economies since 1985 (see Table 1). This phenomenon has been demonstrated to be caused by factors such as the indebtedness culture, unemployment, welfare distribution for low income and a high dependency

ratio(reference). It is common knowledge that savings are a great source for investments in a country and equally key for banks loans creation activities which in turn are vital financing supports for companies. It is further observed that despite low savings, certainly reflected in the level of deposits within the banking sector in South Africa, prudential regulatory constraints such as holding a minimum capital ratio and meeting a specific liquidity coverage ratio are far exceeded by these South African banks. Basel III Accords defined the minimum capital adequacy as banks' capital relative to the riskiness of their assets of 8% and a liquidity coverage ratio involving holding high quality liquid assets relative to total net cash outflows over a 30-days period, phase in to be 100% in 2019 necessary for banks to withstand economic downturns. Findings from recent studies reported that these requirements can contract bank lending (Drehmann and Gambacorta, 2012), (Bridges *et al.*, 2015), (Cohen and Scatigna, 2016), (Li *et al.*, 2017). Despite these stringent requirements, South African banks manage to regularly exceed the minimum in capital required (between 13 to 17%) and liquidity (between 66 to 133%). (Fonseca and González, 2010) identified three reasons why banks hold capital requirements higher than the minimum required in the literature and these include market discipline in the sense that in the absence of deposit insurance, depositors would require higher return against higher risk and the bank's shareholders will inject fresh money in the capital to reduce risk perception and thus deposit cost. The second reason, is the economic quasi-rents expected from increasing capital to reduce risk of failure at the expense of cheap deposit when the bank holds market power. The third reason is the adjustment costs that will be incurred if the capital is below the minimum as this will send a negative message on the market and affect the bank's stock value.

This paper attempts to answer the question of whether low savings has any impact on South African banks' cost of capital and valuation. It also uses resource dependence theory(RDT) to justify the correlation between the key variables and explain how these banks manage to outperform the regulatory requirements. The question and the use of theory are also the main contributions of this paper as we have not seen a study looking specifically at how low savings could influence the cost of capital and banks' value, and furthermore explained with RDT.

RDT was popularised by Pfeffer and Salancik (1978) and is now well-tested in the literature. It has been used largely since its development and in more recent and diverse instances when looking at the relationships between ISO 9000 quality management standard and organizational environment(Singh et al, 2011), human resource and top management (Dopke, 2014), contemporary public and non-profit management (Malatesta, 2014), independent directors and firm

internationalisation(Chen et al, 2016), board of director's work experience and export(2018). The main assumption of RDT is that the actions and behaviour of organizations are affected by their dependence on "critical" resources (Nienhuser, 2008) or more generally, by external constraints (Johnson, 1995). Additional challenge, according to the theory, is the uncertainty that accompanies the availability of these external resources (Johnson, 1995). Johnson added that since no organization can function in self-sufficiency, therefore an exchange and power relationships are established between the organization and other actors in its environment. Environment in the context of RDT could mean resources as well as organizational networks, interorganizational exchange relationships, uncertainty (Johnson, 1995). From this theory, a resource is considered critical if its unavailability can potentially jeopardize the functioning of the organization (Nienhüser, 2008). As applied to this study, this theory holds that we would expect the independent variable(s), which are resource scarcity (low savings), uncertainty (loans volumes, inflation, GDP) and other external constraints (capital adequacy requirement) to influence the dependent variable(s), the organization's actions that we measure with the management ability to optimize the cost of equity and bank valuation. This is because, if in the face of scarcity of funding resources, South African banks are able to easily meets and exceed the regulatory requirements supposed to further penalised them, our assumption, based on the predictions of RDT is that, they have developed exchange relationships and other networks to reduce the power of critical resources holders(households) over their decision making.

In terms of the determinants of savings, according to (Prinsloo, 2000), in the early 1980s, average saving rate in South Africa reached 27% at a time when gold price was very high and positively impacted gold-mining companies' performance and savings capacity. Since 1985, gross domestic savings to gross domestic product ratio has steadily dropped explained by the contraction of private-household savings and the government saving impeded by excess expenditure. In addition, the increase of marginal personal tax that decelerated disposable income growth, the negative effect of increased inflation on the return on deposit, the higher propensity to consume of increasingly younger population and of low-income welfare recipients, unemployment and higher dependency ratio, availability of consumer credit following the 1980s deregulation of financial institutions. Lastly, all these factors lead South African households to direct their saving towards inflation free solutions from pension funds and insurance companies, which are contractual saving institutions. Some of these conclusions were confirmed by (Du Plessis, 2008) following his study on the determinants of households' savings in South Africa were easy access to credit and a development

of a culture of dependence facilitated by government policies of wealth distribution in the form of welfare payment. Also, liquidity constraints (households limited access to credit) increases the saving rate (Jappelli and Pagano, 1994). (Browning and Lusardi, 1996) summarised Keynes (1936)'s theories of why people save as being for precautionary, life-cycle, intertemporal substitution, improvement, independence, enterprise, avarice and down payment motives. (Doshi, 1994) found that life expectancy is also a determinant of saving rate. (Matur, Sabuncu and Bahçeci, 2012) found that public saving can increase national savings. Furthermore, from (Kunio Yoshihara, 1972)'s study, lower long run propensity to consume and growth rate are determinants of saving rate in Japan.

In terms of the relationship between savings and bank cost of capital, (Zimmer and McCauley, 1991) in their study, compared commercial banks costs of capital across several industrial countries. They found that the USA, UK and Canadian banks are confronted with the highest cost of capital. However, German and Swiss banks cost of capital are moderate and Japan is the lowest. They explained that household savings and possible limited access to bank credits in the latter group of countries, but also more generally macroeconomic stability and relations among corporations, banks and governments could explain these differences. Furthermore, (Pennachi, 1988) showed that, under deposit financing competition and regulatory constraints, when a bank sales its loans to fund new loans instead of relying solely on deposits or equity, the cost of funding of the new loans is reduced by the economies on regulatory requirements. Additionally, findings demonstrated that the potential risks on individual loans is diminish by the portfolio diversification. Several studies looked at the determinants of banks' cost of capital and found that competition increases the cost of capital (Berger *et al.*, 2018), regulatory changes, credit supply and loans rate (Kovner and Tassel, 2019), non-performing loans (Chiesa and Mansilla-Fernandez, 2018), lower capital ratios, faster loan growth (Mao and Wei, 2017), strict capital requirement(Baker and Wurgler, 2013), credit supply (Celerier, Matray and Ongena, 2014), higher capital requirements (Gunell and Ahlund, 2017), banking development (Kim, Ma and Wang, 2015). Legal origin, financial development, firm level governance attributes (Gupta, Krishnamurti and Tourani-Rad, 2018).

In terms of the relationship between savings and bank value, Egan and al, 2017, used data from 1994 to 2015 to examine the determinants of US commercial banks' cross-sectional value. Based on safe deposit production theory, they found that producing safe and liquid deposits predominantly increases banks' value, measured in the paper by market-to-book ratios. From the assets side, they tested the good information production via screening and monitoring of loans theory and found

that bank's asset productivity via loans is also linked to bank value creation but to a lesser extent than deposit productivity. Estimations were made holding offered deposit rate fixed. Other studies, investigated the determinants of firm's value including external governance (Gupta et al, 2018).

Data and Variables

Data were collected essentially from the annual financial reports of banks involved in the study over the period 2008 to 2018. We used a convenient sample of 6 bank Groups operating in South Africa with a monopolistic power as they control more than 90% of share market. These bank groups include Barclays, Standard Bank of South Africa, FirstRand, NedBank, Investec and Capitec. Groups.

Variables definition

Resource scarcity: savings generally take the forms of savings or investment. In this paper, savings equal deposits and low savings is defined as the level of deposit relative to total assets held by the targeted banks. We expect a negative sign between low saving and cost of capital as well as bank value since less savings would mean looking for other sources of funding at a higher cost including paying higher interest rate to retain depositors and maintain competitive advantage.

Management actions(i): Cost of equity (1) was determined by banks themselves according through the capital asset pricing model of Modigliani and Miller and is expected to be positively correlated with the book-to-market ratio (Chen, Chen and Wei, 2003), citing Fama and French, 1992). Cost of equity (2) as defined by the ratio of profits to stock market value of the firm represents the shareholders' required rate of return, assuming that the profits generated by South African banks satisfy their shareholders (Miles and Scott, 2005, p.333)

Management actions(ii): Bank valuation measures include the traditional Tobin's Q used in the literature for valuation as the ratio of market value of equity plus book value of liabilities to book value of assets, and the ratio of market value of equity to book value of equity — Market-to-Book (Caprio, Laeven and Levine, 2003).

Uncertainty: at the macroeconomic level, uncertainty is generally measured by inflation (Matur, Sabuncu and Bahçeci, 2012). At the micro level, we used the loans volumes to total assets ratio. At the firm's level one proxy of volatility for banks, outside models of investments under uncertainty, is measured by the volatility of bank loans volume (Dinger and Craig, 2013). We borrow from these authors and consider instead annual volume of loans to total assets ratios due to lack of high frequency data. The reason is, loans are the principal source of revenue for banks and changes in the volume is function of the availability of deposits.

Constraints: CAR is the capital adequacy ratio, which is the minimum level of capital relative to the risk weighted assets of banks required by the prudential authority as caution against potential adverse economic conditions. This requirement can be perceived by banks as a constraint specifically if the minimum required is above the economic capital.

Control variables (banks total assets, repo rate and GDP): Bank assets, largely used in the literature as measure of bank size is expected to be negatively correlated with the cost of capital(CAPM-based) (Chen, Chen and Wei, 2003)citing Fama and French, 1992). Repo rate is the interest rate at which banks borrow money from the Reserve Bank in South Africa and GDP, the measure of the economy's performance.

Econometric model

The statistical method utilised for the estimation of the model was the ordinary least square given the limited number of observations (11 years). The estimations were then improved by the generalized linear model. Descriptive statistics are in the Appendix, Table 2.
All the variables met the condition of normal distribution. To avoid spurious regressions, all the variables were subjected to unit root tests via Augmented Dicker Fuller/Philip Peron tests. The variables with unit roots were differenced until there were no more unit roots.

The baseline specifications are as follows:

$$COE_{it} = \Phi_0 + \Phi_1 LOWSAVING_{it} + \Phi_2 UNCERTAINTY_{it} + \Phi_3 exCONSTRAINTS_{it} + \Phi_4 CONTROL + \delta_{it} \quad (1)$$

$$VALUE_{it} = \delta_0 + \delta_1 LOWSAVING_{it} + \delta_2 UNCERTAINTY_{it} + \delta_3 exCONSTRAINT_{it} + \delta_4 CONTROL_{it} + \mu_t \quad (2)$$

, where δ_{it} and μ_t are the error terms; *COE* is cost of equity with two measures (the cost of equity as defined by the capital asset pricing model, and cost of equity defined by the ratio profit to market value of equity *VALUE* is valuation as measured by Tobin's Q (ratio market value of equity added to book value of liabilities to book value of assets) and market-to-book ratio. *LOWSAVING* is deposit to assets ratio, *UNCERTAINTY* is either loans to assets ratio or inflation measured by the consumption price index(CPI), *CONSTRAINTS* are capital adequacy ratio (CAR) or Repo Rate (the rate at which banks borrow money from the South African Reserve Bank); and *CONTROL* are total assets(size measure) or GDP.

Table 3: Estimated results

Dependent variables / Independent variables	Cost of Equity(I)	Cost of Equity(II)	Tobin's Q	Market-to-Book ratio
ABSA Gp				
Dep/Asset	0.07(0.04)***	-0.46(0.16)*	0.47(0.18)**	5.70(2.11)*
Loan/Asset	0.05(0.03)	0.03(0.13)	0.03(0.16)	0.19(1.88)
CAR	0.15(0.08)***	0.12(0.30)		
Repo Rate	0.54(0.16)	-0.46(0.59)	0.29(0.40)	5.48(4.63)
Constant	0.01(0.01)*	0.13(0.03)*	1.01(0.02)*	1.02(0.30)*
STBK Gp				
Dep/Asset	-0.13(0.05)**	-0.17(0.09)***	0.43(0.08)*	4.34(0.92)*
Loan/Asset	0.26(0.09)*	1.08(0.19)*	-0.59(0.21)*	-7.19(2.34)*
CAR			0.07(0.56)	12.09(4.71)**
Market-to-book		0.02(0.01)		
Tobin's Q	0.32(0.12)*			
CPI	0.00(0.00)	-0.78(0.42)***		10.66(5.64)***
Repo Rate			-1.20(0.51)**	
GDP	0.46(0.21)**	0.13(0.02)*	0.01(0.09)	-2.51(0.71)*
Constant	0.11(0.00)*			
NEDBK Gp				
Dep/Asset	-1.87(0.27)*	-1.03(0.29)*	1.86(0.85)*	14.94(5.72)*
Loan/Asset	0.77(0.12)*		-0.76(0.42)***	
Coe1				8.96(7.06)
Asset	0.0(0)*	0.00(0.00)*	-0.00(0.00)*	
Tobin's Q	1.14(0.11)*			
CPI		0.00(0.00)		0.15(0.08)***
Repo Rate	0.34(0.10)*	0.35(0.17)**		2.83(5.59)
GDP		0.56(0.43)	-0.19(0.84)	
Constant	0.87(0.13)*	0.85(0.22)*	-0.89(0.52)***	-12.79(4.68)*
FIRSTRD Gp				
Dep/Asset	-0.06(0.02)*	0.70(0.24)*	0.51(0.15)*	2.67(0.98)*
Loan/Asset	0.06(0.03)***	-0.56(0.49)	-0.40(0.29)	-1.71(2.11)
CAR		2.56(1.82)	1.99(1.04)***	
Asset				

Tobin's Q	0.10(0.04)*			
Market-to-book		-1.19(0.06)*		
Coe2				-2.92(0.89)*
CPI	0.01(0.00)*	-0.05(0.03)***	-0.12(0.02)*	-0.33(0.14)**
Repo Rate				
GDP	0.54(0.3)***		-6.73(2.28)*	-9.48(15.10)
Constant	-0.08(0.03)*	-2.21(0.14)*	0.73(0.12)*	-5.45(2.55)**
INVESTEC Gp				
Dep/Asset		-10.4(4.9)**	-2.57(0.76)*	-37.3(11.5)*
Loan/Asset			-1.78(0.8)**	-30.9(12.9)**
CAR		12.43(9.52)	0.97(3.09)	-11.35(40.73)
Tobin's Q		-9.92(2.18)*		
CPI		0.15(0.06)**	0.00(0.02)	-0.04(0.37)
Repo Rate				
GDP			-4.85(4.56)	-101(68.82)
Constant		-0.72(0.29)**	0.04(0.18)	2.08(2.86)
CAPITEC Gp				
Dep/Asset		0.34(0.10)*	8.96(1.84)*	34.75(9.51)*
Loan/Asset		-0.14(0.04)*	0.66(0.88)	-2.90(4.53)
CAR		0.05(0.34)	4.55(6.07)	14.4(31.31)
CPI		0.00(0.00)	-0.63(0.12)*	-2.82(0.62)*
Repo Rate				
GDP		0.96(1.36)	-58.9(24.06)**	-2.53(1.24)**
Constant		0.00(0.09)	2.34(1.59)	12.30(8.22)
N	11	11	11	11

(*) significance at 1% level. (**) significance at 5% level. (***) significance at 10% level. COE CAPM-based data were not available for INVESTEC Gp and CAPITEC Gp. All the estimations from the OLS are free from serial correlations, homoscedasticity and the errors terms are normally distributed.

Analyses

With regards to bank valuation, the coefficients of the relationship between low savings and bank valuation is significant and positive. Results showed that the valuation of the banks as measured by market-to-book ratio is not affected by low savings except for Investec Group. The market value of these banks' assets on the Johannesburg Stock Exchange remains greater than their book value. The same findings emerged from the estimation using Tobin's Q measure of bank value. For the four banks groups with data available on cost of equity determined based on the capital asset pricing model, the findings globally showed a negative sign relative to low savings for three banks group out of four, implying that low savings commonly increases the cost of equity. The cost of equity as a ratio of profit to market value of assets also has a negative sign and significant

coefficients for four banks groups out of six. This suggest these banks' profits are more affected than their market value by low savings.

With regards to Uncertainty and Constraints: Two measures of uncertainty, in this case the ratio loans volume to total assets(1) and inflation via consumer price index(2). (1) has an inverse and significant relationship with the valuation and positive relationship with the cost of equity (CAPM-based) of STBK, NEDBK, INVESTEC groups. Uncertainty (2) is negative and significant for FirstRand(but negative with COE2) and Capitec Groups relative to their valuation but revealed a positive and significant sign relative to cost of equity for STBK, FirstRand and Investec Groups. Constraints on the other side as measured by the prudential capital adequacy ratio required by the regulator and repo rate determined by the South Africa Reserve Bank have a limited impact whether on banks valuation or on cost of equity. Repo rate has almost no influence on the banks' valuation. However, repo rate exhibited a positive and significant coefficient with the cost of equity of ABSA and NEDBK groups, suggesting that an increase of repo rate also increases the cost of the groups' cost of equity. The second constraints which is the capital adequacy ratio has a positive and relatively significant influence on the value of NEDBK and FirstRand Groups. On the cost of equity side, only NEDBK group's is positively affected with a negative and significant sign between the two variables, implying that an increase of CAR reduces the cost of capital of NEDBK.

Resource Dependency Theory predicts that to overcome the issue of resources scarcity, organizations would build exchange relationships since no organization can function alone. Reflecting of the South African banks, findings seems to suggest that low savings culture in South Africa, although it affect negatively their cost of capital, it does not impede banks value. Actually, South African banks have long turned to whole sale funding from contractual savings institutions such as pensions funds and assets managers. Furthermore, these bank groups have subsidiaries and branches in Africa. Some of these banks have chosen to adopt a very conservative approach where their Asset and Liability Management team strive to limit maturity transformation as they refuse to rely corporate call deposits deemed uncertain. Also, funding is provided from deposit franchises (subsidiaries established all over Africa), from foreign currency, from securitisations and others innovative savings products offered.

Conclusion

This study intended to determine whether low savings culture in South Africa affect banks actions since they exhibit prudential capital and liquidity levels that by far exceed the minimum required by the regulator. Using resource dependency theory, we were able to identify variables that could relate to low savings while reflecting the actions of organizations such as banks at the same time. Estimates demonstrated, as predicted by the theory, that the scarcity of savings does not negatively impact South African banks performances since they have built exchange relationships with other organisations to fund themselves and possibly passing on the costs to customers given the indebtedness culture. It is found though that low savings increases their cost of capital, which is of no surprise since deposits are not free of charge. The question for further research would now be to know to what extent the increase in the cost of capital deviates from what it would have been if savings were not scarce.

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Appendix

Table 2 Descriptive statistics[2]

ABSA Gp

Variable	Mean	Std dev	Min	Max	Obs
Dep/Asset	0.57	0.04	0.49	0.63	11
Loan/Asset	0.65	0.03	0.61	0.71	11
CAR	0.15	0.01	0.14	0.17	11
Repo Rate	0.06	0.01	0.05	0.11	11
COE1	0.13	0.00	0.13	0.15	11
COE2	0.10	0.01	0.07	0.13	11
Tobin's Q	1.03	0.01	1.01	1.06	11
Market/Book	1.41	0.17	1.12	1.69	11

[2] All the variables used are normally distributed

STBK Gp

Variable	Mean	Std dev	Min	Max	Obs
Dep/Asset	0.52	0.03	0.49	0.58	11
Loan/Asset	0.45	0.01	0.42	0.49	11
CAR	0.15	0.00	0.13	0.16	11
CPI	84.2	14.7	63.6	107.8	11
Repo Rate	0.06	0.01	0.05	0.11	11
GDP	0.02	0.01	0.01	0.05	11
Tobin's Q	1.03	0.01	1.00	1.06	11
Market/Book	1.41	0.18	1.02	1.66	11

NEDBK Gp

Variable	Mean	Std dev	Min	Max	Obs
Dep/Asset	0.80	0.01	0.78	0.82	11
Loan/Asset	0.74	0.02	0.70	0.78	11
COE1	0.13	0.01	0.13	0.15	11
Asset	777764	177162	567023	1043912	11
Tobin's Q	1.03	0.01	1.00	1.06	11
Market/Book	1.43	0.18	1.11	1.75	11
COE2	0.09	0.01	0.06	0.12	11
Repo Rate	0.06	0.01	0.05	0.11	11
CPI	84.20	14.77	63.6	107.80	11
GDP	0.02	0.01	0.01	0.05	11

FIRSTRD Gp

Variable	Mean	Std dev	Min	Max	Obs
Dep/Asset	0.54	0.11	0.36	0.76	11
Loan/Asset	0.63	0.10	0.45	0.72	11
CAR	0.15	0.01	0.13	0.17	11
Asset	974044	246383	697927	1532289	11
Tobin's Q	1.06	0.12	0.82	0.82	11
Market/Book	2.15	0.49	1.51	1.51	11
CPI	84.20	14.77	63.60	63.60	11
Repo Rate	0.06	0.01	0.05	0.05	11
GDP	0.02	0.01	0.00	0.00	11
COE2(log)	-2.42	0.16	-2.64	-2.64	11

INVESTEC Gp

Variable	Mean	Std dev	Min	Max	Obs
Dep/Asset	0.49	0.02	0.46	0.52	11
Loan/Asset	0.38	0.03	0.34	0.45	11

CAR	0.14	0.01	0.13	0.16	11
Tobin's Q	1.08	0.02	1.04	1.11	11
Market/Book	2.18	0.33	1.71	2.59	11
Repo Rate	0.06	0.01	0.05	0.11	11
GDP	0.02	0.01	0.00	0.05	11

CAPITEC Gp

Variable	Mean	Std dev	Min	Max	Obs
Dep/Asset	0.48	0.13	0.28	0.68	11
Loan/Asset	0.68	0.08	0.56	0.79	11
CAR	0.37	0.02	0.34	0.43	11
Tobin's Q	1.59	0.24	1.21	1.92	11
Market/Book	3.56	1.16	1.76	5.20	11
CPI	84.20	14.77	63.60	107.8	11
Repo Rate	0.06	0.01	0.05	0.11	11
GDP	0.02	0.01	0.00	0.05	11