

**Impact of Capital Structure on Profitability:  
The case of the Land and Agricultural Development Bank of South Africa**

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**Umthelela Wesimozimali Sebhizinisi ekungeneni kwenzuzo:  
Ucwaningo Oluqondene neBhange Lokuthuthukiswa Komhlaba Nezolimo  
laseNingizimu Afrika**

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**Khuetšo ya Matlotlo a Kgwebo go bokgoni bja go hwetša Dipoelo  
Tšhupo ya Panka ya Tlhabollo ya Naga le tša Temo ya Afrika Borwa**

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**Kgoro ya Matlotlo, Taolo ya Ditšhošetšo le tša go Panka**

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## ABSTRACT

The purpose of this study was to determine the impact of capital structure on the profitability of the Land and Agricultural Development Bank of South Africa (Land Bank). Both theoretical and empirical literature were reviewed in order to guide the empirical investigation of this study. In particular, the theories of financial intermediation, credit creation and fractional reserve formed the basis of this study. The capital structure theories that were examined included the pecking order theory, trade-off theory and Modigliani-Miller leverage irrelevance theory. In the literature, it was observed that profitable companies prefer using internal funds over debt or equity.

To test the stated hypothesis that there is no relationship between capital structure and bank profitability, a quantitative research design with a case study approach was used, with the Land Bank as the unit of analysis. Using time series data for the period 1982 to 2015, multiple regression using the ordinary least squares method was applied to test the specified models. Preliminary data analysis was performed using trend analysis, descriptive statistics and Pearson bivariate correlation analysis.

The study demonstrated that the relationship between capital structure and bank profitability was positive and statistically significant at a 95% confidence level when using only equity. However, inclusion of debt in the capital structure showed that capital structure, proxied by the debt-to-equity ratio, resulted in a negative relationship between capital structure and bank profitability, albeit statistically insignificant.

It was concluded that the Land Bank requires an injection of equity to improve its performance. Alternative low-cost sources of funding to debt should be considered. The results of the study have policy implications for the Land Bank, regulators and potential investors.

**Keywords:** profitability, capital structure, return on investment, return on assets, interest spread, Land and Agricultural Development Bank of South Africa, emerging farmers, South Africa

## KAFUSHANE NGOCWANINGO

Injongo yalolu cwaningo kwabe kuwukucubungula nokuthola umthelela wesimozimali sebhizinisi ekungeneni kwenzuzo eBhange Lokuthuthukiswa Komhlaba Nezolimo laseNingizimu Afrika (iBhange Lomhlaba). Kokubili, imibhalo yethiyori kanye nemibhalo esuselwe emaqinisweni abonakalayo naphathekayo, yabuyekwezwa ukuze ihole futhi ilawule uphenyo olugxile emaqinisweni abonakalayo naphathekayo oluqondene nalolu cwaningo. Amathiyori ayisisekelo salolu cwaningo, ikakhulukazi, kwaba *yi-financial intermediation, credit creation kanye ne-fractional reserve*. Lawo mathiyori esimozimali sebhizinisi acutshungulwa abandakanya *i-pecking order theory, trade-off theory* kanye *ne-Modigliani-Miller leverage irrelevance theory*. Emibhalweni eyacutshungulwa, kwabonakala ukuthi izinkampani ezinezuzo zincamela ukusebenzisa izimali zangaphakathi kunokusebenzisa isikweletu noma izabelokulingana (*equity*).

Ngenhloso yokuhlola ihayiphothesisi ethuliwe yokuthi abukho ubudlelwano phakathi kwesimozimali sebhizinisi kanye nokungena kwenzuzo ebhange, kwasetshenziswa idizayini yocwaningo olukhwantithethivu ehambisana nendlela yokusebenzisa ucwaningo lwesigameko egxile ekuhlaziyweni kweBhange Lomhlaba. Ngokusebenzisa *i-time series data* yesikhathi esisukela kowe-1982 kuyofinyelela kowezi-2015, kwalandelwa *i-multiple regression* ngokusebenzisa *i-ordinary least squares method* ukuhlola amamodeli achaziwe. Uhlaziyo lwedatha olwandulelayo lwenziwa ngokusebenzisa uhlaziyo lwezimonkambiso (*trend analysis*), izibalomanani ezichazayo (*descriptive statistics*) kanye *ne-Pearson bivariate correlation analysis*.

Ucwaningo lwabonisa ukuthi bukhona ubudlelwano obuphawulekayo phakathi kwesimozimali sebhizinisi kanye nokungena kwenzuzo ebhange futhi idatha yabonisa ukuthembakala okusezingeni elingama-95% uma kusetshenziswa izabelokulingana kuphela. Kodwa-ke ukufakwa kwesikweletu kwisimozimali sebhizinisi kwabonisa ukuthi isimozimali sebhizinisi, ngokusekelwa yizinga-silinganiso phakathi kwesikweletu nezabelokulinganisa, kwaholela ekutheni bungabi khona ubudlelwano obuphawulekayo phakathi kwesimozimali sebhizinisi kanye nokungena kwenzuzo ebhange, nakuba idatha mayelana nalokhu yabonisa ukungathembakali okuthile.

Kwafinyelelwa esiphethweni sokuthi iBhange Lomhlaba lidinga ukuthi kufakwe izabelokulingana ngenhloso yokwenza ngcono ukusebenza kwalo. Kumele kwenziwe imizamo yokuthola eminye imithombo yezimali ehlukele futhi engambi eqolo. Imiphumela yocwaningo inemithelela ethile ephathelene nezinqubomgomo eqondene neBhange Lomhlaba, abalawuli kanye nalabo okungenzeka babe nesifiso sokutshala izimali.

**Amagama asemqoka:** ukungena kwenzuzo, isimozimali sebhizinisi, inzuzo kutshalomali, inkomba yenzuzo uma iqhathaniswa nenanibungakho eliphelele lempahla yebhizinisi (*return on assets*), umehluko phakathi kwenzalo ekhokhiwe kanye nenzalo ezuziwe (*interest spread*), iBhange Lokuthuthukiswa Komhlaba Nezolimo laseNingizimu Afrika, abalimi abasafufusa, iNingizimu Afrika

## SETSOPOLWA

Morero wa thutelo ye e be e le go laetša khuetšo ya matlotlo a kgwebo go bokgoni bja go hwetša dipoelo bja Panka ya Tlhabollo ya Naga le tša Temo ya Afrika Borwa (Land Bank). Dingwalo tša ditlhalošo tša diteori le tšeo dithutelo tša peleng di di hweditšeng di sekasekilwe go fa tlhahlo go dipoelo tša dinyakišišo tšeo di dirilwego peleng tša thutelo ye. Gabotsebotse, diteori tša mokgwa wa dipanka wa go tšea tšhelete ye e bolokilwego tša e adimiša, mokgwa wa dipanka wa go hlola dikadimo ka bontši le tsheketšo ya palophatlo ya tšhelete di bopile motheo wa thutelo ye. Diteori tša matlotlo a kgwebo tšeo di lekotšwego di akareditše teori ya mokgwa wa go kgetha methopo ya kadimo ya ditšhelete, teori ya go lekanyetša ditheko le ditefelokholego le teori ya Modigliani-Miller ya go re mokgwa wa go diriša tšhelete ye e adimilwego go bona dipoelo ga o ame boleng bja khamphani. Ka go dingwalo, go lemogilwe gore dikhamphani tše di ka hwetšago dipoelo di kgetha go diriša matlole a ka gare go ena le dikoloto goba bokaalo bjo bo šalago ka morago ga go ntšha dikoloto

Go leka kakanyo ye e filwego ya gore ga go na tswalano gare ga matlotlo a kgwebo le bokgoni bja pankha bja go hwetša dipoelo, tlhako ya nyakišišo ya go hwetša dikarabo go batho ka bontši ka mokgwatebelelo wa nyakišišo ye e dirilwego ka ga tiragalo e dirišitšwe, ka Land Bank bjalo ka yuniti ya tshekatsheko. Ka go diriša datha go ya ka tatelano ye e itšeng ya nako ya paka ya 1982 go iša go 2015, tlhahlobo ya tswalano gare ga mabaka a mabedi goba go feta ka go diriša mokgwa wa go fokotša palo ya disekwere e dirišitšwe go leka mehlala ye e šupilwego. Tshekatsheko ya datha ya mathomo e phethagaditšwe ka go diriša tshekatsheko ya taolelopele ya seo se tla diregago ka ditšhelete, mokgwa wa go sekaseka dipalopalo le tshekatsheko ya Pearson ya dipalo tše pedi go bona tswalano ya tšona.

Thutelo e laeditše gore tswalano gare ga matlotlo a kgwebo le bokgoni bja pankha go hwetša dipoelo go bile le ditlamorago tše botse le dipoelo tše di ka bago nnete ka kemo ya kgonthišo ya 95% ge go dirišwa fela bokaalo bjo bo šalago ka morago ga go ntšha dikoloto. Le ge go le bjalo, kakaretšo ya sekoloto ka go matlotlo a kgwebo go bontšhitše gore matlotlo a kgwebo, ao a laeditšwego ka tekanyo ya palomoka ya dikoloto go bokaalo bjo bo šalago ka morago ga go ntšha dikoloto, e hlotše tswalano ye

e sa letelwago gare ga matlotlo a kgwebo le bokgoni bja pankka go hwetša dipoelo, le ge e ka ba dipoelo tše di ka bago nnete.

Go phethilwe ka go re Land Bank e nyaka koketšo ya bokaalo bjo bo šalago ka morago ga go ntšha dikoloto go kaonafatša tiro ye e swanetšwego go dirwa. Methopo ye mengwe ya tswala ya fase go dikoloto e swanetšwe go lebelelwa. Dipolelo tša thutelo di na le ditlamorago tša Molaotshepetšo wa Land Bank, balaodi le babeeletši ba ka moso.

**Mareo a bohlokwa:** bokgoni bja go hwetša dipoelo, matlotlo a kgwebo, dipolelo go peeletšo, polelo go phahlo, tswala ye e phatlaladitšwego, Panka ya Tlhabollo ya Naga le tša Temo ya Afrika Borwa, balemi ba ba thušwago ke mananeo a mmušo, Afrika Borwa



# DECLARATION

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## **Impact of Capital Structure on Profitability: The case of the Land and Agricultural Bank of South Africa**

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I declare that the above dissertation is my own work and that all the sources that I have used or quoted have been indicated and acknowledged by means of complete references.



24 April 2018

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SIGNATURE

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DATE

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# CHAPTER 1

## INTRODUCTION

### 1.1 Background

The availability of agricultural finance to emerging farmers, particularly in South Africa, has been a major challenge since the deregulation of the agricultural industry in the 1980's and 1990's. This is evidenced by a decline in overall agricultural performance in the country. In reality, the sector represented less than 10% of the economy in 1960 and in the financial year 2015, this figure is below 2.5%, suggesting that the sector is in dire distress (BFAP, 2017).

The government has provided support to the agricultural sector through a number of initiatives including, Land Redistribution for Agricultural Development (LRAD), Micro-Agricultural Finance Institutions of South Africa (MAFISA), Agricultural Broad Based Economic Empowerment (Agri-BEE), Department of Agriculture, Forestry and Fisheries Flood Relief, Emerging Farmers' Support Facilities and Rem Wholesale Finance Facility. Additionally, government funds have also been channelled to Land Bank to provide assistance to emerging farmers. There have been growing concerns over the ability of the Land Bank to discharge its mandate as a development finance institution. Various reasons have been provided for the bank's failure to discharge its mandate. Some of these are the capital structure decisions, mandate restrictions, as well as the financial performance of the Land Bank.

Capital structure is important because it affects the profitability decisions made in an organisation, which ultimately impact on the financial performance of the organisation (Velnampy and Niresh, 2012). Therefore, the need to assess Development Finance Institutions' role has led to an evaluation of their financial performance and fulfilment of their social duty (Fransisco, Mascaro, Mendoza and Yaron, 2008).

One of the essential requirements for banks and financial institutions is adequate and sufficient capital. Thus, every bank and financial organisation must maintain a balance between capital and available risks in its assets in order to guarantee its stability

(Bateni, Vakilifard and Asghari, 2014). Given that the goal of every company is to maximise profits, it is imperative for management to attain an optimal level of capital structure.

Policy development in agriculture, in recent years, has brought dramatic and virtually unprecedented changes in investments and financing of agriculture. Over the last 24 years, the issue of financing emerging farmers and rural development have been widely deliberated. However, the financing of emerging farmers remains a challenge for Development Finance Institutions (DFIs) such as the Land and Agricultural Bank of South Africa (Land Bank), since the new political dispensation in 1994. DFIs such as the Land Bank are entrusted to serve emerging farmers, however, they have experienced a number of challenges in discharging their transformation and development mandate. DFIs have not changed to reflect the demands or requirements of post-colonial realities, especially when it comes to assisting emerging or small scale farmers (Coetzee, 2003). Ideally, these institutions are a form of government intervention in the financial system with the aim of addressing market failures in the provision of finance (Thorne, 2011).

Most authors argue that small or emerging farmers have received less than their expected share of total institutional credit in proportion to the share of land available (Coetzee, 2003; Cousins, 2012; De Klerk, Fraser and Fullerton De Klerk, 2013). Recent research done by Coetzee (2003), Chisasa and Makina (2012) and Makhura (2012), clearly shows that the role of DFIs in supporting emerging, small scale farmers or entrepreneurs has been diminishing and not thriving. Inaccessibility of credit is still a challenge for emerging farmers and there is the need for DFIs such as Land Bank, to revise their funding models towards emerging farmers. According to Makhura (2012), in considering agricultural development finance, it is instructive to draw a distinction between past and present approaches to agricultural financing. This will provide an understanding of the changes that have taken place prior and post 1994.

## **1.2 The role of the Land Bank**

The Land and Agricultural Bank of South Africa (Land Bank) has been in operation for over 105 years. The Land Bank was established in 1912 to provide commercial farmers

with both short term loans for crop harvesting and long term loans for capital improvement. The bank initially provided financial assistance to farmers on a practical and economically sustainable basis.

According to the Land Bank Act No. 15 of 2002, the mandate of the Land Bank is to promote rural and agricultural development. Agriculture has a role to play in certain areas and to achieve certain ends (e.g. improving food security). In general, however, agriculture provides a foundation upon which diversification of economic activities can be achieved. The performance of the agricultural sector serves as a key barometer for measuring the qualitative performance of essential economic indices-income, employment and poverty (African Development Bank, 2002). Agricultural production is the prime livelihood tactic in rural areas, after remittance and wages from low-skilled jobs (Hunter, Julian, and Padayachee, 2003).

It is important to acknowledge that rural agriculture is but one activity among others for rural households, and constitutes only a portion of household income. Therefore, supporting food production may guarantee food availability and improve on certain elements of food security, but, may not guarantee adequate income to meet other societal needs. As a result, sustaining livelihoods entails supporting a wide range of rural economic activities than solely agriculture. Though Land Bank has a role to play in promoting rural development, it is important to note that this role is only one of many for the achievement of rural development.

With the advent of democracy in 1994, a number of laws were enacted in order to redress the imbalances in agriculture created by the previous regime and ensure that the previously disadvantaged (emerging farmers) could also access financial assistance from the Land Bank. In the South African context the term 'emerging farmers' is often used interchangeably with the term "black farmers/entrepreneur, small-scale or smallholder, which is incorrect, as not all emerging farmers are black (nor for that matter, are all black farmers emerging) (Mabaya, 2011). However, for the purpose of this research, emerging farmers refer to all previously or historically disadvantaged individuals that were excluded from participating in agriculture. The new government of

1994 embarked on a journey of redressing racial imbalances in access to agricultural opportunities through the following initiatives:

- White Paper on Agriculture published in 1995: The White Paper recommended that special attention be given to the needs of the small-scale (emerging) farmers to ensure equitable access to markets; that access to agricultural finance be broadened to include previously disadvantaged and beginner farmers; and that access to existing institutional infrastructure such as co-operative systems be broadened to include those previously denied access.
- In addition, the Strauss Commission provided a framework for the provision of financial services for rural households, farmers and entrepreneurs. It proposed that the state should support the market by facilitating and co-ordinating the provision of financial services, rather than direct credit delivery. Makhura (2008) observed that the main exclusion of the Strauss Commission was that it overlooked farmers' special financial needs such as seasonal patterns, performance volatility and increasing cost-price squeezes within the broad rural complex.
- The broad policy agenda to enforce a progressive social and economic transformation in rural South Africa, created a constitutionally sanctioned three-pronged programme of land reform namely restitution, tenure reform and redistribution (Matlala, 2014).
- A recommendation was made that credit provision functions that were performed by the national and provincial departments of agriculture are discontinued and the loan books, suitably vetted and or guaranteed, transferred to Land Bank (BATAT, 1996). However, the Broadening Access to Agriculture Trust (BATAT), envisaged as a supply-side initiative failed to materialise (Muthien, Khosa and Ngubane, 2000).
- Deregulation of direct credit services through the Agricultural Credit Board (ACB) ended on 31 August 1997. The Deputy Minister of Agriculture at the time requested that all farmers who required credit or financial assistance were to submit applications to the Land Bank, Commercial Banks, development or

financial institutions. Additionally, it was decided that applications for direct production inputs credit to emerging farmers and land reform beneficiaries be considered by the Land Bank as from 1 September 1997. The de-regulation of South Africa's agricultural sector in the 1980s and 1990s, through the removal of subsidies, state controlled marketing boards, increase in prices of farming inputs, and removal of cheap credit and tax breaks, has substantially decreased profitability and optimal production thresholds that would permit sustainable production in the sector (Matlala, 2014).

- Subsequently, the Land Bank intervened by expanding its financing loans, under section 34, to accommodate production to previously disadvantaged emerging farmers which was approved on 5 September 1997.
- In the course of implementing the new policies, the government decided that the Land Bank Act of 1944 be repealed and replaced by the Land Bank Act no 15 of 2002. However, this initiative had a huge negative impact on the agricultural sector because it repealed some of the key aspects of the Act that worked during the apartheid regime. For instance, in terms of sections 21(d)(f) and (g) of Land Bank Act of 1944 the bank's business permitted it to advance money:
  - a) To discount bills secured by warehouse receipts as defined;
  - b) To make grants to agricultural unions or similar farmers' organisations or educational institution;
  - c) To make grants in aid of research in connection with farming or agriculture in accordance with the provisions of section forty-seven;
  - d) Out of monies appropriated by Parliament for the purpose, and on behalf of the Republic Government, to advance monies to farmers in accordance with the provisions of Section 46 of the Land Bank Act of 1944.

All these initiatives have since failed due to an unsustainable funding model that should assist both the Bank and Government to achieve its goal of assisting previously disadvantaged individuals. Hence, it is imperative to investigate viable solutions to a number of policy issues, such as land market, credit, rural infrastructure and funding instruments.

### **1.3 The importance of the agricultural sector in South Africa**

Agriculture, which includes all economic activities from the provision of farming inputs to farming and value adding, remains an important sector in the South African economy despite its small direct share of the total Gross Domestic Product (GDP) (Department of Agriculture, Forestry and Fisheries, 2011). The agricultural sector's contribution to value creation in South Africa is relatively small when compared to sectors such as Finance and Trade. However, the sector has a large potential and impact on job creation. Agriculture's contribution to GDP has decreased to a low of 2.3% from a high of 10% in the 1990's, which is quite low when compared to other BRICS peers. Agriculture in China, in 2010, contributed over 10.1%, in India 18.1%, in Brazil 5.8% and in Russia 4.2% (*South African Economy: An overview trend since 1994*, 2013). The decrease can be attributed mainly to the changes that took place in the 1990's to deregulate and liberalise the sector. Some of these initiatives had positive results and some had negative results. According to the Department of Agriculture Strategic Plan (2001), the key policy shifts in this regard included:

- Deregulation of the marketing of agricultural products;
- Changes in the fiscal treatment of agriculture, including the abolition of certain tax concessions that favoured the sector;
- A reduction in direct budgetary expenditure on the sector;
- Land Bank, consisting of the restitution, redistribution and tenure reform programmes;
- Trade policy reform, which included the tariffs of farm commodities and general liberalisation of agriculture trade including free trade agreements;
- Institutional reform influencing the governance of agriculture; and
- The application of labour legislation to the agricultural sector.

During the mid-1990s, South Africa had more than 300 well-functioning irrigation schemes covering approximately 50,000 hectares in the former homelands. Unfortunately, these irrigation schemes have either collapsed or utilized well below their potential. These schemes were largely subsistence oriented with little or zero



commercial partnership orientation (Denison and Manona, 2006). Therefore, these schemes offer an excellent opportunity for the creation of agribusiness parks with a commercial orientation. Efforts can also be made to integrate the schemes with local, provincial and national value chains (UNECA, 2009). Closely associated with investments in irrigation infrastructure is the use of yield-enhancing technologies. The challenge here would be how to ensure reliable supply of water- a commodity that is increasingly becoming scarce. Given the fluctuation in rainfall, irrigated agriculture could develop to become an important means of increasing and stabilizing agricultural production and incomes. The resulting increase in output and productivity will contribute significantly to raising incomes and reducing poverty (Kabbaj, 2003).

#### **1.4 Sources of funding for the Land Bank**

The Land Bank is a financing institution, specifically established by legislature to provide financing to the agricultural industry in South Africa. The Land and Agricultural Bank of South Africa (Land Bank) was founded in 1912 as an institution that could undertake specifically tailored agricultural financing. The Bank has been the major player in the agricultural sector and has made a significant impact in this sector. The Bank enjoyed support from government since 1912 such that the initial capital that the bank received from government was R5.47million and the legislation provided for further capital to be made available by the State, by annual appropriations, under parliamentary votes (Jacobs, 2012).

The vicissitudes of the agricultural sector in South Africa had a substantial impact on the Land Bank's sustainability. The policy divergences that took place in the 1980's and 1990's adversely affected the institutional arrangements, which supported the Land Bank (Jacobs, 2012). The Government policy initiatives starting from the 1980's, to establish a competitive financial system (market interest rates and flow of funds), led to the phasing out of funding concessions for the Land Bank. With the exception to paying tax and dividends, the Land Bank had to compete with commercial banks for funds in the open financial markets. This meant that agriculture had to adapt to market linked interest rates, as the Land Bank had to adjust its interest rates upwards (Jacobs, 2012).

Furthermore, the closure of Agricultural Credit Boards led to Land Bank having to write-off non-performing loans from its balance sheet thereby reducing equity of the bank significantly. This resulted in low capital adequacy ratios and high Cost to Income ratios. The amendment of the Land Bank Act in 2002 was an attempt by the Government to create a legislative change that would enable the bank adjust to the new circumstances and the changes brought on by the abolishment of the supporting institutional framework of Agriculture Boards.

After the amendment of the Land Bank Act, the bank was expected to work closely with the Department of Agriculture and Community Banks who were to provide the after-care service. These community banks never materialised. This initiative was centred on correcting market failures and creating an effective and efficient policy environment. The role of government as defined in the BATAT: Series 7 was to mainly provide incentives and instruments to private based actors in the market, to change their behaviour and/or adjust their activities towards the policy objectives of the government; in this particular case, increasing access to financial services to emerging new farmers (BATAT, 1996).

Unfortunately, from 2002 until 2008, the Land Bank went through an adverse period characterised by the following:

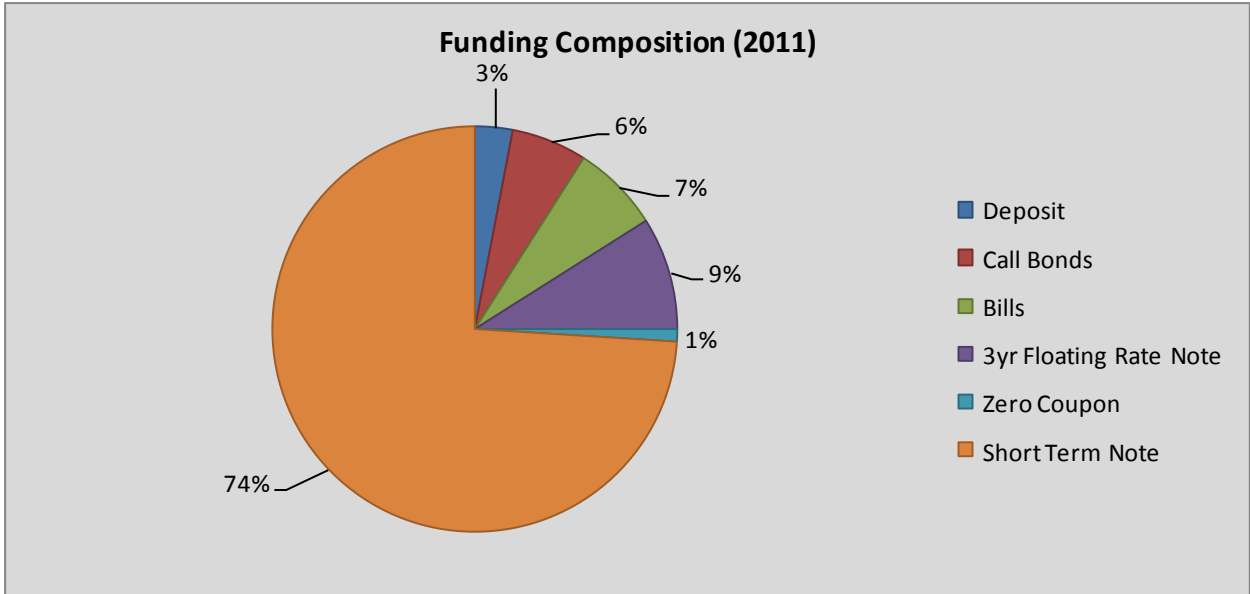
- unstable leadership, culminating in the bank being led by six CEO's within a period of five years;
- bad loans, as a result of poor loan book quality, leading to astronomical levels of high non-performing loans reaching 30%;
- significant write-off of bad debts, mainly developing loans, which led to exponential capital decline;
- highly publicised incidents of corruption and mismanagement;
- flight of clients to commercial banks leading to declaration of losses and destruction of shareholder equity; and
- the loan book declined from a high of R18bn to a low of R11bn (with high non-performing loans), culminating in an annual percentage decline average 25% per annum.

In summary, the significant impairment provisions and bad debt write-offs contributed to a material reduction in the capital levels of the bank, from R3.2bn on 31 December 2001 to R1.1bn (R2.1bn reduction) on 31 March 2006 (Annual Financial Report, 2009/10).

The poor performance elucidated above had a negative impact on the reputation of the bank and most of the investors left the Land Bank (The Land Bank Annual Report, 2009.10). The Bank started experiencing financial difficulties. As a financial institution, the Bank had to rely exclusively on money and capital markets for its funding, borrowing at market related interest rates (Figures 1.1 and 1.2). The Bank issued both short term and long-term instruments, e.g. promissory notes, bills, call bonds, floating rate promissory notes, floating rate notes. In 2008, the Bank almost had over 95% of funds in short term debt instruments, which exposed the Bank to a high refinancing risk. Although, the Bank has managed to diversify its funding sources, reducing its reliance on short term notes from 74% in 2011 (see Figure 1.1) to 42% in 2015 (see Figure 1.2), it has found it difficult to make an impact on development with funds sourced from open markets because the bank pays higher interest rates on borrowed funds.

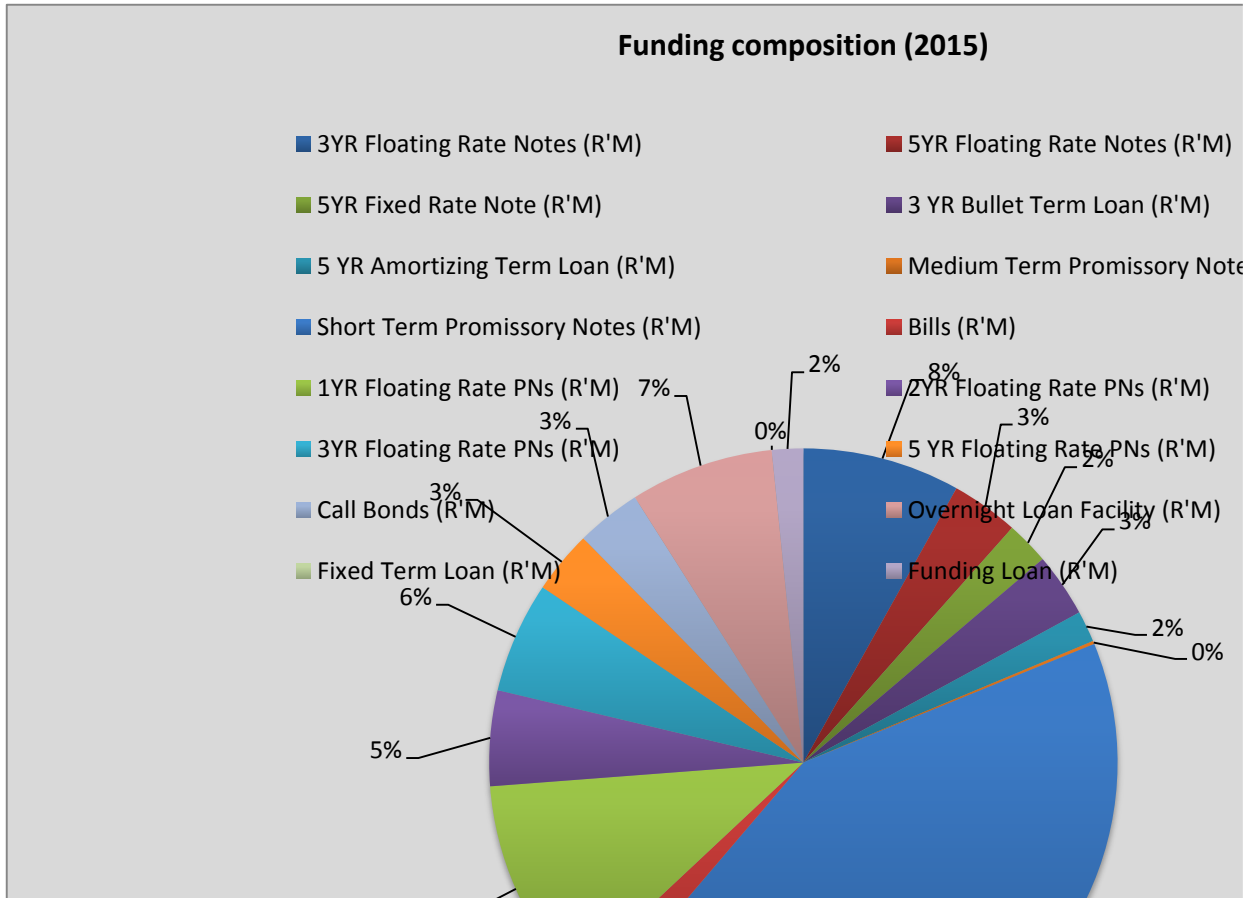
Generally, emerging or development clients are classified as very risky clients and most investors are not too keen to invest in this market as default risk is high and there is usually a high rate of non-performing loans (Makhura, 2012). Most funding institutions including Development Finance Institutions are risk averse and they end up closing their doors to emerging farmers.

**Figure 1.1: Funding Composition 2011**



Source: Land Bank Annual Financial Statement, 2011

Figure 1.2: Funding Composition 2015



Source: Land Bank Annual Report (2015)

Based on the above, the bank had to compete with other financial players for the limited funds available in the money and capital markets and was compelled to pay higher interest on borrowed funds. It was only in 2008 that the Bank received a guarantee of R1.5bn, which was increased to R3.5bn in 2010, to support the sustainability of the Bank. In 2008, the Minister of Finance approved the Land Bank's turnaround strategy after the Bank had been transferred from the Department of Agriculture to the National Treasury. The successful implementation of the strategy has had a positive impact on the Bank:

- Non-performing loans declined significantly from 22.5% in FY09 to 2012 11.1%;
- The liquidity position of the Bank improved with investors buying more of the Bank's paper;
- The Bank currently has a stable leadership;

- The loan book is growing; and
- Core business is beginning to have a positive impact on the bottom line.

In spite of the support from Government and the successful implementation of the Bank's turnaround strategy, challenges remained. On 18 March 2011, Fitch Ratings released the Bank's rating report for FY2009/10. Fitch raised, inter alia, the following concerns:

- Land Bank's core earnings are weak given the tight interest margins;
- Core earnings may remain under pressure unless the Bank receives further capital support and/or obtains access to low cost, long term funding;
- Given the high levels of credit risk that could arise from increased developmental lending, the Land Bank may require further capital;
- The agency believes that higher levels of liquidity are required to support the Bank's substantial short-term asset and liability mismatch.

Furthermore, the Bank received R208m from the Department of Rural Development and Land Reform in 2011 (Land Bank Annual report, 2011/12). The transfer received was a guarantee for identifying deserving emerging farmers with Land Bank mortgage loans that were under distress and required rescue packages. There were conditions that the Bank had to comply with prior to accessing the guarantee. Up to the end of financial year 2014/15, the Bank has been accruing interest on the funds transferred by the State, however, not one deserving client has benefited from this initiative. Hence, co-ordination between different departments particularly Department of Agriculture, Forestry and Fisheries, Land Bank and Rural Development is essential in order to ensure that each institution achieves the desired results.

The mandate of the Bank is mostly restricted to the financing of agriculture and its risk is therefore not spread over a wider spectrum of economic sectors as is the case with other commercial banks and development institutions such as the Industrial Development Corporation (IDC), Development Bank of Southern Africa (DBSA) and

ITHALA Development Finance Corporation Limited. Secondly, given the unbalanced nature of agriculture and high risks associated with the industry e.g. climate change, policy constraints and high non-performing loans, investors are not too keen to invest in agriculture due to high risk exposure. However, if they do invest in Land Bank paper, the premium is usually high. Bad publicity that the Bank experienced between the periods of 2002 to 2005 led to it being penalised by the market. This led to high financial costs which has had unfavourable consequences to the agricultural sector. The agricultural sector is different from other sectors because it is affected by climate conditions such as drought or excessive rainfall, which influences total production and output. This study argues that for emerging farmers to be successful, capital must be available to them at the lowest and most stable interest rate as possible.

Given that the government is in full support of the Land Bank, the Land Bank needs to present a sustainable funding model for emerging farmers that will enable farmers to access funding and allow the Bank to attain its developmental objectives. According to the White Paper (1996), "... farmers must be assured of equitable access to efficient financial services. This should be facilitated by identifying the needs of different farmer groups and characteristics of rural financial markets. It should be accompanied by reassessing the role of government in relation to direct lending".

### **1.5 Factors that influence agriculture in South Africa**

Although, the main objective of this study is to determine an optimal funding model for lenders to the agricultural sector using the Land Bank as a case study, digressing slightly to examine some of the factors that influence agriculture helped affirm the importance of land in the agricultural production function and the bank's lending activities. Development finance has been found to be the composite factor or driver of agriculture and is also affected by other drivers in the economy such as the market, availability of land, the market, availability of information etc. (Makhura, 2008).

Additionally, in South Africa, there are a number of factors that influence the agricultural sector such as land restitution, land redistribution and tenure (Coetzee, 2003). There has been growing pressure to accelerate the land reform process and the rural

community is becoming increasingly unhappy about the pace of land reform which was supposed to have reached 30% by 2014 (Table 1.1).

Institutions such as the Land Bank with both wholesale and retail activities were tasked with the responsibility of dedicating special attention to the needs of land reform programme beneficiaries (Makhura, 2008). The biggest challenge with regards to access to credit was the land reform condition that the land involved could not be encumbered. As a consequence, financial institutions that largely use cash flow in conjunction with security/asset-based lending would shy away from land reform projects unless such a project is integrated within a value chain and thus, assurance with regards to market access of the produce and sufficient risk mitigations are in place. In fact, these institutions have not been providing this sector with finance.

Additionally, the Land Bank has not been effective in enabling government's redistribution objectives. This is evidenced by the total number of loans that have been disbursed directly to emerging farmers, which are way below their commercial and retail exposure. The annual financials reviewed for the period of study clearly shows that the financial book is still highly exposed to commercial and corporate clients.

Table 1.1 below shows the land transferred by the Land Bank to beneficiaries from 1994 to 2009

**Table 1.1: Land transferred and beneficiaries (1994 – 2009)**

Province	Redistribution and Tenure			Restitution			Total	
	Number	Ha	Beneficiaries	Number	Ha	Beneficiaries	Ha	Beneficiaries
Eastern Cape	675	353 357	25 633	16 201.0 0	94 834	215 201	4481 91	240 834
Free State	799	350 291	7 721	2 662.0 0	47 615	40 893	3979 06	48 614
Gauteng	286	34 513	7 328	13 159.0 0	9476	70 719	4398 9	77 507
KZN	690	547	67 761	14	642	433 168	1189	500



		414		752.0 0	447		861	929
Limpopo	291	91 235	7 403	3 382.0 0	513 024	220 227	6042 59	227 630
Mpumala nga	444	322 839	13 950	2 694.0 0	399 876	225 877	7227 15	239 827
Northern Cape	271	952 744	2 773	3 682.0 0	539 620	100 554	1492 364	103 327
North West	300	268 566	40 539	3 709.0 0	373 642	172 963	6422 08	213 502
Western Cape	223	122 304	12 750	15 546.0 0	3 769	118 165	1260 73	130 915
Total	3 979	3 043 263	185 858	75 787	2 624 303	1 597 767	5667 566	1 783 085

**Source: Greenberg (2010)**

Despite initiatives such as the Comprehensive Agricultural Support Programme (CASAP), Land Redistribution for Agricultural Development (LRAD), Settlement Land Acquisition Grant (SLAG), Proactive Land Acquisition Strategy (PLAS), Micro Agricultural Financial Institutions of South Africa (MAFISA) and recapitalisation, which were introduced by government, the historically disadvantaged individuals still find it hard to access funding and land for agricultural purposes. Furthermore, there is minimal participation by previously disadvantaged individuals in the South African agricultural sector (Makhura, 2012). It is important to note that land alone is insufficient; farmers need access to finance, extension and veterinary services, market and water. (Cousins, 2012). The Land Bank requires a sustainable funding model that is fully supported by government in order to be able to assist emerging farmers. A well-capitalised institution is in a better position to take on risk by investing substantially in loans; its large equity base would cushion the institution against large loan losses (Betubiza and Leatham, 1995).

It is important to note that the small-scale agricultural sector is characterised by a large number of historically disadvantaged individuals that have no management and financial

background, no agricultural experience and collateral. It has been observed domestically and internationally that most of these emerging farmers fail due to failure to access credit (Coetzee, 2002; Chisasa; Makina, 2012). Perhaps, this can be argued that small-scale farmers experience exclusion from formal credit markets in the same way that SME's encounter financing challenges and hence viability. Small-scale farmers are also in the category of SME's albeit in the agricultural sector. Empirical evidence confirms that lack of credit led to the failure of many Small to Medium Enterprises (SME's) in Zimbabwe from 2005 to 2009, when inflation peaked at 231 million per cent (Chisasa, 2012). The foregoing discussion underscores the strategic importance of the Land Bank in the provision of liquidity to the agricultural sector in South Africa. This is particularly so for smallholder farmers.

## **1.6 Problem statement**

The Land Bank uses substantial external funding, and has to adjust its lending and deposit rates accordingly as prevailing money and capital market circumstances dictate. As a result, the Land Bank Act requires that the interest rates charged on loans should be adequate in order to ensure its solvency (Kelly, 1993). The cost of raising the funds is usually high as a result of the risk that comes with agriculture and the type of clients, which then forces the Bank to push this cost to its clients. Therefore, lack of access to cheaper funding or concessionary funding has led to the Land Bank's inability to efficiently accommodate the emerging farmers' market in its overall portfolio (see interest rate appendix). Most emerging farmers do not qualify for Land Bank loans due to existing stringent norms and high interest rates. It goes without saying that the Land Bank was never a Development Bank; however, it is an institution that was created to provide financial assistance to farmers on the most practical terms possible.

## **1.7 Research questions**

From the research problem presented in section 1.7, three questions emerged. The questions assisted in the formulation of the research objectives. Thus, this study attempted to answer the following research questions:

1. What are the trends in funding to the Land Bank between 1981 and 2015?

2. What is the impact of capital structure on profitability for the Land Bank of South Africa?
3. What is the relationship between of both open market funding and government on the loan portfolio of the Land Bank of South Africa?

## **1.8 Research aim and objectives**

Following on the preceding research questions, the aim and objectives of the study are presented in sub-section 1.9.1 and sub-section 1.9.2 respectively.

### **1.8.1 Aim of the study**

The aim of the study was to examine the relationship between capital structure and profitability of the Land Bank, in order to understand the potential problems in capital structure and performance of the Land Bank (profitability). Based on the findings, the study endeavours to make recommendations to the management of the bank regarding the most suitable capital structure that will improve financial performance and ensure that the Bank also fulfils its developmental mandate. Accordingly, the specific objectives are stated in sub-section 1.9.2 below.

### **1.8.2 Objectives of the study**

This study seeks to achieve the following objectives:

1. To determine the trends in funding to the Land Bank between 1981 and 2015.
2. To examine the impact of capital structure on profitability for the Land Bank of South Africa.
3. To determine the relationship between open market funding and government funding on the total loan portfolio of the Land Bank

## **1.9 Significance of the study**

Firstly, since the deregulation of the agricultural sector that took place in the 1990s, there has been a gap in financial support provision to emerging or small-scale farmers. Although, there were a number of recommendations made through the policy reforms, some components of the agricultural sector have not fully benefited. According to

Matlala (2011), the transformation and progressive growth of South African agriculture has not materialised as expected. The Bank has made minimal progress in trying to penetrate the development segment. It has failed to integrate its plans with its core development mandate, which has affected the Bank's ability to make substantial improvements in the development loan book. Even though the Bank has introduced a number of initiatives such as Retail Emerging Markets, emerging farmers still struggle to access credit from the Bank.

There have been few prior studies that have investigated funding models for DFIs. This study, thus, attempts to fill this gap by discerning the Modigliani M capital structure, Trade-off theory and Pecking Order Theory. In the Land Bank's role to provide agricultural finance to both commercial and emerging farmers, a few shortcomings have been observed. These have been briefly discussed, in view of the existing gaps in the financing of emerging farmers. It is thus, imperative and significant to have a study that scrutinises the current funding structure of DFIs, proposes alternative funding models and assists the developmental state paradigm as envisaged by the South African government.

### **1.10 Methodology**

A quantitative research design was applied using secondary data to test the hypotheses. Quantitative research attempts to establish statistically significant relationships, addresses questions by measuring and describing, is based on objective measurement and observation and is concerned with correlation and causation (Collinson, 2014). Data will be obtained from the financial statements of the Land Bank and the period of analysis will be from 1981 to 2015.

### **1.11 Research Outline**

The rest of the study is structured as follows:

Chapter 2 presents the literature review. First, it discusses the theories that underpin this study, followed by the conceptual framework and the empirical literature review. It also discusses the fundamentals of government support for Development Finance Institutions.

Chapter 3 discusses the research methodology and comprises of the research design, data and data collection as well the statistical methods applied to test the specified hypotheses.

Chapter 4 presents the results and contains an in-depth discussion of the statistical analysis results.

Lastly, Chapter 5 concludes the study with a summary of the study results, conclusion and recommendations for stakeholders.

### **1.12 Chapter summary**

This chapter introduced the study by providing the historical background of agriculture in South Africa. What emerges from the historical discussion is that the agricultural sector is segmented into commercial and emerging farmer categories. While the entire sector is characterised by high default probabilities when borrowing money from financial institutions, the emerging farmers portray higher default risk. The absence of titleholding to land compounds their lack of access as they fail to provide alternative tangible collateral. In spite of the high default prevalence, the Land Bank remains exposed to this sector in line with its mandate enshrined in the Land Bank Act, which is to provide financial support to agriculture.

However, the Land Bank is experiencing funding challenges as it sources funds from both the open market and Government. It has been observed from this chapter that the weighted average cost of capital is more than the return on capital thus plunging the bank into serious financial mismatches. This situation thus, led to the main objective of the study, which is to determine the relationship between capital structure and the profitability of the bank. In other words, the study sought to determine the sources of funding that make the Land Bank a viable institution, albeit the high portfolio default risk characterising its loan book. In Chapter 2, the theoretical and empirical literature is reviewed in order to provide the basis of the arguments advanced in this study.

# **CHAPTER 2**

## **LITERATURE REVIEW**

### **2.1 Introduction**

Chapter 1 set out the primary objective of this study which was to determine the impact of capital structure on the profitability of the Land Bank. The aim of this chapter is to discuss the theoretical and empirical literature upon which this study is based. Section 2.2 presents the theory of banking. The capital structure theories are discussed in section 2.3, whilst a discussion of the determinants of the Bank profitability is discussed in section 2.4. Section 2.5 elaborated on establishment development finance institutions, followed by the role and the significance of the agricultural development finance institutions in section 2.6. The last part will focus on the services offered by the Land Bank.

### **2.2 Theory of Banking**

Banks play a crucial role in the economy and their importance cannot be overemphasised. Both commercial banks and DFIs have proven to be fundamental drivers in stimulating the monetary system and in growing an economy. This implies that they are key institutions that have to be preserved in order to protect the state of the economy. Chortarears, Girardone and Ventouri (2010) observed that issues of maintaining confidence and stability in the financial sector, imply that capital structure is typically more important in the banking industry than in other industries. Banking institutions have come and gone, evolved and changed, but functional needs persist while packaged differently and delivered in substantially different ways (Allen and Santomero, 1998). Therefore, every economy requires a sustainable banking sector in order to ensure economic growth and a stable financial sector.

This section gives a brief overview of the three main banking theories and their significance in the financial markets. Based on previous literature, there are three dominant theories namely, the financial intermediation theory of banking, the fractional reserve theory and the credit creation theory of banking. Over the past couple of years,

the three theories have been discussed extensively by a number of researchers, with the early proponents being John Law (1705), James Steuart (1767), Adam Smith (1776), Henry Thornton (1802), Thomas Tooke (1838), Marshall (1838), Adam Muller (1816), Phillips (1820), Keynes (1930) and Schumpeter (1954). The modern proponents are Klein (1971), Diamond and Rajan (1984, 1991, 2007), Diamond and Rajan (2001) and Yohe (1995).

### **2.2.1 Financial intermediation theory of banking**

According to the financial intermediation theory, financial intermediaries exist by the grace of market imperfections (Scholtens and Van Wensveen, 2003). In terms of the financial intermediation banking theory, banks are merely intermediaries like any other non-bank financial institution, collecting deposits that are then loaned out (Werner, 2014). Banks therefore use public funds to grow their lending portfolio in addition to other banking activities that are undertaken. Banks thus, expand the pool of financial systems by selling liabilities which are perfect substitutes for money to non-bank units (Davidson, 1978).

Financial intermediaries and organised financial markets arise to alleviate market frictions such as transaction costs, uncertainty about project outcomes and information asymmetries which makes it difficult to de-couple investments from financing decisions (Beck, 2006). Based on the above, it is therefore impractical to expect DFIs to have similar capital structures with commercial banks as DFIs do not have access to deposits but rely on debt to fund their businesses. The functions of commercial banks and DFIs differ, hence, comparing the two would be challenging. Merton and Bodie (1995) state that there are two ways of analysing a financial intermediation system, which are functional and institutional perspectives. In view of this, the authors advocate that financial systems should be analysed using a functional perspective rather than an institutional perspective.

According to Scholtens et al. (2003), current financial intermediation builds on the notion that intermediaries serve to reduce transactions costs and information asymmetries. The current dominant financial intermediation theory holds that banks are merely

financial intermediaries and do not differ from other non-bank financial institutions; they gather deposits and lend these out (Werner, 2014). Therefore, financial intermediaries play a critical role in ensuring the flow of funds from savers to end users.

Financial intermediation can affect economic growth by acting on the savings rate, on the fraction of savings channelled to investment or on the social marginal productivity of investments (Scholtens et al. 2003). Also, financial institutions appraise credit risk on behalf of depositors. This helps to reduce the degree of information imperfection and asymmetry between the ultimate suppliers and users of funds (Saunders and Cornett, 2003). Banks reconcile the different needs of borrowers and lenders by transforming small size, low risk and liquid deposits into loans, which are of a larger size, higher risk, and are not liquid (Casu and Girardone, 2006). Therefore, large-sized deposits in relation to a bank's assets, have a direct link to the profitability of the bank. This is based on the notion that a bank collects deposit from clients to lend to borrowers at a higher return. As a result, Diamond (1984), views intermediaries as monitors on behalf of savers to increase return on scale and implies that specialising may be attractive. Additionally, Diamond and Rajan (2001) demonstrate that deposit finance can create the right incentives for a bank's management.

Unfortunately, Land Bank as a DFI is not permitted to obtain deposits from the public but have to borrow funds using traditional financial instruments such as government bonds, bills, promissory notes etc. As a result, liquidity risk is one of the major risks that need to be managed appropriately by DFIs, hence, the importance of this risk element is influenced by the funding model employed by a financial institution.

Historical approaches suggest that alternative DFIs acquire institutional foundations of competitive advantage by employing safer strategies for profit sustainability, solid deposit bases and capital reserves, greater client / member/ depositor confidence, unique two-tier organisational structures, corporate cultures of social economy, closer control and supervision of management (Mettenheim, and Butzbach, 2012 ).



### **2.2.2 The fractional reserve theory of banking**

The underlying idea of the fractional reserve system is to keep a fraction of deposited money in the account, which implies that it should always be possible, at any time, to give creditors access to their deposit (Stoop, 2010). Hayek (1929), stated that with a reserve of 10%, every bank would lend out 90% of any deposit, which would increase deposits in other banks. Therefore, the banking system should be able to create money through a process of multiple deposit expansion (Werner, 2014).

The early proponent of the fraction reserve theory argued that, one should consider what part of its deposits a bank could lend and then also consider what part of its loans would be re-deposited with it and with other banks and vice versa. Furthermore, considerations of the part of the loans made by other banks that would be received by it should be made. Therefore, a geometrical progression will be that if each bank could lend two thirds of its deposits, the total amount of loaning power in banks would amount to three times what it otherwise would be.” (Marshall, 1888 cited in Yohe, 1995).

### **2.2.3 The credit creation theory of banking**

Credit creation is based on the idea that banks use primary deposit funds to make funds from the public available to on-lend to borrowers and to expand money supply. Davenport (1913), maintains that banks do not lend their deposits, but rather, by their own extension of credit, create the deposits. Werner (2005) stated that “Bank credit creation does not channel existing money to new uses”. It only creates money that did not exist previously and channels it to some use.... This suggests that ‘creative accounting’ is another function of banks as the settlement system of all non-cash transactions in the economy.

Since banks work as the bookkeepers of records of the funds belonging to the public– it is possible for banks to increase the money in clients’ accounts (those who receive a loan), by simply altering the figures. This could go unnoticed, because agents cannot necessarily distinguish between money that was saved and deposited and money that has been created ‘out of nothing’ by the bank (Werner, 2014). Thus, according to Werner (2012), credit creation plays a critical role in the economy and without credit

creation, the economy will shrink. As a result, whenever a bank makes a loan, it concurrently generates an equivalent credit from the existing client's account, thereby creating new money.

The above clearly shows that commercial banks are funded differently from DFIs and commercial banks have a competitive advantage over DFIs. DFIs were set up in order to promote developmental initiatives hence institutions such as Land Bank are not governed by the Bank Act of 1990. The Land Bank is governed by the Land Bank Act no. 15 of 2002. As a result, the Land Bank is not permitted to take deposits from the general public but raises funds from the money and capital markets. Funding of DFIs is slightly different from the funding model of commercial banks. In most countries agricultural finance institutions are funded through government programmes. Calomiris and Himmelberg (1994), argue that the motive behind government programmes to provide credit to agriculture and industry, can be traced back to asymmetric information in capital markets and consequently to benefits from relaxing the constraints on financing.

For instance, South African DFIs cannot fund their operations by taking deposits from the general public, but borrow funds from the capital markets or use their own equity. It is additionally, important to note that, profitable DFIs would most likely finance their activities with internal funds. Also, DFIs have an implicit subsidy which is exempt from taxes and are also not expected to pay dividends to shareholders. This should ideally be seen as an incentive for these banks to grow their retained earnings.

Generally, in some countries, government makes available capital or guarantees to DFIs making it easier for them to obtain better ratings from credit rating agencies, ultimately offering DFIs an opportunity to raise funds cheaper than from the private sector (Te Velde and Warner, 2007).

The theories discussed above clearly show that commercial banks have a competitive advantage over DFIs as they are able to create money using other people's money and also through systemic interaction. However, for DFIs, this is not the case as both

domestically and abroad, most DFIs rely either on debt financing from open markets, government support or donor funding.

### **2.3 Capital Structure Theories**

Capital structure is one of the most important concepts that every manager of a company has to understand. This is because managers are required to make investments and capital structure decisions to maximize their company's value. Capital structure has been researched since 1958 by Modigliani and Miller (MM). Their research produced the theory of irrelevance proposition which became the foundation of the capital structure theory and has been used by a number of authors across the globe. The MM theory is based on a number of assumptions including inter alia that there are no transaction costs, no bankruptcy, the presumption that all firms have the same information, firms issue only risk-free debt and equity and operate in a perfect market.

Capital structure decisions relate to a mix between debt and equity. Following traditional theories, Titman and Wessels (1988) observed that firms choose funding that minimizes the costs and maximizes the benefit associated with different sources of debt and equity. Saad (2010) defines capital structure as the way a firm finances assets across a blend of debt equity or hybrid instruments. Shahr, Shahr, Buhari, Ahmad, Faisal and Rafdi (2015), state that a capital structure decision consists of a mix of debt and equity which is crucial because wrong capital structure decisions may lead to financial distress and even to bankruptcy.

According to Shibru, Kedir and Makonnen (2015), capital structure refers to several alternatives that could be adopted by a firm to get the necessary funds for its investment activities in a way that is consistent with its priorities. Capital structure also refers to how firms choose to finance their assets on the left-hand side of the balance sheet (Johansson and Lundblad, 2011).

Harrison and Widjaja (2013) observed that debt gives firms more financial agility in taking up investment opportunities because debt can be raised faster than either equity

finance or the accumulation of earnings. Basnet (2015) states that with more debt a firm can benefit from tax shields via the tax-deductible interest payment cost of bankruptcy.

With regards to equity and internal funds, capital is considered as the cornerstone of a bank's financial strength. Capital supports the operations of the bank and acts as a buffer, absorbing unanticipated losses from its activities and in the event of problems, enabling the bank to continue operating in a sound and viable manner while these problems are being resolved (Aremu, Ekpo, Mustapha and Adedoyi, 2013).

According to Shibru et al. (2015), capital structure refers to several alternatives that could be adopted by a firm to obtain the necessary funds for its investment activities in a way that is consistent with its priorities. This suggests that capital structure refers to the mix of funding sources that the company uses for its investing activities (debt or equity). The above theory describes, articulately, the importance of capital structure decisions for management and the relevant stakeholders of the companies who might have vested interests in the company.

Previous studies provided sufficient empirical evidence on different alternatives available to financial managers for capital structure decisions. The studies observed various factors that significantly determines the firm capital structure, the importance of considering taxes when making capital structure decisions as well as benefits of tax and the impact of tax deduction on capital structure decisions (Rajan and Zingales (1995); Mason (1990); Graham (2000); Shyam-Sunder and Myers (1998).

According to traditional theories of capital structure, firms choose funding that minimizes the costs and maximizes the benefits associated with different sources of debt and equity (Titman and Wessels 1988). As a result, shaping or determining capital structure is the ultimate task to be achieved by a financial institution.

The theory of capital structure has been publicized by a number of well-known researchers. Earlier supporters of the capital structure theory include, Modigliani and Miller (1958, 1963), DeAngelo and Masulis (1980), Bowen Daley and Huber, Jr (BHD) (1982), Marsh (1982) and Stewart Myers (1984).

DeAngelo and Masulis (1980) posit that the presence of corporate tax shield substitutes for debt implies that each firm has a unique interior optimum leverage decision. Masulis (1983) further add that when firms which issue debt are moving toward the industry average, the market will react more positively than when a firm is moving away from the industry average. In the same vein, Harrison et al. (2013) states that debt enables a firm to increase after tax earnings by exploiting available tax shields. Conversely, higher leverage leads to increased direct and indirect costs of financial distress therefore decreasing the firm's value (De Haas and Peeters, 2004). Hence, it's important for managers to identify the levels beyond which drastic increases of debt will pose substantial risk to the organisation.

Researchers further developed a theory that a firm would seek an "optimum debt level" and that a firm could increase or decrease its value by changing its debt level, so that it moves toward or away from the industry average. However, Hatfield, Cheng and Davidson (1994), present a contrary view. They concluded that the relationship between a firm's debt level and that of industry does not appear to be of concern to the market.

On the other hand, Daley and Huber (1985), provided a technique by which the optimal capital structure can be tested. Marsh (1982) concluded that companies do not make a choice of financing instruments as though they had target level in mind of both long term debt ratios and ratios of short term to total debt. Following from which and Majluf (1984), recommended the Pecking Theory that suggests that a firm chooses its internal capital structure prior to considering external capital in the form of debt and only uses equity as its last resort.

Recent experimental work on capital structure that has been embarked upon involves researchers like, Rajan and Zingales (1995), Guedes and Opler (1996), Schulman, Thomas, Sellers and Kennedy(1996), Myers (2001), Chen (2003), Boateng (2004) and Akdal (2010). Researchers are in agreement that capital structure strives to provide a basis for understanding the impact of financing decisions and their influence on a firm's value (Johansson and Lundbland, 2011).

Despite numerous researches on capital structure, researchers have not reached a consensus on the most suitable capital structure decision for company managers to take in achieving company goals. These types of decisions are also important for DFIs such as Land Bank to enable them achieve their mandates. The capital structure of DFIs, not only influences expected returns (hurdle rates) or how these institutions are managed, but also affects the overall long-term financial sustainability of DFIs (Rikhotso, 2016).

The following subsection analyses the fundamental principles of capital structure; MM Leverage Irrelevance, Trade-off theory and pecking order theory.

### **2.3.1 MM leverage irrelevance theory**

The development of capital structure began with the capital structure theory of Modigliani and Miller (1958). Initially, their paper demonstrated that the choice between debt and equity does not have any material effects on the value of the firm (Modigliani and Miller, 1958). The theory starts by assuming that the firm has a particular set of expected cash flows and when the firm chooses debt and equity to finance its expected cash flow, it divides the cash flow among investors (Modigliani and Miller, 1958). The theory of MM was based on the assumption that a company's market value is reliant on its capital structure and there is a linear relationship between cost of equity and equity ratios.

Subsequently, Franco Modigliani and Merton Miller (MM) established a model that assists in comprehending the effects of taxes and financial distress on a company's capital structure decision (MM, 1963). According to their theory, financially, debt is considered beneficial because of the debt-shields that minimize expected tax bills and maximize the after-tax cash flow (MM, 1958). It is worth mentioning that the capital structure theory explains the most important factors in the relationship between capital structure and the value of the company.

Frank and Goyal (2005) state that when a firm chooses a certain proportion of debt and equity to finance its assets, it divides up the cash flows among investors as both investors and the firm are assumed to have equal access to financial markets. That

means investors have the ability to benefit on both sides as they can either create leverage or remove unwanted leverage. The theory therefore is premised on the notion that company value depends on investments as opposed to financing decisions.

### **2.3.2 Trade-off theory**

The origin of the trade-off theory (1963) emanated from debates around the Modigliani-Miller theory (1958). According to the earlier proponents of the trade-off theory, Kraus and Litzenberger, optimal leverage reflects a trade-off between the tax benefits of debt and the cost of bankruptcy.

According to the trade-off theory, the emphasis is on the tax benefits of using debts as opposed to using equity. The firm managers evaluate and analyse the various costs and benefits of several alternatives of leverage plans (Jahanzeb et. al. 2013). The focus on the cost and benefit analysis assures that an interior solution is obtained so that the marginal costs and marginal benefits are balanced (Frank et al. 2005). Noteworthy is that according to the trade-off theory, companies are expected to find a target debt ratio (Jalilvand and Harris, 1984). Also, the trade-off theory implies that firms have a long run optimal debt ratio that is assumed to be a function of several firm specific characteristics which vary overtime, across firms, or both (Frank and Goyal, 2008). Firms use more debt to benefit from the marginal tax advantage of additional debt which is counterbalanced by the marginal expected financial distress cost.

Different authors have used the trade-off theory to describe a family of related theories (static trade-off and dynamic trade-off model). According to Shyam-Sunder and Myers (1999), the static trade-off model determines the optimal debt level, by comparing the cost and benefit of debt financing. The dynamic trade-off model is an important precursor to the static trade off model. Dynamic trade-off model suggest that firm let their leverage ratios vary within an optimal range. Stiglitz (1973) examined the effects of taxation from a public finance perspective. Stiglitz's model is not a trade-off theory because the author did not adopt the uncertainty assumption as is the case with trade-off theories. Goldstein, Nengjiu, and Hayne (2001) observed that a firm with low leverage today can increase leverage.

### **2.3.3 Pecking order theory**

According to early proponents of the theory, Myers and Majluf (1984), who developed the Pecking Order Theory, they posit that capital structure is driven by a firm's aspiration to finance new investment opportunities, by first considering internal funds, then inexpensive debt and finally, by resorting to equity. The theory suggests that the company will generally use internal sources available prior to pursuing external financing such as debt or equity. This is usually easy for companies with a strong capital base or reserves and also short term or long-term investments.

The Pecking Order Theory, supports the assumption that highly profitable firms would most likely finance their activities with internal funds and that this would lower the level of debt ratio (Jahanzelo et. al. 2013). Furthermore, profitable firms are stronger and are able to face financial distress. Their strength ensures the future sustainability of their business compared to unprofitable firms (Shibru, 2015). The Pecking Order theory's basic assumption, articulated by Myers and Majluf (1984), is that companies would follow a specific order, in relation to their financing preferences. This assertion was further expanded by Abosede (2012) as follows:

- i. New shares must be issued to outsiders
- ii. Even where rights issue is employed, the firm will incur costs which do not have the same treatment as costs on debt source. In the same vein, equity is more subject to undervaluation than debt.
- iii. Under (i) and (ii) above, the assumption is that at the end of new issues, ownership structure is altered.
- iv. Managers know more about the true value of the company's existing assets than shareholders (information asymmetry).

Empirical research of the assumptions of the pecking order theory has been carried out with varying results. Fama and French (2005) estimated that more than half of the firms in their sample violated the Pecking Order Theory with regards to year-by-year equity decisions. Empirical findings presented in a study done by Johansson and Lundblad (2011) support the assumption that high growth firms seem to follow pecking order



theory regarding the options they face when financing operations. This means profitable companies would rather use internal finance to finance their operations. This implies that profitability can be influenced by internal financing decisions regardless of the fact that debt is assumed to be cheaper than equity. On the contrary, Frank and Goyal (2003), disputed that internal funds are sufficient to cover investment funding on average. They believe that firms are mostly reliant on external debt.

Various researchers have used different methods to test the pecking order theory. For instance, Shyam-Sunder and Myers (1999) used the funds flow statement to test the pecking order theory. Frank and Goyal (2003) used balance sheet and income statement to test the theory.

This study thus analyses both the statement of financial position and statement of comprehensive income in testing the effectiveness of the pecking order theory. Additionally, for proper quality assurance, the study utilises two measures of the debt ratio, long term debt ratio and total debt ratio.

Table 2.1 below presents additional work done on capital structure and observations made by different authors. Interestingly, profitability ratios are the commonly used variables (predictors of optimal capital structure). This suggests that the use of financial ratios such as return on equity (ROE) and return on assets (ROA) have been studied by a number of authors and can thus produce dependable results.

## **2.4 Determinants of bank profitability**

Studies that have investigated the impact of capital structure on profitability apply a number of variables ranging from (ROA), leverage, debt equity ratios, equity, interest rates spread, total debt, size, tangibility, liquidity ratios, interest rates, growth rates, earning rate structure, net interest margin etc. For the purpose of this study, (ROA) will be used as the dependant variable instead of ROE. This is because equity makes up a small portion of the capital structure.

### **2.4.1 Profitability (ROA)**

Profitability ratios such as return on assets are generally used to measure the efficiency of the company (Table 2.1) and are referred to as the earning ability of the company. It measures the rate of return on company assets and is used as an indicator of the profitability of the company. According to Golin (2001), for a bank to be profitable and successful in its operations and to maintain solvency, it is imperative to generate sufficient earnings. Profitability ratios are useful to both internal and external stakeholders (Kabajeh, Nu'aimat and Dahmash (2012). For external stakeholders, they give an indication of whether the company is generating sufficient income to meet its financial obligations. In the context of capital structure, profitable companies are likely to have more retained earnings and are more likely to use internal sources of funds.

**Table 2.1: Summary of literature on modelling bank profitability**

Author	Country	Dependent variable	Explanatory variables	Method	Findings
Mykhailo-lavorskyi (2013)	Ukraine	Firm Performance	<ul style="list-style-type: none"> <li>• Leverage</li> <li>• Total factor</li> <li>• Productivity</li> <li>• Size</li> <li>• Sales</li> <li>• Industry</li> </ul>	Pooled OLS estimation Least Square Dummy variable	<p>1. Leverage is found to negatively affect firm performance, measured as the return on assets, operating profit margin, or total factor productivity.</p> <p>2. Developing countries have high growth potential. Debt financing in such conditions makes a firm to commit future fixed payments and thus deters investing in immediately available projects with higher return rates.</p>
Idode, Patrick Esiemogie, Adeleke, Toyin Mary, 3Ogunlowore, Akindede John, 4Ashogbon, Oyekan Samuel (2014)	Nigeria	Return on Assets (ROA) measured as Earnings before tax (EBT) divided by total assets	The independent variables are total debts to total assets ratio (LEVI) and equity to total assets (LEVII).	OLS	<p>1. The result of the regression analysis indicates that total debt ratio (LEVI) is positively signed and statistically significant at a 5% level of significance.</p> <p>2. The result of the regression analysis presented in table 2 also shows that LEVII is positively signed and statistically significant at a 5% level of significance.</p>
Joshua Abor (2005)	Ghana	Leverage	<ul style="list-style-type: none"> <li>• Long term debt to total capital, firm size as a control variable</li> <li>• Short term debt and total debt to total capital</li> </ul>	OLS	<p>1. Regression (1) reveals a significantly positive relationship between SDA and profitability (short term debt is cheaper).</p> <p>2. Regression (2) shows a significantly negative association between LDA and profitability.</p> <p>3. Regression (3) indicates a significantly positive association between DA and profitability.</p>
Rafiu Oyesola Salawu Abafemi Awolowo (2009)	Nigeria	Profitability	<ul style="list-style-type: none"> <li>• Total liabilities ratio</li> <li>• Long term debt ratio</li> <li>• Short term debt ratio</li> <li>• Participation of equity</li> </ul>	OLS, Fixed Effect Mode and Random Effect Model	<p>1) In other words, the larger the total debt, the lower the profitability. This result is in conformity with the conclusions of Booth et al (2001), Fama and French (1998), Graham (2000) and Miller.</p> <p>2. This suggests that short-term debt is a common practice among the most profitable companies.</p> <p>3. The participation of equity (PL) in the capital structure is positively correlated with profitability.</p>

Khalaf Taani (2013)	Jordan	Net profit, Return on Capital Employed, Return on Equity and Net Interest Margin		Multiple Regression, Correlation Matrix	The results show that bank performance, which is measured by net profit, return on capital employed and net interest margin is significantly and positively associated with total debt; while total debt is found to be insignificant in determining return on equity in the banking industry of Jordan.
Md. Nur Alam Siddik 1, vSajal Kabiraj 2 and Shanmugan Joghee 3 (2017)	Bangladesh	1. Return on Assets (ROA) measured as Earnings before tax (EBIT) divided by total assets 2. Return on equity 3. Earnings per share	1. Short Debt to total assets 2. Long term debt to total assets 3. Total debt to total assets 4. Liquidity 5. Size 6. Growth 7. Economic Growth Inflation	Panel data, Multiple regression analysis	1. The results indicate that all capital structure variables, viz. TDTA, LTDTA, and STDTA, have significant inverse impacts on ROA, which is compatible with the conclusions of Hasan et al. (2014) and Salim and Yadav (2012), who observed significant negative impacts of capital structure variables on ROA. 2. It was also found that TDTA and STDTA have significant negative impacts on ROE, which concurs with the observation made by Hasan et al. (2014) and Salim and Yadav (2012). Also in agreement with Hasan et al.'s findings.
Tedy Saputra, Noer zam Achsani and Luckywati Anggraeni (2015).	Indonesia	return on assets (ROA) and return on equity (ROE)	Short term debt to total assets (SDTA), long term debt to total assets (LDTA), total debt to total assets (TDTA), total debt to total equity (TDTE), firm size (SIZE) which is the natural log (Ln) of the total assets and firm's asset growth (AG).	Regression model	The capital structure variables have a negative effect on the firm's performance measured by ROA. This result supports previous research conducted by Zeitun and Tian [13], Vitor and Badu [14] and Hasan et.al. [17]. It concludes that the capital structure has negative effects on ROA  Based on the regression results, capital structure had negative effects on ROA in funding, securities and insurance companies.

Source: Author construction from....

#### **2.4.2 Total debt**

Harrison and Widjaja (2013) argue that debt gives firms more financial agility in taking up investment opportunities since debt can be raised more rapidly than either equity finance or the accumulation of earnings. In the banking context, total loans refer to the amount raised to finance investment opportunities. In the case of the Land Bank it refers to the debt raised in the open market to finance agricultural transactions from both commercial and emerging farmers.

#### **2.4.3 Total loans**

Gul, Irshad and Zamak (2011) define bank loans as the main source of income which is expected to have a positive impact on banks' performance. In the Land Bank context, total loans refer to the total lending portfolios extended to commercial and development clients.

#### **2.4.4 Total equity**

Equity refers to the total capital invested by the shareholder of the company or the bank. Capital is the cornerstone of a bank's financial strength (Aremu, et al. 2013). Berger (1995) states that companies with a high capital base tend to generate high profitability levels and can easily adhere to regulatory capital standards so that excess capital can be provided as loans. A strong capital base is therefore said to be positively correlated with capital structure and allows companies choose between internal and external sources of financing.

#### **2.4.5 Interest rate spread**

Interest rate spread is the difference between the borrowing rate and the lending rate for financing institutions. Interest rates play a critical role towards the profitability of a bank. Low rate or small spread enables financial institutions to remain competitive (Iringu, 2013). There are a number of factors that financial institutions have to consider when determining interest rate spread, these include market conditions, investor perception and the overall financial performance and position of the company.

A study done in Kenya, observed that in most cases, interest rate spread changes from period to period, depending on prevailing economic situations and demand from the

central bank (Iringu, 2013). Findings from a study done in Ghana, concluded that the factors determining this high spread are GDP, inflation, exchange rate, prime rate, Treasury bill rate, liquidity position of banks, overhead costs, loan loss provisioning and profit margin of the banks (Churchill, Kwanig and Ababio, 2014).

#### **2.4.6 The relationship between capital and bank profitability: empirical literature**

The ability of the Bank to successfully finance emerging farmers relies on the availability of capital and a sustainable funding model. The current funding model of the Land Bank makes it hard to on-lend to emerging farmers because funding is raised at steep interest rates. Goergena and Renneboog (2001) argue that external financing is generally more expensive than internal financing and firms should therefore prefer internal funds when it is feasible to do so.

Diamond and Rajan (2000) add that a bank's capital structure affects its ability to provide liquidity and credit effectively. Thus, lack of capital has always been identified as a major cause of failure (Aremu et al. 2013). Hence the capital structure of the Land Bank needs to be reviewed and the balance sheet needs to be strengthened to reduce the cost of funds.

Over the years, the relationship between capital structures has been discussed and has attracted a large number of theoretical and empirical evidence such as from Harris and Raviv (1991), Rajan and Zingales (1995), Fama and French (2002), Frank and Goyal (2007). The literature on the relationship between capital structure and profitability has produced mixed results over the years with some researchers concluding that there is a negative relationship between capital structure and profitability and others concluding otherwise. Abosede (2012) observed that these mixed results are due to the implicit assumptions about the hierarchy in which firms use different sources of capital in view of the uncertainty that firm managers have in adopting pecking order to fund investments.

In addition to the growing body of literature on the relationship between capital structure and financial performance, this chapter endeavours to reconnoitre the following

question: “Does the capital structure of a DFI have an impact on its financial performance?”.

According to Saputra, Achsani and Anggraeni, (2015), based on the regression results that capital structure has negative effects on ROA and on funding, the negative effect of capital structure on the firm’s performance, measured by ROA, is in support of the pecking order theory that firms with high profitability should use more internal funding than external funding. Also, Simonovska, Gjosevski, and Campos (2012) state that statistical evidence does not support the hypothesis that high-leverage increases opportunities for agricultural companies to profit.

The above reinforces the findings of Rajan and Zingales (1995) who support the pecking order theory’s predictions of a negative relationship between the debt notion and profit. This has also been reaffirmed in a recent study conducted by Taani (2013), which concluded that banks should consider an appropriate mix of a capital structure in order to increase the bank’s profitability. Banks should be cognisant that large debts would have a negative impact on profitability, particularly long-term debt as opposed to short-term debt.

Furthermore, the assumptions of Ramalho and Silva (2009), that a negative relationship is expected between profitability and debt in accordance with the pecking order theory, is in line with the above observations. The negative effect of capital structure on a firm’s performance, measured by ROA, is in of support of the pecking order theory that explains why firms that are highly profitability should use more internal funding than external funding (Saputra et. al. 2015). Additionally, total debt was found to be significant in determining net profit and return on capital employed in the banking industry of Jordan. The capital structure had significant effects on firm performance measured by ROA and ROE.

## **2.5 Establishment Development Finance Institutions**

The early missions dispatched by the World Bank over the period 1948 to 1968, identified inadequate long-term credit as a primary deficiency of developing countries’ financial systems (Mayer, 1989). This followed a line of thinking emanating from the

research of Gerschenkron (1962) and Lewis (1955) that advocated for a “development role for state-owned intermediaries.” This was followed by the old rural paradigm of the 1960s and the 1970s which was based on public authorities’ desire to facilitate access to rural finance (Morvant-Roux, 2008). Government intervened by using state-owned development banks and direct donor intervention in credit markets by providing favourable terms and softer interest rates or lenient guarantees. The intervention did not render positive results as it was found to be unsustainable in the long term.

Over the last three decades, Agri-financing has evolved from an old paradigm of being concerned with increasing rural lending at overly-favourable lending rates, to the current system, which takes sustainability and market preferences and dynamics into consideration (Trivelli and Venero, 2007). The characteristics of this new paradigm as opposed to the old direct credit approach which noted that there has been a significant shift towards sustainable institution building, amongst agriculture and rural banks, across a number of countries (Siebel, 2000). This suggests that in order for financial systems to become self-reliant sustainable institutions, they have to accomplish five key objectives:

- Mobilise their own resources.
- Have their loans repaid (i.e. have a performing and healthy loan book).
- Cover operational costs with own income.
- Offset inflation by employing an appropriate profit margin.
- Finance expansion from own profit and commercial funds mobilised.

Hence, the formation of DFIs to support developing countries became imperative.

Francisco et al. (2008), observed that the role of DFIs or state-owned banks is framed along the four main theories: development, social, agency and political. The early development banks were generally successful. DFIs were at least partly owned by the private sector, had operational autonomy and hard budget constraints. These institutions co-financed projects with the private sector, had professional management teams and were committed to skills dissemination. They also benefited from the post-



war economic stability in developed countries (Diamond, 1996 and Siraj, 2004). However, when the World Bank opened a loan window to government Development Finance Corporation in 1968, a number of companies came under state control and today a large majority are state-owned. It was only in the 1980's that in many developing countries, state-run agricultural development banks took a lead in establishing formal credit markets in rural areas (Zeller and Sharma, 1998).

These institutions were developed with the intention of providing credit to smallholder farmers since access to credit can significantly increase the ability of poor households with little or no savings to acquire agricultural inputs (Diagne and Zeller, 2001). This was based on a notion that credit is needed as an important indirect input, among others, to enhance productivity in agriculture (Sriram, 2007; Das, Senapati, and John, 2009).

Unfortunately, most of these institutions in developing countries have rarely operated successfully due the fact their banking principles have been based on collateralised lending, on organisational setup without any incentives to do business with the poor, excessive dependence on government funding and pervasive political patronage which severely handicapped their performance (Zeller and Sharma, 1998). Access to credit and financial services are limited for the majority of rural smallholder producers in Sub-Saharan Africa due to lack of secure land tenure, as land cannot be used as collateral to secure credit facilities (Kirsten, Mapila, Okello and De 2013).

Providing agricultural finance at equitable costs to farmers without collateral has not been easy. Hence, institutions such as Land Bank and other financial institutions need to improve or rationalize their funding structure in order to be able to offer funding for emerging farmers. In fact, agricultural development finance is one of the composite factors or drivers of agriculture and welfare (Diane and Zeller, 2001).

Hence, it is imperative that institutions such as Land Bank, which have a developmental mandate to provide finance to emerging and commercial farmers, revisit their mandate as well as their funding structure in order to contribute meaningfully. Ogg (1917) compares the development of credit institutions in various countries, as an important aspect in the development of agriculture. Based on the fact that agriculture credit is

important for agricultural development, it is therefore appropriate for institutions such as Land Bank to facilitate access to credit for emerging farmers.

Schmidt and Kropp (1987) found that the type of financial institution and its policy will often determine access to finance. In order to address the above, one needs to understand the history and the role of DFIs in a global context, as well as in a domestic context, particularly Land Bank.

It is therefore recommended that development finance companies be formed with the intention of providing long term funding for feasible projects. Post-World War II, large scale agricultural banks were given the responsibility for allocating funds, with the hope that providing subsidized credit would induce farmers to irrigate, apply fertilizers and adopt crop varieties (Armendáriz and Morduch, 2010). As compensation for entering the high risk market, these agricultural banks were given high subsidies. These subsidies were meant to keep interest rates low for poor borrowers (De Aghion and Morduch, 2005).

## **2.6 Role and significance of agricultural development finance institutions**

In 2010, the agricultural sector comprised of six major sources of credit for farmers: Banks (50%), Agricultural cooperatives (20%), the Land Bank (12%), Private creditors (8%) and other creditors and agricultural institutions (9%) and government (1%) (GCIS, 2010). Although Banks constitute a bigger share of agricultural credit, the banks and other financial institutions have been extremely reluctant to engage in rural finance or in the financing of emerging farmers for a number of reasons (Maurer, 2000). This is majorly because the agricultural sector has unique characteristics, which make agricultural finance a complex issue. These characteristics include, environmental issues, drought issues and the unpredictability of the sector, poor infrastructure, and inappropriate technology, failure to access credit and repayment risks.

Commercial banks particularly refrain from financing emerging farmers sector due to the high risks associated with agricultural lending. It has been observed that in agriculture, risks are caused by factors such as production and yield risks, market and price risks, loss due to natural disaster, social and legal risks due to government policy, human

risks linked to labour and management and risks due to technological changes (Van Zyl et al. 1996). Unfortunately, no data has been found to confirm the argument that agricultural loans are more risky than others (Meyer, 2011).

Given that commercial banks have not been generally keen to finance the agricultural sector, this created a need for the formation of agricultural DFIs responsible for financing agriculture. Ironically, Agricultural Development Banks or DFIs have also been identified as being the main culprits undermining rural finance and development (Seibel, 2000). It is important to note that the rationale for setting up a DFI is that there is frequently a gap in financing long-term projects in developing countries, where the banking system is dominated by commercial banks and where capital markets are weak (Makina et al. 2012).

In the past six decades emerging farm markets (rural finance) were characterized by government intervention in the economy, specifically as far as state-owned or state supported agricultural credit institutions are concerned (Van Zyl et al. 1996). A number of researchers such as Lewis (1955), support government ownership of banks as part of a broader sentiment defending public ownership of strategic economic sectors.

By implication, DFI involvement can serve to alleviate risk, also serving as a public guarantee in countries and sectors where private organisations would be unwilling to operate. This is purely based on the notion that DFIs allow development projects to begin when they otherwise would not have begun or when plans may have otherwise been abandoned due to lack of long-term financing and know-how (Griffiths and Evan, 2012). The multiple objectives of DFIs thus, include investing in sustainable private sector projects, maximizing impact on development, remaining viable in the long term and mobilizing private sector capital (Kingombe, Massa and Te Velde, 2011).

DFIs are essentially, institutions majorly owned by government, which have an explicit legal mandate to foster economic and social development in a country, sector or target market mainly by providing investment finance (Calice, 2013). A report done in 2011, by Global Development Advisors, indicated that DFIs are government-controlled institutions that invest in sustainable private sector projects with twofold objectives of

spurring development in developing countries while themselves remaining financially viable. They invest in a wide range of sectors such as agriculture, infrastructure, innovation and financial sector. Most DFIs focus on serving the financial sector due to the following reasons:

- The need to address access to finance by micro, small and medium-size enterprise (MSME's).
- The need to invest in the financial sector to develop the capital market in order to provide business with long-term funding and hedge various risks, however, there is no conclusive evidence about the impact of these interventions.

Despite many decades of experimentation with supplier-led approaches to credit throughout the developing world, limited success been achieved in improving access to credit and many developing countries are still searching for better ways to improve access to credit to smallholder farmers (Manganhele, 2010). Similarly, South Africa's DFIs have also not realized their full potential and despite their importance, very little is known about their developmental impact. Evidence suggests that in most cases the poor performance of DFIs is explained by shortcomings in corporate governance structures resulting from political interference and poor managerial skills (Dinc, 2005; Caprio and ebrary. Inc, 2004).

Furthermore, the operations of these development banks have come under severe criticism and scrutiny in recent years (Seibel, 2000). Some of the criticisms levelled against them include:

- Their large commercial farmer bias;
- Their over-dependence on state resources;
- The one-way nature of their operations from state to the rural sector rather than as intermediaries between rural savers and borrowers;
- Their susceptibility to political manipulation and personal favouritism instead of basing decisions on economic criteria;
- Their high transactions costs and low loan recovery rates; and

- Inability to measure developmental impact and the effective use of state funds.

Hence, the reform of DFIs has been suggested a number of times and methods for this have been explored (Seibel, 2000). Evidence from East Asia and Latin America suggests that access to cheap credit is a crucial variable in the success or failure of reform programmes (Muhumuza, 2002).

There are two agricultural banks that have reformed successfully. They are the Bank for Agriculture and Cooperatives (BAAC) in Thailand and Bank Rakyat Indonesia (BRI). These banks have shown that if a bank is to succeed in implementing reforms, it requires setting up an appropriate legal and regulatory framework which should include setting prudential norms and effective internal controls and external supervision. There should also be operational autonomy and freedom from political interference in the bank's daily operations (Seibel, 2000).

In Latin America, DFIs that serve the agricultural sector and rural areas have redefined themselves considerably in the past 20 years. They changed their orientation, shifting from specialisation in agriculture to a multi-sector approach and from issuing direct loans to (first-tier) (Trivelli et al., 2007).

For South Africa, Makhura (2008) suggested that Land Bank reforms be done in line with the recommendations of the Strauss Commission. However, this has not been translated into policy and has not been implemented. Furthermore, reform or consideration should clearly state the role of government, credit in development, the legal and regulatory framework, the proposed 'new' Land Bank, and the success of rural finance (Kraft, 1996). However, the status quo remains as most emerging farmers still face challenges in accessing credit from the bank. A cautious matching of characteristics of available funding to specific development financing is needed, including building relevant capabilities to ensure the most suitable source of funding are utilised in the agricultural sector.

Traditionally, development finance can be defined as the provision of finance to projects, economic sectors or sections of the population that are not well served by the

financial system (UN, 2005). South Africa has a diverse range of DFIs with different organisational structures and operational mandates (Qobo and Soko, 2015). These institutions include the Development Bank of Southern Africa, Industrial Development Corporation and Land Bank, which all have different weights of financial resources, nature and scale of the projects they finance.

In the agricultural context, agricultural DFIs were established to extend credit and other financial services to customers not considered credit worthy by commercial banks (Seibel, 1998). Most DFIs enjoy tremendous support from government. According to the 1997 White Paper on South African Land Policy, it was stated that government has a responsibility toward farm credit. Hence, there is a need to develop sustainable strategies and models for small scale or emerging farmers that are reflective of the rural development agenda.

This could be achieved through the channelling of funds via the Land Bank and designing suitable products for emerging farmers. Empirical evidence suggests that it is clear that the impact of formal credit on agricultural output is positive and significant (Chandio et al. 2016). Hence, DFIs have to simplify their credit criteria, products and process in order to extend credit to emerging farmers. Chandio (2016) further recommends that firstly, the credit provision process should be made simple and easy in order for small farmers to access credit. In a recent study done on the challenges faced by emerging farmers, it was revealed that Land Bank credit criteria and products did not meet the needs of emerging farmers (Makhura, 2012). Secondly, the funding structure should be revised in order to accommodate the emerging farmers' sector. Products or assistance need to be packaged in a manner in which the broader socio-economic development of emerging farmers is promoted.

The Land Bank has not been able to service the market adequately because, like other agricultural DFIs, it has focused on providing credit using funds from the open market rather than exploring the option of accepting deposit. As a result, Land Bank usually, only lends both short and long-term loans by means of rolling over short-term loans. By implication, the Land Bank relies on funds borrowed from the market to on-lend and

there is no other source of revenue apart from interest income. This creates a high refinancing risk. In a recent study done by Finmark Trust ( De Klerk et. al. 2013), it was recommended that the Land Bank Act should be reviewed with amendment reconsiderations, to allow the Land Bank accept deposits to augment funding, which will facilitate lending to small scale farmers via deposit-based collateral (De Klerk et al. 2013).

It is important to note that for an institution to maximise outreach, it is to be financially sustainable, being able to cover all costs, mobilize own resources, protect its funds against erosion from inflation and non-repayments of loans and make profit to finance its expansion (Siebel, 2000). The practice of relying on interest income as the only form of revenue has destabilised the resourcefulness as well as sustainability of DFIs. However, it is important to note that, DFIs are not created to be profit-driven per se but are expected to operate in a sustainable manner that will allow them to be able to meet their financial obligations (*Broadening Access to Agriculture Trust*, 1996). This implies that in order for DFIs to contribute to sustainable agriculture and to increase outreach, reduction of poverty and job creations, DFIs have to demonstrate viability, sustainability and growth. Financial sustainability is of paramount importance, hence, there is a need for the capital structure of the Land Bank to be revisited.

The second challenge is that most DFIs in developing countries have rarely operated successfully due to the fact that their banking principles have been based on collateralised lending, on organisational setup without incentives to do business with the poor, excessive dependence on government funding and pervasive political patronage. All these severely limits their performance (Zeller and Sharma, 1998).

It is important to note that in asset-based lending, the credit decision is based on the availability and quality of collateral of the business as well as the repayment ability of the applicant (Jansson et. al. 2013). Other reasons which have cited previously are that banks are not lending to emerging farmers because of the high cost of lending to emerging farmers, lack of collateral, low interest rates on agricultural loans, and the long-term nature of agricultural loans which is not compatible with bank lending

principles particularly in situations of high risk (Chisasa, 2014). Apart from collateral, commercial banks and DFIs also operate with other “wealth biases” that include the fact that these institutions often have better knowledge of access to and relationship with, wealthier borrowers (Barham et al. 1996).

DFIs such as Land Bank borrow funds in the open market and investors are not keen to finance development as it is perceived to be high risk. Previous evidence shows that DFIs have done little to improve outreach to female farmers and other previously disadvantaged individuals to access credit. This is despite the fact that rural women in particular are responsible for half of the world’s food production and produce between 60% and 80% of the food in most developing countries (Urama et al. 2009). Female farmers are often overlooked and underestimated in developing agricultural financing strategies. A recent study reiterated that there is a need for credit reform in the institutional sector for streamlining and increasing the accessibility of institutional credit to farmers, which could help improve productivity and income levels and enhance food security and ultimately reduce poverty (Musemwa and Mushunje, 2012).

Emerging farmer finance still remains a challenge and policy makers have been unable to establish a broad financial system to meet the financial needs of emerging farmers. Despite the recommendation of the Strauss Commission (1996) that public policy should play a leading role in coordinating and facilitating access to agricultural finance with the Land Bank proposed to fulfil this role, emerging farmers still find it hard to access funding. The commission recommended that the Land Bank assumes a wholesale function to enable “retailers” to service the agrarian needs of individuals and groups in rural areas (De Klerk et al. 2013). An earlier recommendation was made that credit provision functions that were performed by the national and provincial departments of agriculture are discontinued and the loan books, suitably vetted and or guaranteed should be transferred to Land Bank (BATAT, 1996).

The majority of South Africa’s rural population and emerging farmers have no access to formal financial and credit services. Hence, Vaugn (1997) argues that as a preliminary to formulating a rural development strategy, it is critical to identify the complementarities



and contradictions in the existing and emerging policies which impinge on the rural sector. Additionally, Siebel (2000) suggested the need to reform Agricultural Development Banks and further identified the need for Agricultural Development Banks to be transformed into viable and sustainable providers of financial services to all segments of rural population, including the poor. Siebel (2000) further identified the following key results that will enable DFIs reach their objective:

- Activating the political will to reform or close down.
- Adequate reform strategies (among them privatisation).
- An effective planning processes.
- Operational autonomy and freedom from political interference.
- An appropriate legal and regulatory framework with prudential norms.
- Financial restructuring.
- Organisational restructuring.
- Human resource development, including staff retraining.
- Effective delivery system (decentralised network of branches as profit centres).
- Demand driven financial products.
- Financial sustainability.
- Effective internal control and external supervision.

By implication, it is clear that the current funding structure prohibits the Bank from financing the emerging sector, hence, there is a need for financial restructuring to be done or an appraisal for a new funding model.

## **2.7 Services offered by the Land Bank**

Currently, the Land Bank provides various services for farm development to predominantly black farmers who would normally receive funding from commercial banks (Kahn, 2007). Furthermore, the Bank has been working with the Department of Agriculture and other stakeholders in support of emerging farmers. As a DFI entrusted with assisting emerging farmers, the Land Bank has over time developed a range of financial products and acted as intermediary in implementing government programmes.

Below are some of the initiatives that the ... undertook in partnership with government departments to support emerging farmers.

Land Bank developed a range of financial products and acted as an agent in implementing government programmes (Makhura, 2008). The Land Bank intervened by expanding its financing activities under Section 34 loans to accommodate production loans to previously disadvantaged emerging farmers. This was approved on the 5th of September, 1997. Furthermore, the Bank introduced step up microfinance, which was also aimed at financing emerging farmers who wanted to improve their production of vegetables, poultry, pigs and other agricultural activities.

By the end of 1998, there were over 14 000 emerging farmers. This new product proved that emerging farmers were capable of repaying loans as the Bank achieved 92% repayment rate of the initial pilot group of 2000 clients (Land Bank Annual Report, 1998). The government decided that the Land Bank Act of 1944 be repealed and replaced by the Land Bank Act no 15 of 2002 in order to re-align the development mandate of Land Bank with the plans of the government. The following programmes were also part of the agricultural reform process that took place.

- **MAFISA:** The Land Bank signed a Memorandum of Agreement on the 3rd of March 2006 agreeing to act as a DFI in making this product available to clients. MAFISA was set up at the request of DAFF to invest money in approved projects of the Department through on-lending to individuals. Money received from DAFF for the MAFISA fund was invested in a separate bank account on behalf of DAFF. No on-lending took place during financial year 2014/15. A further injection of R5.15 million from Gauteng Enterprise Propeller was received during 2014/15.
- **LRAD:** LRAD was designed to provide grants to black South African citizens to access land specifically for agricultural purposes. The strategic objectives of the sub-programme included contributing to the redistribution of 30% of the country's agricultural land over 15 years, improving nutrition and incomes of the rural poor who wanted to farm on any scale, de-congesting over-crowded former homeland areas and expanding opportunities. For women and young people who stay in

rural areas, it was anticipated that the objectives listed below would be made possible by the sub-programme's key underlying principles, which are as follows:

- LRAD is unified and basic, it is flexible and beneficiaries can use to achieve their objectives in line with the resources provided.
  - All beneficiaries make a contribution of at least R5000 (in kind or cash), according to their abilities.
  - To do this, beneficiaries can access a range of grants (R20 000 to R100 000) depending on their own contribution in kind, labour and/or cash.
  - LRAD is demand directed, meaning that beneficiaries define the project type and size.
  - Implementation is decentralized.
  - District-level staff assist applicants, but do not approve the application.
  - Ex-post audits and monitoring will substitute a lengthy ex ante approval process.
- 
- **CASP:** CASP was initially a conditional grant from the Department of Agriculture, Forestry and Fisheries, to provincial departments, to support emerging farmer development. In the course of implementing the new policies, the government decided that the Land Bank Act of 1944 be repealed and replaced by the Land Bank Act no 15 of 2002. The introduction of microfinance through the step-up product for emerging farmers. According to Agriseta (2010), the provincial farming budget dedicated to farmer support in Mpumalanga, the Free State, Northern Cape and Western Cape rose significantly and those in KwaZulu-Natal and Gauteng witnessed a slight increase. Furthermore, Limpopo and Eastern Cape's agricultural budgets have been steady, with North West being the only province where there has been a sharp decline in the share of the budget dedicated for farmer support.

- **Agri-BEE:** Parliament approved a sector specific allocation for the Agri-BEE fund that was meant to allocate grants to promote rural community based empowerment groups.

However, these programmes listed above have not been implemented successfully due to the fact that they all lack sustainable funding models, sustainability and outreach. Sustainability refers to the ability to function independently, while outreach refers to the ability to provide a service to as many clients as possible (Van Zyl, 1996).

## **2.8 Funding models for agricultural credit**

The current funding structure of the Land Bank is not sustainable to finance emerging farmers because it is purely based on debt. Hence, outreach has reduced over time and there is still no strong support system available to support previously disadvantaged farmers (Chikazunga and Paradza, 2012). Government has proposed a number of funding initiatives and programmes through the Land Bank and external to the Land Bank. However, these programmes have not benefited the real emerging farmers. Sharma and Yadav (2015) argue that despite the importance of agriculture and efforts by government mentioned earlier, there exists a shortage of agricultural credit in relation to its demand by farming communities.

Complementarities and contradictions may be evident between national and provincial policies and strategies, between different sectorial policies, between initiatives from different departments and or institutions and within particular policies (Vaughn, 1997). Furthermore, lack of collaboration between different players in the agricultural sector has also been identified as a major challenge in implementing the above listed programmes, hence, there is a need for a different approach to agricultural finance. Both government and the banking sector are currently struggling to move development finance in the right direction.

Against this background, it is clear that a new approach to the agricultural financing of emerging farmers is needed if DFIs are to make a difference. It is therefore imperative to put in place innovative financing that takes into account the needs of resource poor

farmers, who in many instances have no title deed for land or other forms of collateral (Kirsten et al. 2013). There is the need to consider blended finance which refers to structures and solutions that mix private capital with public support. Funds flowing from the private sector to emerging farmers or smallholder farmers are currently very limited.

According to a recent report by Dalberg Global Development Advisors (2016), default risk appears to be a barrier, as private investors are generally much less willing to expose themselves to high levels of risk for low returns, in exchange for development impact. Hence, there is a need for government intervention to provide explicit guarantees against funds extended to emerging farmers to lower the exposure of relevant private players. Gumede, Govender and Motshidi (2011) stated that government may be expected to play a more active role in providing equity and guarantees, allowing for dividend retention, giving tax exemption and scaling up transfers (Gumede et al. 2011).

Furthermore, interventions through interest rate subsidization could also be considered for supporting agriculture as long as conditions are made favourable by support measures and systems, targets and conditions are properly thought through. In the case of subsidized interest, usually the principal amount is financed using open market funding. This creates problems as investors expect return on their investments. Hence, it is essential that the private sector recognises that it can play a significant role in financing future agricultural lending, as long as government provides an incentive for the risk taken.

Though, institutions utilise different sources of funds such as deposits, money and capital market funding or government funding, these funds have different implications and qualifying criteria. For instance, money from the money and capital markets is expensive and their criterion is based on the rating of the institution as well as the risk exposure. As a result, investors will review the Land Bank's rating as well as the risk profile of its underlying asset before deciding to invest or not invest. In view of this, this study attempts to find a suitable funding structure or composition to assist emerging farmers. Given that the Land Bank relies heavily on funding from money and capital

markets to finance farmers and is also expected to assist emerging farmers, the need arises to revise the funding mix available in order to make a developmental impact.

Regarding DFIs, it is important to note that African countries have the challenge of closing substantial development gaps such as exclusion and financial constraints. The reason for this is that more than 50% of individuals in Africa have no access to formal financial institutions (Dalberg Global Development Advisors, 2016). Calice (2013) opines that African DFIs have the potential of contributing towards lengthening maturities in the financial sector and mobilizing resources for underserved segments of the economy. Hence, DFIs need to find sustainable ways of financing the emerging farmers or small-scale farmers to improve their performance.

DFIs should not lose sight of their responsibility which is to expand access to financing by consistently searching out under-invested sectors while working to maximize the social outcomes of their projects (Griffith and Evans, 2012). Agricultural reform must create decent livelihoods through the promotion of efficient smallholder systems (Lipton and Lipton, 1993). However, currently, there is a clear lack of collaboration and a policy framework for agricultural finance. This suggests that there has to be greater collaboration between different role players to significantly impact on development. Commercial banks, development banks, parastatals and the private sector have to come up with policies to improve access to credit for emerging farmers.

## **2.9 Chapter Summary**

The purpose of this chapter was to review both the theoretical and empirical literature focusing on bank profitability. This is in line with the primary objective of the study which is to test the relationship between a bank's capital structure and its profitability. Both banking and capital structure theories were discussed. The financial intermediation theory, credit creation theory and the fractional reserve theory, are the banking theories presented. What emerges from discussions of these theories is that banks profit from risk transformation. Primarily, banks accept interest-bearing deposits from the public for on-lending to deficit economic units at higher interest rates for a profit. In the process, banks assume a certain level of market related risks for a premium.

The chapter also explored capital structure theories, viz, the pecking order theory, trade-off theory and the irrelevance theory. These three theories sought to explain the determination of the optimal capital structure of a firm. It was observed that albeit some philosophical variations, there is consensus that firms seek to have the right mix of capital that maximises the firm's value. Such capital could be in the form of debt, equity or both. The next chapter presents and discusses the methodology applied in this study.

## **CHAPTER 3**

### **RESEARCH METHODOLOGY**

#### **3.1 Introduction**

The theoretical premise of this study was presented in Chapter 2. This paved the way for the identification of an appropriate research methodology. The World Bank (2007) defines research methodology as the tools and techniques that are used in the research process. Section 3.2 presents the research design. The data sources and data collection methods are presented in Section 3.3. In Section 3.4, the development of the hypotheses is explained. The statistical methods of secondary data analysis are articulated in Section 3.6, empirical model in Section 3.7 and the chapter summary concludes this chapter in Section 3.8.

#### **3.2 Research Design**

A research design is the plan to be followed in order to realize research objectives or hypothesis (Tustin et al. 2005). Two broad designs, i.e., quantitative and qualitative, have been used extensively in empirical literature. Shank (2002, p. 5) defined qualitative research as “a form of systematic empirical inquiry into meaning”. Similarly, Denzin and Lincoln (2000, p. 3) assert that qualitative research involves a naturalistic and interpretive approach, stating “... this means that qualitative researchers study things in their natural settings, attempting to make sense of, or to interpret phenomena in terms of the meanings people bring to them”. Unlike a qualitative design, in quantitative design, researchers are concerned with an objective reality that is “out there to be discovered” (Krathwohl, 1998) and the researcher is independent of that which is being researched (Creswell, 1994).

In a two-phase design by Creswell (1994), qualitative methods were used to explore a phenomenon and to understand participants’ different constructions of their life experiences, followed by a quantitative method for the measurement and generalization of the findings, based on the collection of data on large samples.



For qualitative research designs, the argument has been that qualitative designs ought to be less structured but should be more flexible, for this reason, it was previously termed motivational research. Therefore, qualitative and quantitative researches are each suitable for answering different types of questions. It is important to note that qualitative research generates data that are frequently difficult to quantify (Tustin et al. 2005).

A quantitative research design was applied in this study, using secondary data to test the hypotheses. The reason for choosing a quantitative approach is based on the arguments made by Hamer and Collinson (2014). They state that quantitative research attempts to establish statistically significant relationships, address questions by measuring and describing, is based on objective measurement and observation and is concerned with correlation and causation. Additionally, Leedy and Ormrod (2001) alleged that quantitative research is specific in its surveying and experimentation techniques, as it builds upon existing theories. Quantitative research involves the collection of data so that information can be quantified and subjected to statistical treatment in order to support or refute “alternate knowledge claims” (Creswell, 2003, p. 153).

A case study approach was adopted for this study as the focus is on one DFI, the Land Bank of South Africa. The case study method enables a researcher to closely examine the data within a specific context (Zainal, 2007). According to Yin (2009), the case study approach is a research strategy entailing an empirical investigation of a contemporary phenomenon within its real-life context using sources of evidence and is especially valuable when boundaries between phenomenon and context are blurred. Most researchers that have conducted research on capital structure and profitability have done this through the use of case studies (examples). One of the benefits of using the case study approach is that the examination of the data is most often conducted within the context of its use, that is, within the situation in which the activity takes place (Yin, 1984).

Common criticisms of the case study method is its dependency on a single case exploration, making it difficult to reach a generalizable conclusion (Tellis, 1997).

### **3.3 Data Sources and Collection Methods**

In this section, the types of data used for the study are elucidated in Sub-section 3.3.1. This is followed by the methods used to collect the data in Sub-section 3.3.2.

#### **3.3.1 Secondary Data**

Secondary data was used for the purpose of this study to test the hypotheses. There are a number of identified reasons for researchers conducting secondary data analysis and one of them is that “knowledge is cumulative, as more researchers engage an existing dataset by means of analysis, more value is derived from this dataset. Secondary data analysis uses previously collected data to address other problems not necessarily related to the reason for which the data was originally collected (Tustin et al. 2005). Secondary data is very useful for interpreting and evaluating primary data (Kinneer and Taylor, 1991, p. 182). Furthermore, it is also important to note that secondary data, particularly time series secondary data, lends itself to analysis in order to discern trends (Tustin et al. 2005).

The purpose of this study is to test the relationship between the capital structure and the profitability of the Land and Agricultural Development Bank of South Africa. To achieve this, financial data were extracted from the financial statements of the bank. Additionally, other DFI specific information external to the Land Bank were retrieved. Literature on the evaluation of DFIs’ performance have largely relied on traditional accounting profit measurements which have been deemed inadequate because they disregard DFIs that seek to maximize a social objective and that often benefit from large subsidies (Francisco et al. 2008).

The study adopted the same approach used in a study conducted in Nigeria by Idode, Adeleke, Ogunlowore, Ashogbon (2014). Empirical evidence showed that capital structure has a significant positive influence on the profitability of Nigerian Banks during the period of study. Whereas in a study conducted in Ghana, the study revealed a significantly positive relationship between short term debt and return on equity,

therefore suggesting that profitable companies use short term debt to finance their operations. The study also suggested a negative relationship between long term debt and return equity and a positive relationship between total debt and profitability (Abor, 2005). This implied that profitable companies depend on debt for financing their operations. This dependency confirms the findings in previous literature by Rajan and Zingales (1995) and Wald (1999) that suggested a negative correlation between profitability and leverage.

### **3.3.2 Data sample**

The study focused on one of the DFIs, the Land Bank. Data applied in the study was collected only for this institution for the period 1982 to 2015. The dataset covered a period of 33 years. The purpose of the data collected was to test the relationship between capital structure and profitability. Data relating to return on equity, return on assets, total debt, and total equity was obtained from Land Bank's annual financial statements.

### **3.3.3 Data collection method**

The study used data for selected variables in the financial statements including, profitability, total debt, total equity, long-term debt, short-term debt and loan book size for both commercial and development portfolios. Data was extracted from the financial statements and entered into an MS Excel spreadsheet. In assessing "accounting profitability" for DFIs, most studies use standard indicators of bank profitability such as Return on Assets (ROA), Return on Equity (ROE), interest on margin and non-performing loans (Fransisco, Mascaro, Mendoza and Yaron, 2008). Consistent with the above, the study also assessed the accounting profitability of Land Bank using the indicators mentioned. This was followed by a data cleaning process to enhance the usability of the data for the purpose of this study.

## **3.4 Hypotheses development**

As previously indicated in the preceding chapters, the purpose of the study is to investigate the relationship between the capital structure and the financial performance of the Land Bank. In developing the hypotheses, the study adopted Agbada's (2015)

approach where the null hypothesis was considered as a useful tool for testing the relationship between the capital structure and the profitability of the Land Bank. Additionally, consistent with Velnampy and Niresh (2012), both the alternative and null hypotheses were formulated to investigate the relationship discussed above. Also consistent with Tustin et al. (2005), the null hypothesis is that there are no significant differences between two or more groups (variables).

Capital is considered as the cornerstone of a bank's financial strength since it supports the bank's operations by providing a buffer to absorb unanticipated losses from its activities and in the event of problems, enabling the bank to continue to operate in a sound and viable manner while the problems are addressed or resolved (Aremu et al. 2013). The study thus, observed the capital structure of the Land Bank and its influence on profitability over 33 years. Goddard et al. (2004), stated that a bank's capacity to absorb unforeseen losses determines its level of risk. From the literature reviewed, the following hypotheses were developed and tested.

#### **3.4.1 Hypothesis 1**

Profitable companies tend to have lower debts and higher retained earnings. Therefore, companies that generate sufficient profits tend to prefer using internal funding for finance investment opportunities than using debt. On the contrary, Sayilgan (2006) argued that profitable companies usually employ more debt since they are more likely to have high tax burdens and low bankruptcy risks (trade-off model).

*H<sub>0</sub>: There is no supported relationship between capital structure and the profitability of the Land Bank.*

The pecking order theory suggests that there is a negative relationship between profitability and debt because successful companies do not rely on external funding because they prefer using retained earnings.

#### **3.4.2 Hypothesis 2**

In most cases, DFIs are established and financially supported by the state. Thus, the government funds allocated to DFIs are usually ring-fenced. This subsidization received

will in turn require the financial institution to subsidize its clients. The circumstance that most DFIs find themselves makes it difficult for them to maximize profits and to fulfil their social mandate. Hence, most financial institutions participate in the financial market to access funding. In some parts of the world, certain DFIs have been recently prohibited from seeking funding directly from the financial markets (e.g. Finrural in Mexico). The hypothesis here is:

*H<sub>0</sub>: There is no supported relationship between open market funding and the size of the total farmers' portfolio.*

### **3.4.3 Hypothesis 3**

*H<sub>0</sub>: There is no supported relationship between Government subsidy (support) towards agriculture and the profitability of the lending portfolio.*

In addressing the hypothesis above, the approach adopts a similar approach to studies conducted on capital structure and profitability such as those by Bonin et al. (2005), Esiemogie et al. (2014), Obilor (2013), Nurmet (2011) and Abor (2005). Consistent with the approach of the researchers mentioned above, profitability is the dependent variable and total debt, total equity, long-term debt, short debt and size of the portfolio are independent variables. One of the important things to note is that banks with more capital, total assets, loans, deposits and macro-factors (i.e. economic growth, inflations and stock market capitalization), are perceived to be more safe; an advantage which can be translated into higher profitability (Gul et al. 2005). However, Demirgüç-Kunt and Huizinga (1999), concluded that financial structure does not have significant influence on banks' profits and margins.

### **3.5 Definition of variables**

The purpose of this section is to define and summarize the dependent variables in relation to the objectives, hypothesis and literature review in the study. Both leverage and profitability have been identified as dependent variables. Additionally, the study will also look at bank specific variables such as liquidity and the size of the bank portfolio, in order to test the hypothesis. For the purpose of this study, short term debt, long term

debt, total debt and liquidity have been identified as independent variables. These variables have been adopted in line with the study completed in Bangladesh by Siddik et al. (2017). However, for the purpose of this study, inflation, economic growth and growth opportunities will not be dealt with.

### **3.5.1 Dependent variable**

The focus of this study was to explain the performance of DFIs. Using the Land Bank as a case study, profitability was used to measure performance. The ratios Return on Assets (ROA) and Return on Equity (ROE) were used as proxies for profitability.

#### **3.5.1.1 Return on Assets (ROA)**

The return on assets ratio is normally expressed as a percentage (%). It measures the rate of return on farm assets and is used as an indicator of the profitability of the company.

$$ROA = \frac{\text{Earnings before interest and tax (EBIT)}}{\text{Total sales}} \quad [3.1]$$

## **3.6 Data analysis**

Data was analysed using E-Views version 8.5 software. Preliminary data analysis was conducted using descriptive statistics and correlation analyses. The specific statistical analysis techniques applied for this study are presented below.

### **3.6.1 Descriptive statistics**

Descriptive analysis was used to examine the dependent and independent variables in order to obtain mean values and to also test the normal data distribution.

#### **3.6.1.1 Mean**

The arithmetic mean was used to measure the central location of data. One of the attributes of the mean is that the sum of negative deviations from the mean is always equal to the sum of the positive deviations from the mean. This makes the mean a

significant balancing point for the distribution of individual values (Tustin et. al. 2005). The results show descriptive statistics for the entire variables. ROA, ROE, equity, total loan and total debt all have positive means, which range from 0.01 to 2.7.

### **3.6.1.2 Normal Distribution**

For the purpose of this study, the theoretical distribution used to test the hypothesis is a normal distribution. This was done to obtain mean values because any normal distribution with a given mean and a given standard deviation translates into a standard normal distribution by converting the raw scores into standard scores (Tustin et al. 2005).

### **3.6.2 Correlation analysis**

Correlation analysis was used to test the relationship between variables. Pearson's correlation was then implemented to assess whether the variables are connected to each other and to determine if they are correlated. Pearson focuses on linear relationships because if two variables are linked by means of a non-linear relationship, Pearson's correlation cannot detect it (Tustin et al. 2005). The Pearson model was thus chosen because it produces a sample correlation coefficient,  $r$ , which measures the strength and direction of linear relationships between pairs of continuous variables (Katru, Chilamakuru, Ravalipriya, Bonda and Deepa, 2017). By suggestion, the Pearson correlation evaluates whether there is statistical evidence for a linear relationship among the same pairs of variables in the population, represented by a population correlation coefficient,  $\rho$ .

### **3.6.3 Statistical analysis technique for Objective 1**

The first objective of this study was to determine the trends in funding received by the Land Bank between 1981 and 2015. To achieve this objective, data was analysed using trend analysis as suggested by Tustin et al. (2005). Graphs were used to determine trends. Tustin et al. (2005) provides that trend analysis can be used to calculate growth rates, which include the following:

- Year-on-year growth rates.

- Growth rates for periods of more than one year.
- Annual growth rates over a longer period of time.
- Weighted growth rates.

The preliminary analysis presented in this section paved the way for more robust analysis of relationships in the specified hypotheses.

### **3.6.4 Diagnostic tests**

#### **3.6.4.1 Unit root tests**

In order to conduct the OLS regression analysis, the data series were first tested for stationarity. It is a rule of thumb that before any regression analysis can be done on time series data, the data must have no unit roots, otherwise, the analysis will produce spurious results. Several methods are used to detect the presence of unit roots in a time series. The Augmented Dickey Fuller (1979 and 1981) and Phillips-Peron tests (1989) were applied to test the data for unit roots. Furthermore, measures to treat the series from unit roots were applied, leaving the data in levels suitable for further analysis using regression models of an OLS nature.

#### **3.6.4.2 Test for serial autocorrelation**

After observing the likelihood of serial autocorrelation in the autoregressive model, the data series were subjected to a series of diagnostic tests to detect serial autocorrelation. In order to eliminate the serial autocorrelation, an autoregressive model was introduced. Dependent variables were lagged and model the respecified.

#### **3.6.4.3 Q-Test Correlogram**

Given that the Durbin Watson statistic was outside the acceptable levels of 1.8 to 3, a further test was performed to ensure that data was free of serial correlation. An autoregressive model called the Q-Test Correlogram was performed in order to detect serial autocorrelation in the data set.



#### **3.6.4.4 Breusch-Godfrey serial correlation LM Test**

Further tests were performed to confirm the absence of serial autocorrelation. The results of the Breusch-Godfrey serial correlation test revealed the absence of serial autocorrelation.

#### **3.6.5 Statistical analysis technique for Objective 2**

The second objective of this study was to determine the impact of capital structure on profitability for the Land Bank of South Africa. To achieve this objective, data was analysed using multiple regressions of the Ordinary Least Squares (OLS) method. Multiple regressions were used to test the hypothesis using the OLS method. OLS is probably the most common technique for finding the optimal parameter (Draper & Smith, 1998). The regression model is specified below as Equation 3.2.

$$\text{ROA} = \beta_0 + \beta_1 D + \beta_2 E + \varepsilon_t \quad [3.2]$$

Where:

ROA – Return on assets

CS – Capital structure

$\beta_0$  - is a constant

$\beta_1$  – is the coefficient for capital structure

$\varepsilon_t$  – is the error term

#### **3.6.6 Statistical analysis for Objective 3**

The third objective sought to determine the relationship between open market funding (M) and the total lending portfolio ( $P_1$ ). Data was analysed with the aid of a linear regression model specified as Equation 3.3 below.

$$P_1 = \beta_0 + \beta_1 M + \varepsilon_t \quad [3.3]$$

Where:

$P_1$  – size of the portfolio

$M$  – Open market funding

$\beta_0$  - is a constant

$\beta_1$  – is the coefficient for open market funding

$\varepsilon_t$  - is the error term

### **3.6.7 Statistical analysis for Objective 4**

The fourth objective was to determine the relationship between government funding ( $G$ ) and the total lending portfolio ( $P_1$ ). In order to achieve this objective, data was analysed with the aid of a linear regression model specified as Equation 3.4 below.

$$P_1 = \beta_0 + \beta_1 G + \varepsilon_t \quad [3.4]$$

Where:

$P_1$  – Emerging farmers' portfolio

$G$  – Government funding

$\beta_0$  - is a constant

$\beta_1$  – is the coefficient for government funding

$\varepsilon_t$  - is the error term

### **3.7 Empirical Model**

The main objective of this study was to determine an optimal funding model that maximizes the profitability of the Land Bank with capital structure being the focal explanatory variable. The variable, capital structure, was disaggregated into its components of debt and equity in order to gain a good understanding of the elements of capital structure that contribute the most to the profitability of the bank. The other explanatory variables are borrowing rate, lending rate, non-performing loans, total expenditure and total assets. To achieve this objective, the model applied in the

empirical analysis is based on that of Velnampy and Niresh (2012), which is presented in its functional form as Equation 3.5.

$$\text{Profitability (P)} = f(\text{Capital structure (CS)}) \quad [3.5]$$

ROA was used as a proxy for measuring profitability. ROA was used as the dependent variable in Equation 3.7. Whereas capital structure is measured by using debt to equity ratio or debt to total funds ratio.

After introducing control variables, the final regression models applied to test the relationship between capital structure and the profitability for the Land Bank were specified below as Equations 3.7.

The control variables included in the model are the borrowing rate, lending rate, total assets, non-performing loans and total expenditure. The following two OLS regression models were used to obtain these estimates. When using ROA as the dependent variable, the model is presented in its functional form as Equation 3.6. When using ROA as the dependent variable, the model is presented in its functional form as Equation 3.7.

$$\text{ROA} = f(\text{equity (E); total expenditure (TE); Lending rate (LR); Borrowing rate (BR); Debt to equity ratio (D/E); Total assets (TA)}) \quad [3.6]$$

$$\text{ROA} = \beta_0 + \beta_1E + \beta_2D + \beta_3BR + \beta_4LR + \beta_5TA + \beta_6TE + \varepsilon_t$$

### **3.8 Chapter summary**

This chapter explained the research design applied in this study. This was followed by a discussion on the data used in the study and data collection methods employed. The research hypotheses and statistical techniques used to analyse the data were discussed. The results obtained from the analysis conducted presented in Chapter 4.

## **CHAPTER 4**

### **RESULTS AND DISCUSSION**

#### **4.1 Introduction**

The main objective of this study was to determine the funding methods most suited for DFIs. A case study approach using the Land Bank was adopted. Secondary time series data collected for the period 1982 to 2015 were analysed using E-views version 8.5 software. The chapter proceeds as follows. Section 4.2 presents the trends in the variables used in the study. Section 4.3 presents the descriptive statistics. The results of the bivariate correlation analysis are presented in Section 4.4. In Section 4.5, the diagnostic test results are presented. The empirical results of the regression analysis are presented in Section 4.6. Section 4.7 summarizes the chapter.

#### **4.2 Trend analysis**

In this section, trend analysis was used. This examined total assets return on equity (ROE), return on assets (ROA), interest rate spread, total loans and total debt for the past 33 years, for the hypothesis testing process. Table 4.1 presents an interesting trend of variables ranging from 1982 to 2015. The graph indicates both downward and upward trends over the period under review. Equity, total debt, total loans and total debt were stable from 1981 to 1987 and subsequently grew significantly from 1997 to 2002. Both ROE and ROA reduced drastically in 2002 but stabilized post 2006.

In general, most of the variables have trended in the same direction over the period under review, except in periods where the institution underwent challenges as a result of economic, environmental, policy changes, as well as decisions taken by the management. When analysing historical trends of the capital structure of the Bank, it is evident that agricultural policy decisions had a huge impact on the overall financial performance of the Bank. For instance, the issue of transformation (development mandate) meant that the Bank had to redirect resources towards the development of emerging farmers. This required concessionary funding to specifically deal with the emerging portfolio.

However, it is important to note that development books, in relation to the total portfolio have been extremely marginal. The loan composition has not changed to reflect the mandate of the Bank, however, a huge portion of the loan book still resides with corporate and retail commercial clients. This is line with the recent observation by Chisasa (2015), where it was observed that a comparative analysis of total credit extended to smallholder farmers, relative to the credit extended to commercial farmers, revealed that smallholder farmers received far lower credit than commercial clients did. It is important to note that the retail commercial book of the Land Bank also includes black commercial clients. It is therefore impossible to split the book, as the financial statements do not provide a clear indication of the actual development book. As a result, the study used the aggregated book as opposed to client segments.

In order to obtain a better view of the events that took place during the period under review, the analysis will be undertaken across three different decades. Starting with the early 1980's period, moving to the 1990's and then analysing recent developments. The reason for this is that each period is characterized by certain events, which had an impact on the performance of the agricultural sector and the Land and Agricultural Bank of South Africa. The process was characterized by changes within an existing institutional structure, as the main role players involved in the sector remained in place despite the general relaxation in State intervention (Van Zyl, Vink, Kirsten; Poonyth, 2001). Additionally, between the early 1980's until mid-1990's, it's also important to note that though performance was fairly good, there were drought challenges experienced in the late 1980's until the early 1990's, which had a huge impact on the overall performance of the agricultural sector.

During this period, the Bank offered clients drought relief products such as 2 plus 20 years, which offered a two-year holiday payment period plus 20 years and drought relief subsidies. As much as the loan book of the bank grew between 1987 until mid-1990, it must be noted that qualifying farmers were eligible for a two-year payment holiday prior to servicing both the capital and interest of the loan owed to the Land Bank. Additionally, there were a number of drought relief concessions offered to farmers affected by drought. The financial performance of the bank has been unpredictable over

the past 33 years because the vicissitudes in the agricultural sector in South Africa had a substantial impact on the Land Bank’s sustainability. The policy divergences that took place in the 1980’s and 1990’s adversely affected the institutional arrangements, which supported the Land Bank.

**4.2.1 Trends in aggregate loan book**

Figure 4.1 reveals steady growth in the 1980’s in the loan book of the Land Bank and an unprecedented shift in the loan book, which took place in the late 1990’s and in 2012. The increase which took place from 1996 to 2007, was driven by the recommendations encapsulated in the Broaden Access to Agricultural Thrust, White Paper on Agricultural Policy and Strauss Commission. Land Bank loans to clients increased significantly from 1996 to 2007, which was part of a strategic change in regimes and in the mandate of the bank.

The development and inclusion of previously disadvantaged individuals became the fundamental mandate of the Land Bank, as a result, the Bank Act of 1944 was repealed and replaced by Act No 15 of 2002. Noteworthy is that, though the mandate of the bank changed, the financials and book composition of the Land Bank did not reflect this as the commercial and retail books were still over 90%.

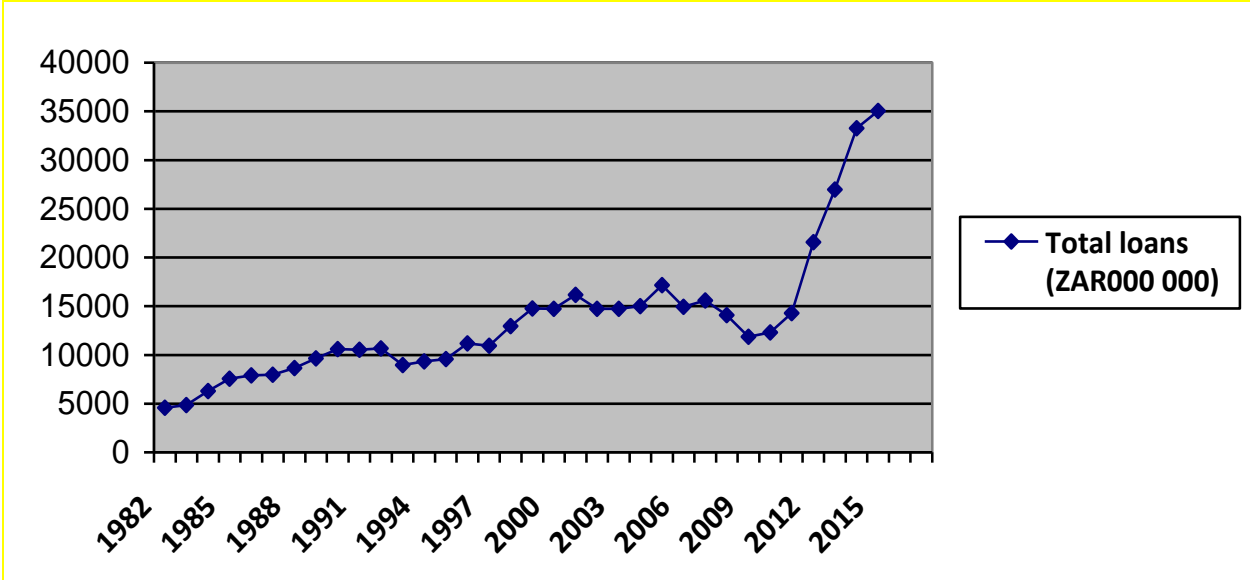


Figure 4.1: Total Loans  
 Source: Land and Agricultural Bank of South Africa

As the loan book value grew, variables such as debt, operational costs and impairments also increased, resulting in increased loan provision. These loan provisions also had a huge impact on the income statement of the bank. The large losses incurred in the early 2000s exposed the bank as a risky institution making it less attractive to investors. As observed by Chisasa (2015), after 2002, there was a sharp decline in the role of the Land Bank in the sector and by 2008, the bank only provided just over 7% of its total credit to the agricultural sector. The performance of the Land Bank dropped significantly because of poor governance, high default rates, high interest rates and bad publicity.

#### **4.2.2 Trend in Equity**

Figure 4.1 shows steady equity in the early 1980s until the mid-1990s. However, there was a sharp decline in equity from the late 1990's to early 2002. The change in the mandate of the Land Bank to focus on development was alleged to be the reason for the debilitated capital base. There was an increase in non-performing loans, which resulted from an upturn in bad loans. This was based on the large losses of up to R1.4bn which the bank incurred early 2002 that had to be written against capital. This confirms an observation made by Dermiguc-Kunt (1999), that there is a positive relationship between bank performance and capitalization. This confirms that banks with higher equity to assets ratio generally have lower needs for external funding and have higher profitability. Conversely, the Land Bank asset to equity ratio is low hence, the bank relies more on external funding. This is worrying because an unprofitable company with excessive risk would find it difficult to raise capital. The company would have high funding costs which would erode its profits.

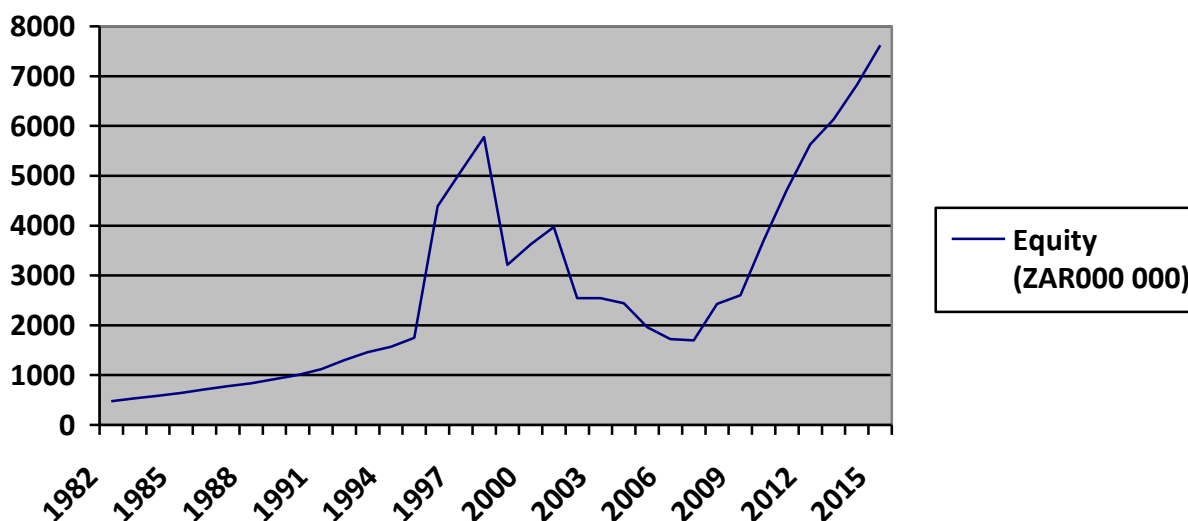


Figure 2.2: Trends in equity

Source: Land and Agricultural Bank of South Africa

With the advent of new management in 2008, the Bank received capitalization in form of a guarantee from the National Treasury, which also came with strict conditions. The conditions were tied to the development mandate of the bank. The Bank received a R3.5bn guarantee, which was to be converted into cash over time. The equity in the balance sheet of the Land Bank also included the R3.5bn guarantee.

#### 4.2.3 Trends in total debt

Figure 1 shows that the debt portfolio of the Land Bank was steady in early 1980 until mid-1990. However, in the 2000's, there was an unprecedented decline in the demand for the Land Bank paper as investors lost confidence in the Bank and a few prominent Land Bank clients (Co-ops) also left the Bank. The debt portfolio deterioration proceeded until the issuance of the guarantee and change in management resulted in a change of investor perception. Investors were keener to extend funding to the Land Bank.



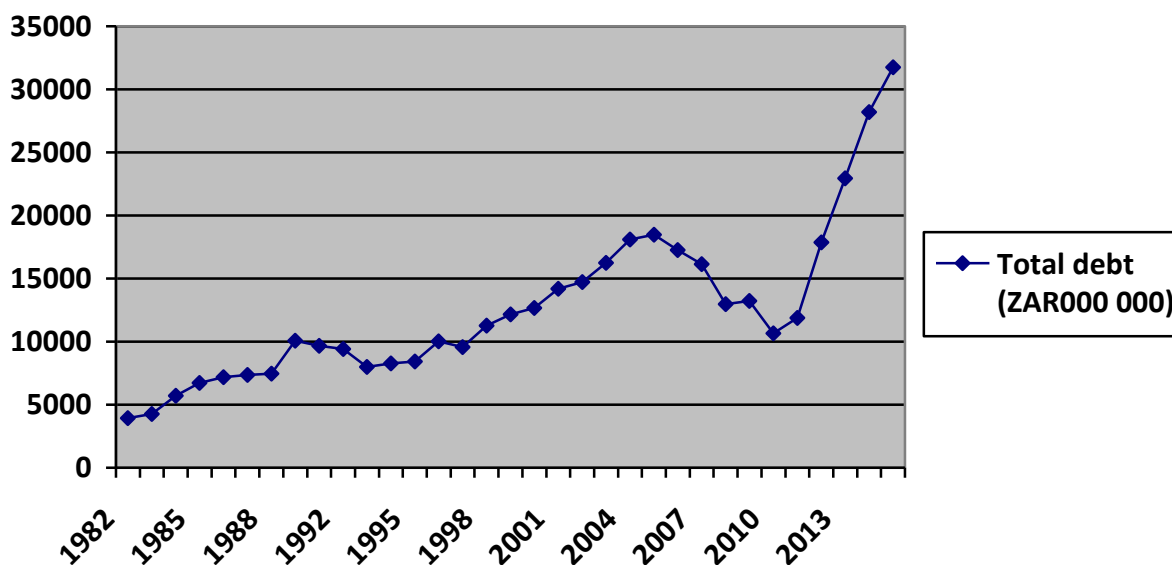


Figure 4.3: Total Debt

Source: Land and Agricultural Bank of South Africa

The Bank received a R3.5bn guarantee that was to be converted into cash over time. The trend analysis shows that the loan book grew exponentially from R12bn in 2011 to R31bn in 2015, resulting in an increase in funding. Rapid growth in debt has a ripple effect because it increases the cost of funding and other operational costs, which exposes the company to risks of bankruptcy if it fails to honour its obligations. The capital structure of the Land Bank shows that it uses debts to fund its operations as opposed to using internal sources such as equity.

#### 4.2.4 Trend in interest rate spread

Figure 1 indicates that the interest rate spread (difference between lending rate and borrowing rate) has been volatile over the period under review. Noteworthy is that from 1982 to 1990, the average borrowing rate (14.6%) was higher than the average lending rate (12.83%), indicating a negative spread. This means the Bank borrowed funds at high interest rates and disbursed loans at low interest rates. Theoretically, the interest rate spread should be positive for a company to be profitable. **Despite the interest rate spread, the bank remained profitable.**

From 1991 to 2002, the average lending spread trended upwards and downwards (volatile) with minimal differences between the borrowing rates and lending rates. This implies that the bank generated minimal return from its business operations. This can be attributed to both internal factors and uncontrollable external factors. Demirguc-Kunt and Huizinga (1998), observed that interest margins and bank profitability are explained by several factors such as bank characteristics, macroeconomic variables, explicit and implicit bank taxation and deposit insurance regulation.

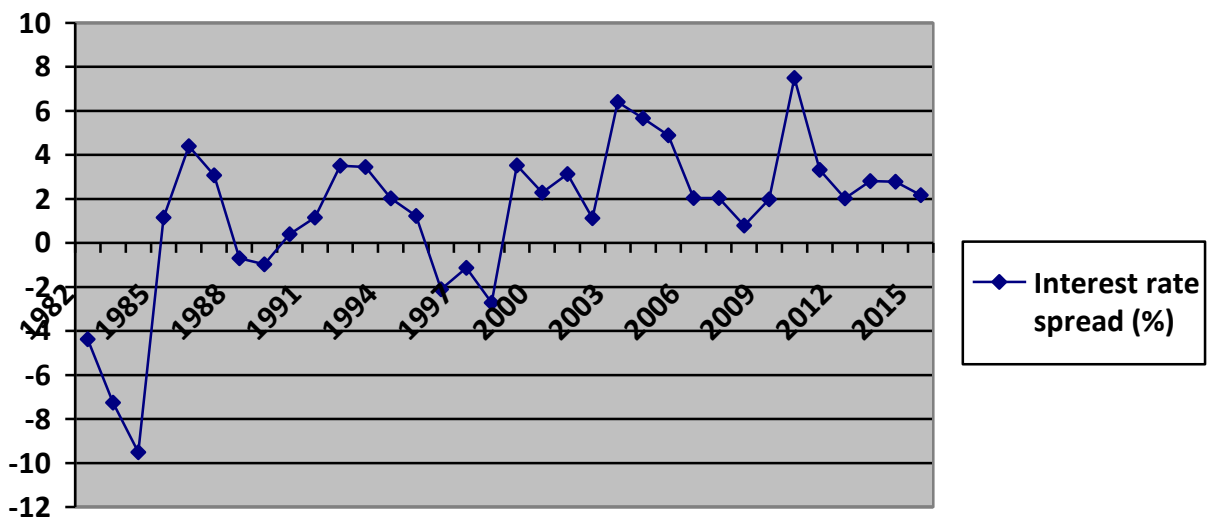


Figure 4.4: Interest Rate Spread  
 Source: Land and Agricultural Bank of South Africa

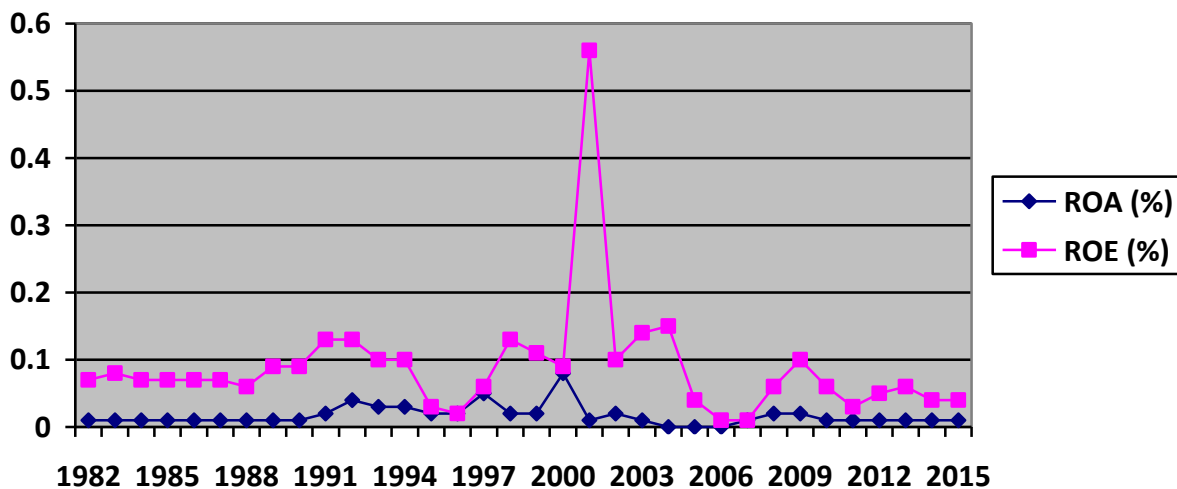
Figure 4.5 shows that from 2002, the spread began increasing. This can be attributed to the fact that the Bank unilaterally increased interest rates in 2002 outside the provisions of the Monetary Policy Committee. This triggered problems for the Bank as clients began questioning the integrity of the institution and its accounting policies. As a result, most clients left the Bank, hence the loan book of the bank decreased because the Bank lost key clients, the non-performing book increased drastically, profitability ratios and efficiency ratios also increased.

From Figure..., it was observed that leverage ratios averaged 613% from 1998 to 2007, which indicates that the Land Bank relied on debt to finance investment opportunities, confirming that the bank is highly geared. This coincided with factors considered to have

an impact on the interest rate spread such as market power, staff costs, administrative costs and the extent to which a bank is risk averse and inflation (Aboagye, Akoena, Antwi-Asare and Gockel, 2008)

#### 4.2.5 Trend in Return on Equity (ROE) and Return on Asset (ROA)

The trend analysis shows that during the period under review (Figure 4.5), the ROA and ROE varied slightly from one period to the other. However, there were periods where both measures were highly volatile. For instance, ROE averaged 8.65% between 1982 and 1995 while ROE dropped significantly to 0.4% between 1996 and 2008. This could be attributable to losses of approximately R1.4bn in 2002, resulting in a reduction in reserves from R5.7bn in 1998 to R2.5b in 2002.



**Figure 4.5: Trends in ROA and ROE**

**Source: Land and Agricultural Bank of South Africa**

The policy changes that took place post 1994 had huge impacts on ROA, ROE, total debt, total assets, and other variables. The average ROA for the period of study for the Land Bank is low and in some accounting periods has been negative. ROA indicates how effective an organization is in taking the earnings advantage of its assets base.

The proportion of assets compared to shareholders' equity reveals the extent to which debt is utilized in a company's capital structure. The choice companies make in

balancing the ideal proportion of debt and equity can affect the value of the company as much as the return rate can (Salawu et al. 2009). This confirms the theory that suggests that returns for a financial institution is indeed sensitive to the type of capital structure that the company uses to finance investment opportunities.

#### 4.2.6 Trends total expenditure

Both non-performing loans and total expenditure were utilised as control variables. Non-performing loans and operational expenditure trended upwards and downward over the period of study. It is worth mentioning that as the loan book of the Land Bank grew, both variables also increased considerably. The average rate of non-performing loans in the loan book was 17% for the period of study and the average amount for operational expenditure was R272m. The rate was observed to be too high and was seen as the failure of the Land Bank to put in place sound credit risk management.

Noman, Pervin and Chowdhury observed that the relationship between the non-performing loan ratio and profitability is negative and significant demonstrating that high non-performing loans decreased profitability. Thus revealing that sound credit risk management is a precondition for ensuring the profitability of banks.

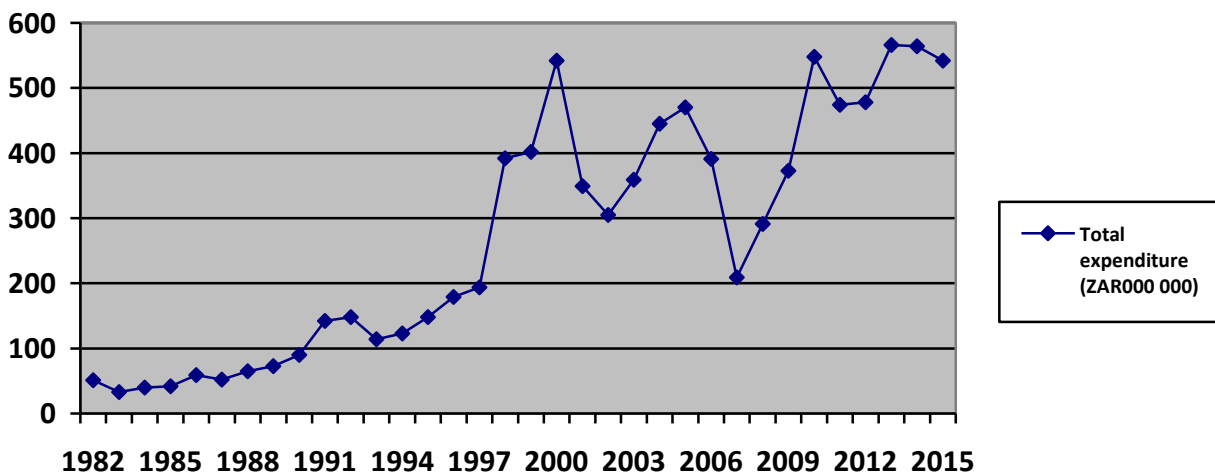


Figure 4.6: Total Expenditure  
Source: Land and Agricultural Bank of South Africa

Operating expenses are expenses incurred by a company for operational purposes. For banks the operational costs include payment of interest owed to investors, as well as interest on deposits. The biggest cost for banks have generally been personnel and interest expense. Employee costs in the financial services sector tend to be the bulk of the operating costs of these institutions and is thus a major driver of financial sustainability of the business (Rikhotso, 2016). For the purpose of the study, actual staff cost was not provided. The financial information from 2002 to 2015 indicates that average cost for operational expenditure was R434m. The trend analysis reveals that operational costs have been increasing since the early 1990's, which could be attributed to organizational reviews, institutional changes, introduction of new accounting and IT systems and the funding structure of the Land Bank.

The results above indicate that capital structure decisions taken by management to support the operations of the bank triggered a number of issues including an increase in the operational costs of the Land Bank. Expenses grew significantly from a minimum of R32m in the 1980s to a maximum of R565m by 2013. Also, an increase in the cost of funding was observed due to an increase in short term funding, creating higher refinancing risks. Additionally, there was a substantial decrease in equity (excluding government guarantee) particularly when it decreased from R5bn in 1998 to R1.7bn in 2007.

Given that the Land Bank is highly exposed to agriculture, which is dependent on a number of factors such as environmental factors which causes unstable income and operating cash flow, high concentration on debt should monitored. Zimmerman (1996) observed that management decisions, particularly regarding loan portfolio concentration, was an important factor contributing to bank performance.

Goyal (2007) stated that companies with more volatile cash flows face higher expected costs from financial distress and should thus, use less debt. Management is tasked with ensuring that the capital structure takes cognizance of the type of business the company is engaged in. For instance, having high exposure to commercial and retail clients has a huge impact on the profitability of the bank as more revenue was

generated from this portfolio and the rate of non-performing loans were presumably lower, subject to economic conditions. Whereas, high exposure to emerging or small client poses is risky as it exposes the bank to high default rates and higher losses.

### **4.3 Descriptive statistics**

The descriptive analysis was applied to the total data sample. Table 4.1 presents average indicators of the minimum, maximum, mean, mode and standard deviation of all the dependent and independent variables tested. Both Tables 4.1 and 4.2 explain the results concluded by applying descriptive statistics and correlation. The values of the mean, median and standard deviation were calculated for both independent and dependent variables from 1982 to 2015. Time series data for the period 1982 to 2015 were used in the study. Data used in the sample was obtained from the annual financial statements of the Land Bank.

Table 4.1 presents descriptive statistics for all the variables. ROA, ROE, equity, total loan and total debt all have positive means, which range from 0.01 to 2.7. Descriptive analysis on Table 4.2 shows that ROA recorded a minimum of -0.081222 and maximum of 0.014234 from 1982 to 2015 with a mean of 0.010725. Implying that the ratio ranged from -8.1% to 1.07% in the period of the study. This is an indication that the ROA has been extremely volatile.

The ROE recorded a minimum -0.561389, a maximum of 0.152587 and a mean of 0.04834. Which implies that the ratios ranged from a minimum of -0.56 to a maximum of 0.04 indicating low return on capital for the period of study. Return on Equity (ROE) and Return on Assets (ROA) are two key measures for appraising the effectiveness of a company's management team in managing the capital entrusted to them by the shareholders. Both ratios are very important for investors and shareholders. The results show that there is a variation in the dataset of ROE for the period of study as the company incurred higher debts due to their low levels of capital and equity. The above thus reduces the ROE ratio.

Equity analysis recorded a minimum of 4.78 and a maximum of 7.62 with a mean of 2.75 for the period under review, total loans recorded a minimum 0.457 and a maximum

of 3.750 with a mean of 1.36. Total debt recorded a minimum of 3.94 and a maximum of 3.18 with a mean of 1.26. Both total loans and total debt recorded the highest standard deviations of 6.98 and 6.32 respectively.

Interest rate spread recorded a minimum of -9.51 and a maximum of 7.5 with a mean of 1.336. The statistic results suggest that the interest rate spread ranged from a low of -9.51 to 7.5%, borrowing rate recorded a minimum of 5.35 and a maximum of 20.85 with a mean of 12.084. This implies that the interest rate range was from 5.35% to 20.85% during the period of study with half of the rates being between 12% and 20.85%. The lending rate recorded a minimum of 7.88 and a maximum of 18.25 with a mean of 13.421. As indicated in the trend analysis, both the lending and borrowing rates have been extremely volatile over the period of study.

The results presented in Table 4.1, shows that all the variables have positive means and using nominal data, variations are below the mean (standard deviation).

**Table 4.1: Lending and borrowing rates**

	ROA	ROE	TOTAL__ ASSETS	TOTAL_ _LOANS	TOTAL_ DEBT	INTEREST_R ATE_SPREAD	EQUI TY	BORROWI NG_RATE	LENDIN G_RATE
Mean	0.01 0725	0.04 7834	1.47E+1 0	1.36E+1 0	1.26E+ 10	1.336364	2.75 E+09	12.08485	13.4212 1
Media n	0.00 9497	0.07 0582	1.66E+1 0	1.23E+1 0	1.13E+ 10	2.030000	2.43 E+09	12.10000	13.8300 0
Maxi mum	0.05 4234	0.15 2587	4.05E+1 0	3.50E+1 0	3.18E+ 10	7.500000	7.62 E+09	20.85000	18.2500 0
Minim um	- 0.081 222	- 0.56 1389	4.70E+0 9	4.57E+0 9	3.94E+ 09	-9.510000	4.78 E+08	5.350000	7.88000 0
Std. Dev.	0.02 0631	0.12 0487	9.15E+0 9	6.98E+0 9	6.32E+ 09	3.559062	2.00 E+09	4.476038	3.02784 1
Skew ness	- 2.455 162	- 4.14 5503	1.087991	1.62746 1	1.2518 34	-1.169244	0.82 7880	0.108568	- 0.35451 1
Kurtos is	13.5 8048	21.2 8482	3.852283	5.64579 8	4.5502 64	4.748293	2.67 5547	1.945897	2.21400 4
Jarqu e-Bera	187. 0794	554. 2285	7.509268	24.1927 9	11.923 55	11.72195	3.91 4365	1.592637	1.54068 9
Proba bility	0.00 0000	0.00 0000	0.023409	0.00000 6	0.0025 75	0.002848	0.14 1256	0.450986	0.46285 4
Sum	0.35 3913	1.57 8529	4.85E+1 1	4.50E+1 1	4.17E+ 11	44.10000	9.07 E+10	398.8000	442.900 0
Sum Sq. Dev.	0.01 3620	0.46 4550	2.68E+2 1	1.56E+2 1	1.28E+ 21	405.3416	1.28 E+20	641.1174	293.370 4
Obser vations	33	33	33	33	33	33	33	33	33

#### 4.4 Correlation analysis

Table 4.2 presents the correlation matrix, which explains the degree of relationship among variables. A correlation matrix is a rectangular array of numbers that shows the correlation coefficients between a single variable and other variables in the investigation



(Tustin et al. 2005). The diagonal elements, which show the level of correlation of variables with themselves, are always equal to one. According to Cohen (1988), correlation can be classified as small correlation (values 0.10 -0.29), medium correlation (0.30 – 0.49) and large correlation (0.50 -1.00). Therefore suggesting that correlation coefficients between 0.5 and 1.00 indicate high correlation between the independent and dependent variables. Also, correlation coefficients can either be positive or negative. The results of the correlation analysis are presented in Table 4.2.

The correlation matrix in Table 4.2 shows that there is a positive correlation between ROA and ROE (0.1540). This is classified as small correlation. However, there is a significant negative correlation between [1] ROA and Interest rate spread (-0.0846), [2] ROA and total debt (-0.1725176) and [3] ROA and total loans (-0.0881). The negative correlation indicates that the asset book growth is not contributing positively towards profitability. This could be attributable to poor asset quality, which results in high non-performing loans.

**Table 4.2: Correlation analysis**

	ROA	EQUITY	INTEREST RATE SPREAD	TOTAL DEBT	TOTAL LOANS
ROA	1.0000 ----- 33				
EQUITY	0.1540 0.3923 33	1.0000 ----- 33			
INTEREST RATE SPREAD	-0.0846 0.6398 33	0.2417 0.1754 33	1.0000 ----- 33		
TOTAL DEBT	-0.1722 0.3380 33	0.7465 0.0000 33	0.4246 0.0138 33	1.0000 ----- 33	
TOTAL LOANS	-0.0881 0.6258 33	0.8299 0.0000 33	0.3562 0.0419 33	0.9712 0.0000 33	1.0000 ----- 33

Source: Land and Agricultural Bank of South Africa

The negative relationship between spread and ROA indicates that, the bank raises funds at high interest rates and lends at low interest rates, which reduces the net interest margin for the bank, resulting in lower profits. Previous studies have demonstrated that a positive relationship between ROE and profitability exists in some emerging markets, while others indicated the existence of a negative relationship. For instance, the study done by Abor (2005), indicated a negative relationship between leverage and ROA. Whereas, Shubita and Alsawalhah (2012) found a negative relationship between debt and profitability.

Generally, ROA assists funders to measure how management utilises the organisation's assets to generate additional income, while ROE is an indicator that assists funders or investors to measure how an organisation uses their investments to generate revenue. Golin (2001), points out that adequate earnings are required in order for banks to maintain solvency, to survive, grow and prosper in an enabling environment. The negative relationship suggests that loans are not generating sufficient return for the Land Bank and if the loans, opportunities for better return will be low.

There is a positive and significant correlation between [1] equity and total debt (0.746521), [2] equity and total loans (0.829882), [3] equity and NPL's (0.572672) and [4] equity and interest rate spread (0.2417), There was a positive and significant correlation between [1] interest rate spread and total debt (0.4246) and [2] interest rates and total loans (0.3562).

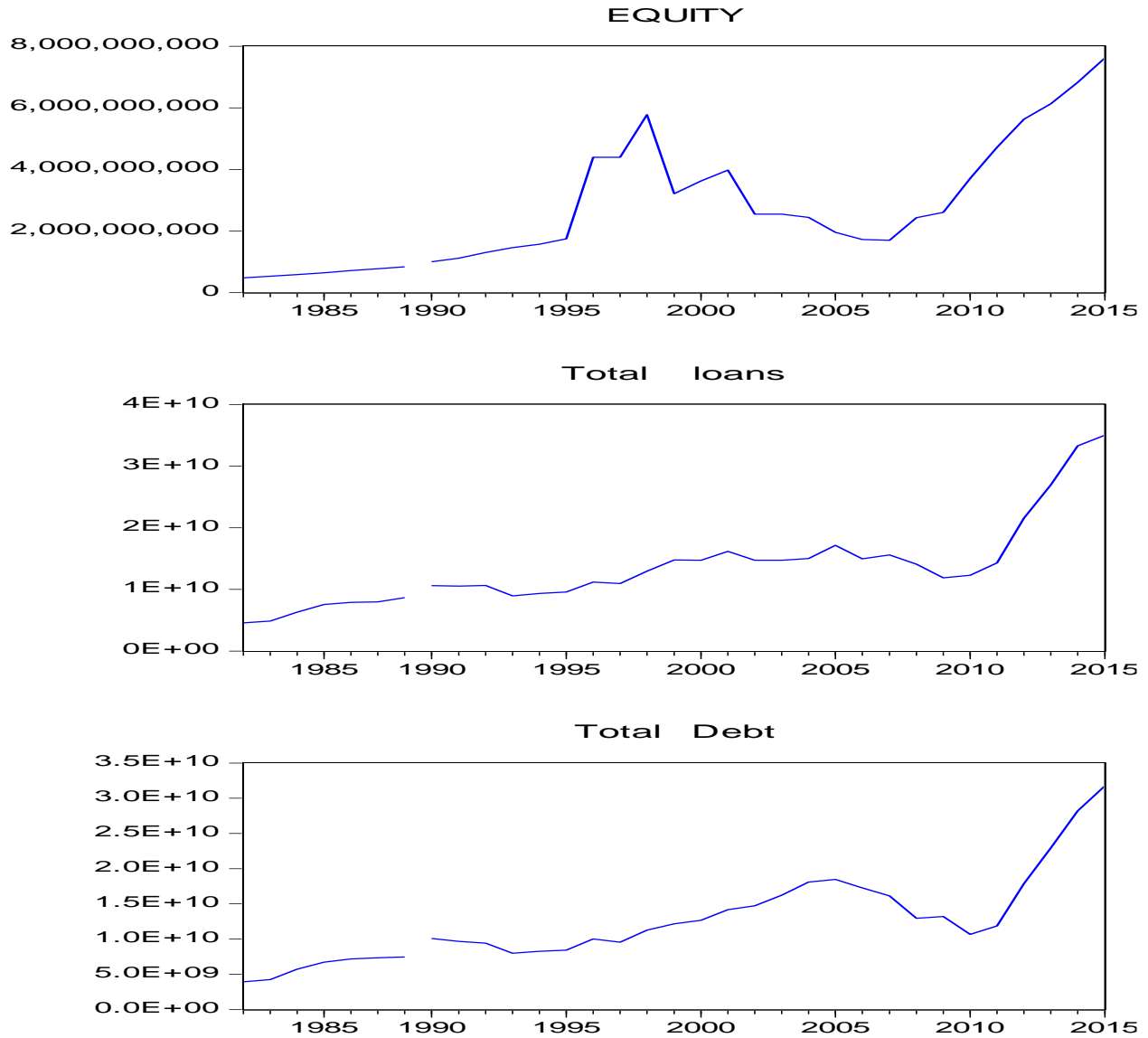
Uluyol, Lebe and Akbas, observed that firms have to be conscious that the leverage effect is not limitless because the more the debt ratio increases, the higher the financial risk leading to a decrease in equity and increased debt costs (higher cost of funding). Noteworthy is that an increased loan book has an impact on equity because indicates an increase in non-performing loans, which therefore affects profitability. There was a positive and significant correlation between total debt and total loan (0.9712).

#### **4.5 Unit root tests**

The time series data used in the study was first subjected to a stationarity test. The results for the variables, equity, total debt and total loans are presented below in Figure

4.3 and show stochastic trends. The null hypothesis was that there was no autocorrelation in the data series used for this study. In levels, all the variables were found to be integrated of the order of one. This is shown in Figure 4.3. In order to eliminate the serial autocorrelation characterizing the data, the data series were log-transformed and found to be stationary thereafter.

This paved the way for further statistical analysis using regression models, as it is a requirement that variables be stationary, before they can be applied in a regression model to avoid getting spurious results. To achieve this, data was tested for stationarity using the Augmented Dickey-Fuller (1979 and 1981) and Phillip-Peron tests (1989). In levels and intercepts, all the variables were found to be integrated of the order of one. However, both methods confirmed stationarity in first difference and intercept.



**Figure 4.7: Log-formatted Trends (E-views)**

**Source: Author construction**

From the trends presented in Table 4.3 above, total assets and total debt trended upwards from 1980 to 2005 and then declined from 2008 to 2010. However, from 2010 to 2015, both total debt and total assets trended upwards. However, NPL's and total expenditure trended downwards between 1980 until 1998, then trended upwards from 2000 to 2015. This meant that the amount of non-performing loans and the operational

cost of the bank has been on an increasing trend. The borrowing rate, the lending rate, ROA and ROE have been showing upward and downward movements over time.

**Table 4.3: Unit root tests**

Variable	Augmented Dickey-Fuller				Phillips-Peron			
	Level with intercept	Order of integration	1 <sup>st</sup> difference with intercept	Order of integration	Level with intercept	Order of integration	1 <sup>st</sup> difference with intercept	Order of integration
Total debt	1.2228	I(1)	3.9239***	I(0)	1.0354	I(1)	3.8995***	I(0)
Total loans	0.2527	I(1)	3.0684**	I(0)	1.2149	I(1)	3.0079**	I(0)
Equity	1.0745	I(1)	5.4354***	I(0)	1.1241	I(1)	5.4560***	I(0)

**Source: E-Views 8.5**

## 4.6 Estimation of Empirical Results

### 4.6.1 Statistical results for objective 2

On the basis of the second objective, the study hypothesized that there is no supported relationship between capital structure and the profitability of the Land Bank. After applying the linear regression model of the Ordinary Least Squares (OLS) method, the results obtained are summarized in Table 4.4 below.

**Table 4.4: Results for objective 2**

Dependent Variable: ROA				
Method: Least Squares				
Date: 01/05/18 Time: 13:23				
Sample: 1982 2015				
Included observations: 33				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
LTOTALDEBT	-0.030429	0.011407	-2.667547	0.0122
LEQUITY	0.017769	0.006814	2.607813	0.0141
C	0.333990	0.172834	1.932426	0.0628
R-squared	0.205682	Mean dependent var		0.010725
Adjusted R-squared	0.152728	S.D. dependent var		0.020631
S.E. of regression	0.018990	Akaike info criterion		-5.003272
Sum squared resid	0.010819	Schwarz criterion		-4.867226
Log likelihood	85.55399	Hannan-Quinn criter.		-4.957497
F-statistic	3.884131	Durbin-Watson stat		2.096722
Prob(F-statistic)	0.031617			

The model indicates that the coefficient for debt (-0.030429) with a probability value of less than 5% ( $p < 0.05$ ) suggests that there is a negative and significant relationship between total debt and return on assets. The coefficient for equity is 0.017769 with a probability value less than 5% (0.0141). Thus, the relationship between equity and return on assets was found to be positive and significant at the 95% confidence level.

The coefficient of determination represented by both the R-Squared (approx. 21%) and the Adjusted R-Squared (approx. 15%) implies that when using the Adjusted R-squared value, 15% of the variation in the dependent variable is explained by the independent variables in the model. The 85% variation in the dependent variable remains unexplained by the independent variables of the study. The F-statistic is 3.8841 and is

significant ( $p = 0.031617$ ), confirming the validity and stability of the model and establishing its relevance for the study. Accordingly, the hypothesis that there is no relationship between capital structure and profitability of the Land Bank could not be accepted and was hence, rejected.

#### **4.6.2 Statistical results for objective 3**

In the third objective, the study sought to determine the relationship between open market funding and the size of the lending portfolio. Applying linear regression analysis, the results obtained are presented in Table 4.5. What is evident from the results is that the relationship between total debt and total loans is positive and statistically significant as the coefficient is 0.938147 and the probability value is 0.000 ( $p < 0.05$ ). Additionally, the R-squared value of 0.957338 and the Adjusted R-squared value of 0.955962 indicate that approximately 96% of the dependent variable is explained by its predictors listed in the model. The model's stability and validity are confirmed by the significant F-statistic with a probability value of 0.0000 ( $p < 0.05$ ).

However, weaknesses in the results were observed. A low Durbin-Watson Statistic of 0.6575 suggested the presence of serial autocorrelation. This is because the acceptable level for this statistic should be between 1.8 and 3 (Durbin and Watson, 1951). In order to correct for serial autocorrelation, an autoregressive model was introduced.

**Table 4.5: Results for objective 3**

Dependent Variable: LTOTALLOANS				
Method: Least Squares				
Date: 01/08/18 Time: 09:09				
Sample: 1982 2015				
Included observations: 33				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
LTOTALDEBT	0.938147	0.035570	26.37498	0.0000
C	1.512992	0.823510	1.837248	0.0758
R-squared	0.957338	Mean dependent var		23.22846
Adjusted R-squared	0.955962	S.D. dependent var		0.463386
S.E. of regression	0.097243	Akaike info criterion		-1.764518
Sum squared resid	0.293142	Schwarz criterion		-1.673820
Log likelihood	31.11454	Hannan-Quinn criter.		-1.734001
F-statistic	695.6398	Durbin-Watson stat		0.657569
Prob(F-statistic)	0.000000			

#### 4.6.2.1 Introduction of autoregressive model

The relationship between the size of the lagged value of total loans and market funding (total debt) was found to be positive and significant. The R-squared and Adjusted R-squared values were both high at 100%. This was supported by the F-statistic which was significant ( $p < 0.05$ ). The Durbin-Watson statistic was found to be below the threshold of 1.8 at 1.329580 suggesting the presence of serial autocorrelation.

After introducing the one-year lag of total loans (ltotal\_loans), the regression model was re-specified as equation 4.1 below.

$$Ltotalloans = c + \beta_1 Ltotaldebt + \beta_2 Lagtotalloans + e \quad [4.1]$$



The results show the presence of serial autocorrelation with a Durbin Watson statistic of 0.8267 which is lower than the recommended minimum of 1.8.

**Table 4.6: Autoregressive Model**

Dependent Variable: LTOTALLOANS				
Method: Least Squares				
Date: 01/11/18 Time: 07:00				
Sample (adjusted): 1983 2015				
Included observations: 32 after adjustments				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-1.22E+11	1.31E+11	-0.933449	0.3583
LTOTALLOANS(-1)	0.221893	0.383460	0.578659	0.5673
LTOTALDEBT	5.73E+09	5.85E+09	0.978909	0.3357
R-squared	0.317769	Mean dependent var		1.38E+10
Adjusted R-squared	0.270718	S.D. dependent var		7.15E+09
S.E. of regression	6.11E+09	Akaike info criterion		47.99219
Sum squared resid	1.08E+21	Schwarz criterion		48.12960
Log likelihood	-764.8750	Hannan-Quinn criter.		48.03773
F-statistic	6.753790	Durbin-Watson stat		1.309758
Prob(F-statistic)	0.003908			

#### 4.6.2.2 Test for serial autocorrelation

In light of the low Durbin Watson statistic reported in Table 4.6 above, a test for serial correlation was performed. The study hypothesized that there is no serial correlation in the data. Using the Q-statistic test, all probabilities were found to be greater than 5% ( $p > 0.05$ ). With a p-value greater than 5%, the Q-statistic showed that there is no auto correlation. This is supported by the correlogram (AC) and the autocorrelation (PAC) statistics, which are above zero for all the 11 lagged observations. It should be noted that when testing for serial autocorrelation using the Q-statistics, one has to use one-

third of the total number of observations as the number of lags. Therefore, the null hypothesis that there is no serial autocorrelation was not rejected.

**Table 4.7: Test for serial correlation**

Date: 01/11/18 Time: 07:06						
Sample: 1982 2015						
Included observations: 32						
Q-statistic probabilities adjusted for 1 dynamic regressor						
Autocorrelation	Partial Correlation	AC	PAC	Q-Stat	Prob*	
.  * .	.  * .	1	0.075	0.075	0.1957	0.658
. *  .	. *  .	2	-0.077	-0.083	0.4120	0.814
. *  .	. *  .	3	-0.128	-0.117	1.0228	0.796
. *  .	. *  .	4	-0.200	-0.193	2.5710	0.632
. *  .	. *  .	5	-0.101	-0.102	2.9825	0.703
.   .	. *  .	6	-0.028	-0.071	3.0150	0.807
.   .	.   .	7	0.009	-0.058	3.0181	0.883
.   .	. *  .	8	-0.003	-0.081	3.0185	0.933
.   .	. *  .	9	-0.016	-0.080	3.0308	0.963
.   .	.   .	10	0.031	-0.016	3.0788	0.980
.   .	. *  .	11	-0.021	-0.071	3.1027	0.989
*Probabilities may not be valid for this equation specification.						

#### 4.6.2.3 LM-Test for serial autocorrelation

Further tests confirmed the absence of serial autocorrelation. After performing the Breusch-Godfrey serial correlation test (see Table 4.8), the Durbin-Watson statistic was found to be within the acceptable range of 1.8 – 2.4 (DW=2.057040).

**Table 4.8: Breusch-Godfrey serial correlation LM Test**

Breusch-Godfrey Serial Correlation LM Test:				
F-statistic	5.187564	Prob. F(2,27)	0.0124	
Obs*R-squared	8.883022	Prob. Chi-Square(2)	0.0118	
Test Equation:				
Dependent Variable: RESID				
Method: Least Squares				
Date: 01/11/18 Time: 10:04				
Sample: 1983 2015				
Included observations: 32				
Pre-sample missing value lagged residuals set to zero.				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-2.01E+11	2.35E+11	-0.855314	0.3999
LTOTALLOANS(-1)	-1.122887	1.223858	-0.917498	0.3670
LTOTALDEBT	9.30E+09	1.08E+10	0.859398	0.3977
RESID(-1)	2.272989	0.954033	2.382506	0.0245
RESID(-2)	-1.396522	0.757285	-1.844117	0.0762
R-squared	0.277594	Mean dependent var	4.89E-06	
Adjusted R-squared	0.170571	S.D. dependent var	5.91E+09	
S.E. of regression	5.38E+09	Akaike info criterion	47.79202	
Sum squared resid	7.81E+20	Schwarz criterion	48.02104	
Log likelihood	-759.6723	Hannan-Quinn criter.	47.86793	
F-statistic	2.593782	Durbin-Watson stat	2.057040	
Prob(F-statistic)	0.058886			

#### **4.6.2.4 Test for heteroscedasticity**

Since the study used time series data, no test for heteroscedasticity was done. This is because time series data has no heteroscedasticity. This is a characteristic often found in cross-sectional data.

#### **4.7 Statistical results for objective 4: Relationship between government subsidy and size of the lending portfolio**

The study further hypothesized that there is no supported relationship between Government funding and the size of the total loan portfolio. Applying the linear regression of the ordinary least squares method, the results obtained are presented in Table 4.9 below. The coefficient for equity was found to be positive and statistically significant at a 99% confidence level ( $p < 0.01$ ). Both the R-squared and Adjusted R-squared were 72% and 71% respectively, indicating that the total loan portfolio of the Land Bank depends on equity which is wholly government funded. This is supported by the F-statistic which is significant at the 99% confidence level ( $F = 81.22063$ ;  $p < 0.01$ ). However, the Durbin-Watson statistic of 0.419420 falls below the minimum threshold of 1.80 suggesting that the data series were serially correlated.

**Table 4.9: Results for Objective 4**

Dependent Variable: LTOTALLOANS				
Method: Least Squares				
Date: 01/08/18 Time: 10:54				
Sample: 1982 2015				
Included observations: 33				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
LEQUITY	0.487229	0.054063	9.012249	0.0000
C	12.77880	1.160295	11.01340	0.0000
R-squared	0.723758	Mean dependent var		23.22846
Adjusted R-squared	0.714847	S.D. dependent var		0.463386
S.E. of regression	0.247446	Akaike info criterion		0.103446
Sum squared resid	1.898122	Schwarz criterion		0.194144
Log likelihood	0.293134	Hannan-Quinn criter.		0.133963
F-statistic	81.22063	Durbin-Watson stat		0.419420
Prob(F-statistic)	0.000000			

In order to eliminate the serial autocorrelation, an autoregressive model was introduced. The regression model was re-specified and presented as Equation 4.2 below.

$$Ltotalloans = c + \beta_1 Lequity + e \quad [4.2]$$

Table 4.10 presents the results of the model. The coefficient for government funding proxied by equity, was found to be positive, albeit insignificant ( $p > 0.05$ ). Similarly, the autoregressive model was observed to be positively related to the size of the loan portfolio. However, the relationship was observed to be insignificant ( $p > 0.05$ ). The F-statistic is at the 99% confidence level ( $F = 7.943038$ ;  $p > 0.01$ ). However, the Durbin-Watson statistic of 1.383951 falls below the minimum threshold of 1.8 indicating that the

data series has serial autocorrelation. After introducing the autoregressive model, the results of the model are presented in Table 4.10 below.

**Table 4.10: Empirical results – autoregressive model**

Dependent Variable: LTOTALLOANS				
Method: Least Squares				
Date: 01/11/18 Time: 10:48				
Sample (adjusted): 1983 2015				
Included observations: 32 after adjustments				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-6.23E+10	4.21E+10	-1.479855	0.1497
LTOTALLOANS(-1)	0.280080	0.233317	1.200426	0.2397
LEQUITY	3.36E+09	2.07E+09	1.623135	0.1154
R-squared	0.353920	Mean dependent var		1.38E+10
Adjusted R-squared	0.309363	S.D. dependent var		7.15E+09
S.E. of regression	5.94E+09	Akaike info criterion		47.93774
Sum squared resid	1.02E+21	Schwarz criterion		48.07515
Log likelihood	-764.0039	Hannan-Quinn criter.		47.98329
F-statistic	7.943038	Durbin-Watson stat		1.383951
Prob(F-statistic)	0.001775			

#### 4.7.1 Test for serial autocorrelation

After observing the likelihood of serial autocorrelation in the autoregressive model, the data series were subjected to a series of diagnostic tests in order to detect the serial autocorrelation. To achieve this, the Q-test statistic, the correlogram and Breusch-Godfrey serial correlation LM Tests were performed. The results are presented below in Table 4.11 and Table 4.12 respectively.

**Table 4.11: Results for Q-test Statistic**

Date: 01/11/18 Time: 12:51

Sample: 1982 2015

Included observations: 32

Q-statistic probabilities adjusted for 1 dynamic regressor

Autocorrelation	Partial Correlation	AC	PAC	Q-Stat	Prob*
.   .	.   .	1 0.029	0.029	0.0292	0.864
. *   .	. *   .	2 -0.124	-0.125	0.5866	0.746
. *   .	. *   .	3 -0.149	-0.143	1.4149	0.702
. *   .	. *   .	4 -0.153	-0.167	2.3199	0.677
.   .	.   .	5 -0.008	-0.046	2.3225	0.803
.   .	.   .	6 0.030	-0.036	2.3610	0.884
.   * .	.   .	7 0.097	0.046	2.7736	0.905
.   .	.   .	8 0.022	-0.010	2.7961	0.946
.   .	.   .	9 -0.018	-0.006	2.8113	0.971
.   .	.   .	10 0.003	0.027	2.8118	0.986
. *   .	.   .	11 -0.068	-0.048	3.0509	0.990

\*Probabilities may not be valid for this equation specification.

The  $p > 0.05$  and correlogram indicate the absence of autocorrelation. A further test for autocorrelation was performed using the Breusch-Godfrey serial correlation LM Test and the results obtained are presented below. The results show that there is no serial correlation as depicted by the F-statistic (4.942269) and  $p < 0.05$ .

**Table 4.12: Breusch-Godfrey serial correlation LM Test**

Breusch-Godfrey Serial Correlation LM Test:				
F-statistic	4.942269	Prob. F(2,27)	0.0148	
Obs*R-squared	8.575550	Prob. Chi-Square(2)	0.0137	
Test Equation:				
Dependent Variable: RESID				
Method: Least Squares				
Date: 01/11/18 Time: 12:59				
Sample: 1983 2015				
Included observations: 32				
Pre-sample missing value lagged residuals set to zero.				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	6.13E+10	7.22E+10	0.848908	0.4034
LTOTALLOANS(-1)	0.533703	0.782937	0.681669	0.5013
LEQUITY	-3.19E+09	3.80E+09	-0.839739	0.4084
RESID(-1)	0.851696	0.896646	0.949868	0.3506
RESID(-2)	-1.963533	0.655407	-2.995900	0.0058
R-squared	0.267986	Mean dependent var	-6.68E-06	
Adjusted R-squared	0.159539	S.D. dependent var	5.75E+09	
S.E. of regression	5.27E+09	Akaike info criterion	47.75079	
Sum squared resid	7.50E+20	Schwarz criterion	47.97981	
Log likelihood	-759.0126	Hannan-Quinn criter.	47.82670	
F-statistic	2.471134	Durbin-Watson stat	1.944382	
Prob(F-statistic)	0.068462			



Three hypotheses were presented and tested for this study. Table 4.13 summarises the results obtained from the tests performed.

**Table 4.13: Summary of results for tested hypotheses**

<b>Hypothesis</b>	<b>Results</b>
H <sub>0</sub> : There is no supported relationship between capital structure and profitability of the Land Bank.	Rejected
H <sub>0</sub> : There is no supported relationship between open market funding and the size of the total farmers' portfolio.	Rejected
H <sub>0</sub> : There is no supported relationship between Government subsidy (support) towards agriculture and the profitability of the lending portfolio.	Rejected

#### **4.8 Statistical results for Objective 5**

The main objective of this study was to determine the impact of capital structure on the performance of the Land Bank. This objective was empirically tested using multiple regression analysis of the Ordinary Least Squares (OLS) Method. In order to identify the combination of independent variables that explain the variation of the dependent variable E-views 8.5 was used to analyse the data. The results are presented in Table 4.14 below. Several control variables were introduced and the regression model specified was Equation 4.14 below.

$$ROA = 0.004622 + 0.031814E - 0.001616D + 0.000905BR + 5.94E-05LR - 1.22E-13TA + 0.024194TE + \varepsilon_t \quad [4.13]$$

**Table 4.14: Results for the final model**

Dependent Variable: ROA				
Method: Least Squares				
Date: 01/11/18 Time: 13:57				
Sample (adjusted): 1983 2015				
Included observations: 32 after adjustments				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
DLEQUITY	0.031814	0.014888	2.136871	0.0426
DEBT-EQUITY	-0.001616	0.001325	-1.219366	0.2341
DLTOTALEXPENDITURE	0.024194	0.014930	1.620495	0.1177
LENDING RATE	5.94E-05	0.001853	0.032078	0.9747
BORROWING RATE	0.000905	0.001006	0.899725	0.3769
DLTOTALASSETS	-1.22E-13	1.68E-12	-0.072825	0.9425
C	0.004622	0.023180	0.199398	0.8436
R-squared	0.378695	Mean dependent var		0.010832
Adjusted R-squared	0.229582	S.D. dependent var		0.020952
S.E. of regression	0.018390	Akaike info criterion		-4.963369
Sum squared resid	0.008455	Schwarz criterion		-4.642739
Log likelihood	86.41390	Hannan-Quinn criter.		-4.857089
F-statistic	2.539648	Durbin-Watson stat		2.026012
Prob(F-statistic)	0.046511			

The regression model had the following variables; equity, debt to equity, total expenditure, lending rate, borrowing rate and total assets. ROA was used as a proxy for bank financial performance because it measures the ability of the organization to generate sufficient income using its resources (assets) efficiently.

The outcome of the Ordinary Least Squares regression model indicates that the model explains 23% (Adjusted R-squared = 0.229582) of the variation in ROA. The F-value of

2.539648 with probability value of 0.046511 signifies that the dependent variable is significantly related with the profitability of the Land Bank. Theoretically, if the probability value of the F-statistic is less than 5% ( $p < 0.05$ ), then the model is considered to be significantly better than what would be obtained by chance and one can reject the null hypothesis of no linear relationship between the dependent and independent variables (Tustin et al. 2005).

#### **4.9 Discussion of empirical results**

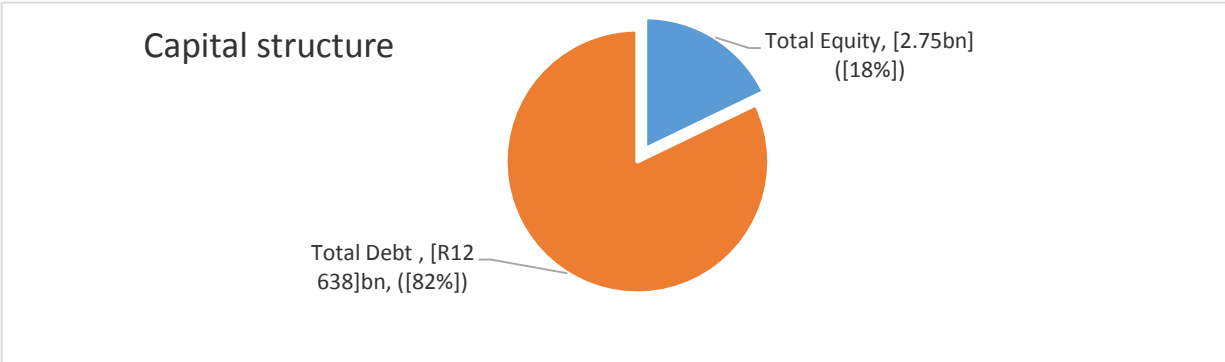
This section discusses the results of the study. In achieving the first objective, the study examined the trends in the variables used and this aided the achievement of objectives 2 to 5. The variables are equity, debt, interest rate spread, ROA, ROE and non-performing loans. What emerged from the analysis is that all the variables are volatile. In particular, both ROA and ROE were found to depict low performances when compared to other DFIs such as the National Empowerment Fund and Development Bank of Southern Africa (Rikhotso, 2016).

While it is understood that the Land Bank serves a more risky sector than other DFIs, the low profitability results obtained suggest that management of the bank need to revisit the bank's funding, pricing, credit and asset selection policies. It is not surprising that the bank performed poorly in the period under review when taking into account the non-performing loans, which spiralled over the same period. The decline in equity, a negative interest spread and increasing debt, compounded the performance challenges experienced by the bank. Similar observations were made by Noman et al. (2015).

The preliminary analysis reported in the first objective showed signs of a poor performance by the bank prompting further and more robust statistical and econometric analyses of the performance of the bank. Accordingly, in the second objective, the study sought to determine the relationship between capital structure and profitability. The variable, capital structure, was disaggregated into its elements of debt and equity. The results indicate that there is a significant positive relationship between equity and ROA. These results are consistent with those of Huizinga and Dermarguc- Kunt, (1999).

Given that the study hypothesized that there is no supported relationship between capital structure and profitability, the results of this study suggest that although the equity of the Land Bank is low when compared to debt capital (see Figure 4.7), it has a positive and significant impact on the ROA of the Land Bank. The average capital and debt for the Land Bank for the period of the study were R2.8bn and R12.6bn respectively. The bulk of the capital structure is debt financing which suggests that the Land Bank relies heavily on debt to finance its operating activities.

**Figure 4.8: Capital Structure**



**Source: Author construction**

The above observations therefore support the statement that well capitalized banks tend to be profitable than banks with a borderline capital base (Aremu et al. 2013). This implies that the explicit guarantee provided by the National Treasury strengthened the balance sheet of the Land Bank and subsequently improved the ROA, which restored the confidence of investors and other relevant stakeholders. Following on the improved investor and stakeholder appetite for a stake in the Land Bank paper, the Bank managed to raise funding from both money and capital markets. Additionally, the bank was able to diversify the funding mix and extend its maturing profile, contrary to what had been obtaining for many years, were the bank relied on short term debt to finance new and existing businesses (Land Bank, 2009).

Similar results were observed in a study done in the Indonesian Financial Sector. It was observed that when using high debt, the firm paid higher interest which resulted in reduced profit. Because the Return on Assets (ROA) is the ratio of earnings after

interest and taxes to the firm's total assets, using high debt may decrease profit and ultimately, the bank's profits will reduce (Saputra et al. 2015).

Based on the results presented above, the capital structure of the Land Bank shows that much reliance is placed on debt to finance the operations of the bank and marginal profit is generated. This illustrates that internal sources of funding are insufficient to finance operating activities. The Pecking Order Theory states that a negative relationship exists between profitability and debt. Thus, effective and efficient companies do not depend entirely on external funding (Sayilga, Karabacak and Kucukkocaogluu, 2006).

The third objective sought to test the relationship between total debt (open market funding) and the total lending portfolio of the Land Bank. The results show a positive and significant relationship between total debt and the total lending portfolio. The results confirm that the growth in the lending portfolio is financed using debt funding. This indicates that an increase in debt funding will result in an increase in the lending portfolio. Nevertheless, the growth in the lending portfolio contributed less towards profitability, which could be attributed to higher cost of funds and unprofitable pricing of loans (particularly commercial loans). Graham (2000) observed that big and profitable companies present a low debt rate suggesting that the use of high debt implies that the company will pay interest, which results in reduced of profitability.

The fourth objective examined the relationship between equity and the profitability of the lending portfolio. Government funding was used as a proxy for the variable, equity, since most of the Bank's equity was obtained from Government. The study hypothesized that there is no supported relationship between Government funding and the size of the total loan portfolio. The relationship between government funding and total lending portfolio was found to be positive albeit insignificant ( $p > 0.05$ ), thus, the null hypothesis was rejected. This suggests that an increase in equity has the potential of increasing the portfolio of the Land Bank, particularly the emerging farmers' portfolio.

In the fifth and final objective, the study examined the relationship between debt-to-equity ratios and ROA. The results provide evidence that there is a negative relationship

between the debt-to-equity ratio and ROA as the regression coefficient is -0.001616 with a probability value of 0.2341. The results above are consistent with the recent study conducted by Anarfo and Appiahene (2017), which concluded that higher debt has an adverse impact on profitability, suggesting that as much as the loan book and total debt have grown rapidly over the period of study, their contribution towards the profitability of the bank is considerably insignificant. Debt ratios (see Appendix C) also averaged 613% from 1998 to 2007, which indicates that the Land Bank relied on debt to finance its investment activities, confirming that the bank is highly geared.

Additionally, for a number of years, the Bank relied on short-term funding to finance long term lending which also posed huge refinancing risks for the Land Bank. The above is consistent with the findings of Siddik et al. (2017). They concluded that short-term debt, has a negative and significant impact on ROA. It is imperative for the bank to find solutions that will improve its profitability and grow its internal reserves. Profitable banks accumulate internal reserves and this enables the banks to depend less on external funding (Saeed et al. 2013).

Since banks profit from incurring less expenses than revenue collected, the study also examined the influence of total expenditure on the profitability of the bank. It was observed that there is a positive relationship between total expenditure and ROA reflected by a 0.024194 regression coefficient, however, the relationship is insignificant as the probability value is 0.1177. These results are in line with the assertions of Koch and MacDonald (2010) that the management of bank expenditure is critical for profitability.

Both the borrowing and lending rates have an insignificant relationship with the dependent variable with probability values of 0.3769 and 0.9747 respectively. This suggests that there is a possibility that the bank's cost of funding is high and the lending rate charged on loans is not contributing to the profitability of the bank. This could be explained by the negative interest rate spread between the lending and the benchmark rates (prime), suggesting that the Land Bank's cost of funding is expensive in comparison to its on-lending rates. Theoretically, a bank's cost of funding should be

lower than the lending rate in order for banks to be profitable (Koch and MacDonald, 2010), suggesting that banks borrow money at a lower interest rate than their lending rate to customers.

Furthermore, this also implies that net interest margins are not enough to cover the administrative cost, operational cost, cost of non-performing loans and other inherent factors in banking. This observation is consistent with the findings of Hossain (2010), who observed that high administrative costs, high non-performing loan ratio and some other macroeconomic factors are key determinants of persistently high spread and margins in private banks. Therefore, this indicates that the higher the interest spread (cheaper funding vs higher on lending rate), the higher the rate of return. The interest rate spread in previous studies conducted was found to be positively related to deposits and negatively related to loans, furthermore, explanatory variables such as non-performing loans increase the spread, while excess liquidity was found be negatively related to the spread (Ngugi, 2001).

A study done in Kenya found that interest rate spread affects the performance of assets in banks as it increases the cost of loans charged on the borrowers, thus, regulation on interest rates have far reaching effects on assets non-performance (Iringu,2012). As much as interest rate spread affects performance, it must be noted that that there are a number of factors that drive interest rate spread. These factors include bank size, liquidity risks, credit risk, return on average assets, net interest income as a ratio of total income and operating costs (Were and Wambua, 2014). In the case of the Land Bank, all of the factors mentioned above have been extremely inconsistent, therefore indicating that the changes in spread were driven by the changes in the above factors. Thus, the implication of this on the Land Bank is that the Bank should raise funding at reasonable costs and charge interest on loans that will contribute towards better interest margins and profitability.

High operational expenditure including non-performing loans also impacts on the cost of raising debt, as investors are uncomfortable with increases in operating overheads. This coincides with the factors considered to have an impact on the interest rates spread,

factors such as market power, staff size costs, administrative costs, the extent to which a bank is risk averse and inflation (Aboagye et al. 2008).

With regard to the relationship between total assets and ROA, the model indicates that there is a negative relationship between the dependent and independent variable as the regression coefficient is -1.22 with a probability value of 0,9425. This indicates that a negative relationship exists between total assets and return on assets (profitability), suggesting that as much as the loan book increased during the period of study, this growth contributed little to profitability.

According to Garcia-Herrero et al. (2009), there is higher profit growth in banks that have high proportion of loans to total assets, high customer deposit efficiency and low credit risk. This implies that banks with good quality loan books and low non-performing loans have the potential of increased bank profitability. The bank's non-performing loan book has been erratic. It averaged 17% during the period of the study, which was above industry norm. This indicates the poor quality of loans. A study by Calice (2013) showed that 24 percent of African Development Finance Institutions are not profitable and have negative ROA, whilst 52% of African Development Finance Institutions have NPLS's in excess of 15 percent of the loan book. Hamisu (2011) opined that excessive non-performing loans in the banks can be a result of poor governance, practices, lax credit administration processes and the absence or non- adherence to credit risk management practices.

The discussion of the results elucidated above suggests that DFIs, more or less, face similar challenges, hence, there is a need to assess the performance of DFIs regularly, in order to provide support for the design of funding solutions and to provide technical knowledge that will assist DFIs in accomplishing their mandate.

#### **4.10 Chapter summary**

Chapter 4 presented the results of the research hypotheses tested for this study. The results clearly indicate that the capital structure of the Land Bank has a negative and insignificant impact on ROA. This negative result led to the rejection of the hypothesis



that there is no relationship between the capital structure of the bank and ROA (profitability).

Furthermore, on objective 3 the study, the study sought to determine the relationship between open market funding and the size of the lending portfolio. The results showed that there was a significant relationship between debt and the total loans of the Land Bank.

Objective 4 of the study sought to determine the relationship between government funding and the size of the lending portfolio. The results showed a positive relationship between government funding and total lending portfolio, albeit insignificant.

In the study, ROA was used as an independent variable while, equity, total debt, total loans, interest rates spread were the dependent variables. The control variables included in the model are borrowing rate, lending rate, total assets and total expenditure.

Overall, the results of the study suggest that the current capital structure of the Land Bank does not adequately contribute to the profitability of the Land Bank. This means that an increase in equity and a reduction in debt will have a positive impact on profitability which would improve the ROA and ROE of the Land Bank.

The result discussion, conclusion and recommendations of this study are presented in Chapter 5.

# **CHAPTER 5**

## **SUMMARY, CONCLUSIONS AND RECOMMENDATIONS**

### **5.1 Introduction**

The last chapter of the study provides a summary of the findings as well as the conclusions of the study. The purpose of the study was to investigate the relationship between capital structure and bank profitability using a case study approach in which the Land Agricultural Bank of South Africa was the unit of analysis. The ultimate goal was to investigate how an optimal capital structure would support the lending operations of the bank and ensure sustainable return on investments. The motivation behind the study was to determine the impact of capital structure on profitability and to evaluate the most suitable funding structure for the bank. The expectation is that, if the bank has an optimal capital structure, it will be able to fulfil its developmental mandate.

Capital structure theories have been researched comprehensively, however, limited studies have been done on the impact of capital structure on the profitability of DFIs. Firstly, one needs to acknowledge that development banks or state-owned banks have been established by government for specific development mandates that they need to fulfil in the economy. State-owned DFIs are considered as imperative to finance economically warranted operations that were not financially attractive to private, for profit, financial institutions, because of their actual or perceived poor financial profitability and high risk operations (Yaron, 2004).

However, DFIs have been widely criticized for poor performance in terms of efficiency, profitability and in the achievement of their social objectives (Francisco et al. 2008). Several reasons have been provided to explain this poor performance. Inherent risks that DFIs have which are responsible for this poor performance are that DFIs face high correlated risks, asymmetric information problems aggravated by a client's lack of financial statements and political interventions in credit allocation, which hamper sound loan recovery (Yaron, 2004). As a result, the study investigated the relationship between capital structure and profitability of the Land Bank.

Previous studies indicate that most farmers still find it difficult to access funding particularly from DFIs. In South Africa, prior literature focused on testing the adequacy of credit supplied to smallholder farmers (Coetzee, 2003, Chisasa and Makina, 2012). Other studies investigated the relationship between bank credit and agricultural output (Chisasa and Makina, 2014). To the best of the researcher's knowledge, no study has investigated funding models for agricultural DFIs. This study thus, attempted to fill this gap using capital structure theories.

Employing time series data for the period 1982 to 2015, the effect of capital structure on profitability was statistically tested. Preliminary statistical analysis were conducted using trend analysis, descriptive statistics and bivariate correlation analysis. Further tests were conducted using linear and multiple regression analysis.

Firstly, the study analysed the trend in the dependent and independent variables as well as in the control variables over the period of the study. Secondly, the study sought to test the relationship between capital structure and the profitability of the Land Bank. Thirdly, the study tested the relationship between open market funding and the total lending portfolio of the Land Bank. In the fourth objective, the study tested the relationship between government funding and the total lending portfolio. Lastly, to determine the combined effect of capital structure, total expenses, lending rate, borrowing rate and total assets on bank profitability, the study tested...

The rest of the chapter is organized as follows: Sections 5.2 summarizes the empirical results. Section 5.3 presents the conclusion of the study. Section 5.4 provides recommendations for further studies. Section 5.5 explains the limitations of the study. Section 5.6 presents recommendations and suggestions for further research.

## **5.2 Summary of results**

The results of the study are summarised in the ensuing sub-sections.

### **5.2.1 Results for objective 1**

The loan book for the Land Bank showed exponential growth. However, the growing loan book was not supported by equity, which depicted a sluggish increase between

1982 and 1995. A spike followed this from 1995 to 1998 before declining steeply and recovering in 2007 until 2015. The trend in debt, which was used as a proxy for open market funding, exhibited moderate growth from 1982 to 2005. However, from 2006, a decline was observed which lasted until 2010 before a sharp rise was observed at the start of 2017. This recovery was attributed to a change in management whose operating model attracted new clients and thus, an increase in the demand for new capital to support the requirements of the expanded clientele base occurred.

The interest rate spread depicted volatility during the period under review. What is notable is that the interest rate spread was negative for some of the years under review, notably from 1982 to 1985 and from 1997 to 1999. As a result, profitability (ROA) was generally low, below 10%. When using ROA, profitability was found to be below 5%, which when accounting for inflation, averaged 9.13% from 1968 to 2017 (Statistics SA, 2017). This shows that the bank earned negative real returns which is a cause for concern to equity holders.

Total expenditure was stable between 1982 and 1991. Thereafter, the bank experienced high volatility in its total expenditure.

### **5.2.2 Results for objective 2**

In this objective, the study analysed the relationship between capital structure and the profitability of the Land Bank. Capital structure plays a significant role as it is related to the financing decision. Dedes (2010) argues that capital structure is important because of its practical implementation on the corporate level, since the financing decisions of a firm are of vital importance for its operating and investing activities.

The dependent variable (profitability) was proxied by ROA as opposed to ROE because the composition of capital structure reflects that debt contributed, on average, 82% while equity contributed 18%. After applying the linear regression model of the Ordinary Least Squares (OLS), the evidence showed that there is a significant relationship between profitability and equity. Huizinga and Dermeguc- Kunt (1999) observed that well-capitalized banks have higher interest margins and are more profitable, suggesting that companies with a strong capital base or capital ratios generally require minimum

external funding. This implies that equity positively affects the profitability of the Land Bank and an increase in the equity of the Land Bank will result in an increase in the profitability of the bank. The results are in contradiction with the findings of Ronoh and Ntoiti (2015) who found that equity negatively affects the financial performance of the company.

A negative and significant relationship between total debt and ROA was observed. The findings are consistent with the observation of Ronoh and Ntoiti (2015) who opined that debt affects the company's financial performance negatively. Consequently, an increase in the debt of the company would result in reduced financial performance, whereas, a reduction in the debt levels of a company would lead to an increase in the performance of the company. Additionally, this is also in line with the observations of Mykhailo (2013), whose analysis asserted that a company's indebtedness negatively affects firm performance. The Land Bank is heavily indebted and therefore requires additional capital injection in order to maximize profits. It is therefore important to note that debt requires payback with cash flow obligations that are not reliant on the successful use of money borrowed.

### **5.2.3 Results for objective 3**

In the third objective, the study analysed the relationship between market funding and the total lending portfolio. The results indicate that there was a relationship between open market funding and total loans suggesting that the total loan book was financed using funding from the open market. This choice of funding exposes the bank to high leverage ratios. Therefore, the hypothesis suggesting that there is no relationship between total loans and total debt was rejected.

### **5.2.4 Results for objective 4**

The fourth objective sought to determine the relationship between government funding and total lending portfolio. In order to achieve this objective, data was analysed with using a linear regression model. The results suggest that government equity provides a cushioning effect for the Land Bank, without which the bank would be unable to attract investors, access funding and fulfil its developmental mandate. The above suggests that

the equity provided by government plays a critical role in supporting the business of the bank.

### **5.2.5 Results for objective 5**

The final objective of the study was to determine the combined effect of capital structure, total expenses, lending rate, borrowing rate and total assets on bank profitability. The relationship between equity and Roa was found to be positive and significant. However, when using the debt-to-equity ratio as a proxy for capital structure, the results showed a negative relationship between capital structure and profitability, suggesting that an introduction of debt to the bank's capital structure negatively influences the profitability of the bank. Total expenditure, lending and borrowing rates were all found to be positively related to the profitability of the bank, albeit insignificant. Finally, the study found that the relationship between total assets and profitability was negative. This was attributed to the high contribution of total loan to the aggregate asset portfolio.

### **5.3 Conclusion**

One of the key objectives of the study was to investigate the impact of capital structure on the performance of the Land Bank. The study has demonstrated that it is imperative for the management of the bank to consider an optimal capital structure that will contribute towards the profitability and achievement of the Land Bank's mandate. The current capital structure suggests that there is a negative correlation between total debt and profitability, whilst there is a positive correlation between capital and profitability. Total debt was found to be insignificant in determining ROA and equity suggesting positive results. This was confirmed by the correlation matrix developed for the dependent and independent variables and supported by previous literature. The observations are consistent with the study done by Abor (2005), which indicated a negative relationship between leverage and ROA. Also, the study by Shubita and Alsawalhah (2012) found a negative relationship between debt and profitability.

The above conclusions suggests that there is a need for the bank to adopt an appropriate capital structure mix in order to increase its profitability.

## **5.4 Recommendation and suggestions**

### **5.4.1 Policy recommendation**

Choosing an appropriate capital structure requires management to appreciate that different capital structure theories impact companies in various ways, hence it is important for management to understand these theories and their impact on profitability. When a company makes such decisions, the profitability, solvency and control of the company should be taken into consideration. The relationship between capital structure and profitability is necessary for the long term sustainability of a company, therefore top management should make prudent financing decisions in order to remain profitable, competitive and to achieve its objectives.

DFIs operate within the confines of certain policies that are different from those of corporate institutions whose objective is to maximize shareholders' wealth and remain financially strong. However, the socially and developmental nature of DFIs insinuates that they operate in a risky market that would generally not be attractive to investors and if there are interested investors, they would likely pay high interest rates. As a result, debt financing requires payback with cash flow commitment that are independent of the successful use of money borrowed.

### **5.4.2 Recommendation for further studies**

The results provided empirical evidence which demonstrated the negative impact on the profitability of the bank proxied by ROA and. The findings support the Pecking Order Theory which states that companies will consider internal sources of funding prior to resorting to external funding. Further studies could be undertaken to include more variables in order to obtain more robust results. The model could be expanded to include other sub-classes of capital structure and profitability in order to obtain more comprehensive results.

The proposal for further research is to assess different DFIs in order to compare the impact of capital structure for diverse DFIs. Further research should include time-series data collected to cover longer periods than this study does. This study could be further

extended to cover and also incorporate periods before reform programmes and periods post reforms.

Further research should be undertaken that incorporates the use of real time data in order to ensure a more accurate prediction of the relationship between capital structure and profitability.

## **5.5 Limitations of the study**

A number of limitations can be cited for this study. Firstly, the data is only limited to the Land Bank and is mainly conducted using secondary data. The data relating to the head count of the Land Bank from 1982 to 2015 was not available due to changes in systems from one period to another and it was a challenge to access information that has not been publicly made available. Additionally, most of the Land Bank data comes from hard copy loan files (raw data) that is not automated. One of the critical points to mention is that the comparison might be skewed given the changes in Financial Reporting Standards. A complete assessment of financial information could not be done as Financial Reporting Standards differ drastically and reporting requirements have changed since the introduction of the International Financial Reporting Framework. However, key variables that have theoretically had an impact on the capital structure were assessed in detail.

## **5.6 Recommendations**

Given the above and the restrictiveness of the Land Bank's mandate of financing agriculture and Agri-related business, one can conclude that it is difficult to make any developmental impact using funds borrowed in the open market. Firstly, farmers from previously disadvantaged groups of South Africa who were historically denied commercial farming opportunities under the apartheid regime, face the double challenge of entering a very competitive and deregulated domestic market, as well as having to deal with the challenges posed by the process of agricultural industrialisation (Kirsten, 2002).

Additional challenges that emerging farmers face include failure to access finance, poor access to markets, infrastructure constraints and geographic. Pursuing development



funding from the domestic money and capital markets is not practical as the risk premium attached to this category of risky clients will lead to excessive pricing and small-scale farmers will not be able to service their loans.

Hence, the Bank requires a sustainable capital structure in order for it to enhance its operational performance. Additionally, capital supports bank operations by providing a buffer that absorbs unanticipated losses from the bank's activities when such incidents occur. It is important to note that a wrong decision about capital structure may lead to financial distress and even to bankruptcy (Chen, 2003). In 1995, the Land Bank's financial position was sound due to state assistance and historically conservative lending policy (Land Bank Annual Report, 1995). The Land Bank's financial position has been deteriorating and this was evidenced by a decrease in its reserves, which plummeted since 1996 to date as a result of changes in agricultural policies as well as the funding structure of the Bank.

Based on the findings of the study, the study recommends the following:

- A sustainable funding model that will ensure that the Land Bank is able to discharge its mandate. The envisaged model should ensure that the bank reduces its reliance on debt finance as evidence proves that it affects financial performance negatively. Therefore, suggesting that an appropriate capital structure should be adopted by both management and shareholders of the Land Bank in order to increase the profitability of the Land Bank
- Further capital injection is required in order to improve the ROA and ROE ratios
- Amendment of the Land Bank Act to allow the Bank launch an aggressive deposit taking initiative in order to be able to access deposits and to also attract non-interest income which is presumed to be a key source of income for commercial banks (Model similar to SAPO). The approach will help the institution achieve the development finance performance indicators which are outreach, growth and sustainability of emerging farmers.
- In order to strengthen the balance sheet of the Land Bank, a proposal for the replication of African Development Bank's capital structure is recommended

where the Land Bank should consider issuing callable and paid up shares (Callable capital is the commitment by each shareholder to make additional capital available to the institution in case of financial distress –AfDB Capital Structure).

- Pricing of loans particularly for corporate clients and intermediaries should be reviewed in order to improve the interest rate spread of the Land Bank.
- Implementation of sound credit risk management and prudent financial decisions need to be made in order to ensure the Land Bank's profitability.

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# LIST OF APPENDICES

## APPENDIX A: DEBT, EQUITY AND LENDING PORTFOLIO BALANCES

Year	Total Debt	Total loans	Equity	Total Assets
1982	3,942,191,721.00	4,570,411,829.00	477,806,848.00	4,698,080,180.00
1983	4,261,943,909.00	4,871,216,845.00	532,084,802.00	5,060,894,180.00
1984	5,722,724,286.00	6,303,608,569.00	583,654,187.00	6,606,348,766.00
1985	6,730,486,362.00	7,559,195,174.00	640,095,088.00	7,939,481,416.00
1986	7,195,766,693.00	7,905,901,113.00	712,879,511.00	7,629,780,647.00
1987	7,352,781,990.00	7,966,151,616.00	775,706,313.00	7,661,856,688.00
1988	7,463,223,328.00	8,649,307,352.00	836,285,856.00	8,340,083,387.00
1990	10,084,505,000.00	10,611,597,000.00	1,002,112,000.00	10,324,570,000.00
1991	9,671,935,000.00	10,524,166,000.00	1,117,387,000.00	10,125,815,000.00
1992	9,425,403,000.00	10,650,864,000.00	1,299,215,000.00	10,041,024,000.00
1993	7,985,745,000.00	8,946,741,000.00	1,458,830,000.00	5,380,147,000.00
1994	8,269,667,000.00	9,347,972,000.00	1,571,058,000.00	5,502,860,000.00
1995	8,430,919,000.00	9,588,640,000.00	1,745,805,000.00	5,487,359,000.00
1996	10,031,229,000.00	11,179,954,000.00	4,391,040,000.00	6,869,098,000.00
1997	9,569,594,000.00	10,951,509,000.00	4,391,040,000.00	5,903,700,000.00
1998	11,264,388,000.00	12,973,101,269.00	5,775,419,000.00	6,840,936,000.00
1999	12,163,838,000.00	14,781,299,000.00	3,213,641,000.00	16,882,921,000.00
2000	12,673,648,000.00	14,730,578,000.00	3,625,315,000.00	16,599,817,000.00
2001	14,179,349,000.00	16,167,546,000.00	3,973,828,000.00	18,352,329,000.00
2002	14,724,923,000.00	14,730,155,000.00	2,545,060,000.00	17,591,006,000.00
2003	16,231,504,000.00	14,730,155,000.00	2,545,060,000.00	19,007,662,000.00
2004	18,103,618,000.00	15,010,481,000.00	2,443,087,000.00	20,469,131,000.00
2005	18,478,975,000.00	17,153,664,000.00	1,957,405,000.00	20,469,131,000.00
2006	17,258,482,000.00	14,951,852,000.00	1,721,453,000.00	19,686,629,000.00
2007	16,131,138,000.00	15,598,898,000.00	1,696,171,000.00	18,303,553,000.00
2008	12,965,540,000.00	14,102,136,000.00	2,429,192,000.00	17,142,435,000.00
2009	13,211,022,000.00	11,872,465,000.00	2,605,434,000.00	17,543,755,000.00
2010	10,661,930,000.00	12,294,424,000.00	3,706,956,000.00	16,877,808,000.00
2011	11,877,749,000.00	14,299,153,000.00	4,715,119,000.00	18,451,543,000.00
2012	17,864,948,000.00	21,555,645,000.00	5,626,474,000.00	25,351,406,000.00
2013	22,953,550,000.00	26,968,735,000.00	6,131,064,000.00	30,782,006,000.00
2014	28,206,620,000.00	33,281,280,000.00	6,825,405,000.00	36,819,287,000.00
2015	31,754,287,000.00	35,032,449,000.00	7,617,762,000.00	40,548,549,000.00

## APPENDIX B: INTEREST RATES

Year	Prime	Lending rate	Lending rate spread to prime	Borrowing rate
1982	18	10.48	- 7.52	14.85
1983	20	9.60	- 10.40	16.85
1984	24	11.34	- 12.66	20.85
1985	16.5	14.50	- 2.00	13.35
1986	12	13.25	1.25	8.85
1987	12.5	12.42	- 0.08	9.35
1988	18	14.15	- 3.85	14.85
1990	21	16.88	- 4.12	17.85
1991	21	18.25	- 2.75	17.85
1992	20.25	18.25	- 2.00	17.1
1993	17.25	17.61	0.36	14.1
1994	15.25	15.55	0.30	12.1
1995	16.25	15.12	- 1.13	13.1
1996	18.5	16.58	- 1.92	15.35
1997	20.25	15.00	- 5.25	17.1
1998	19.25	14.97	- 4.28	16.1
1999	23	17.14	- 5.86	19.85
2000	15.5	15.88	0.38	12.35
2001	14.5	13.64	- 0.86	11.35
2002	13	12.98	- 0.02	9.85
2003	17	14.97	- 2.03	13.85
2004	11.5	14.75	3.25	8.35
2005	11	13.52	2.52	7.85
2006	10.5	12.25	1.75	7.35
2007	12.5	11.39	- 1.11	9.35
2008	14.5	12.14	- 2.36	11.35
2009	15	13.83	- 1.17	11.85
2010	10.5	14.85	4.35	7.35
2011	9	9.17	0.17	5.85
2012	9	7.88	- 1.12	5.85
2013	8.5	8.16	- 0.34	5.35
2014	8.5	8.13	- 0.37	5.35
2015	9.25	8.27	- 0.98	6.1
2016	9.75	9.01	- 0.74	6.6

## APPENDIX C: FINANCIAL RATIOS

Year	NPL%	Total Expenditure	Profit / Loss	DEBT RATIO	ROA	ROE
1982	17%	51,013,625.00	34,295,026.00	83.91%	1%	7%
1983	17%	32,980,784.00	43,978,116.00	84.21%	1%	8%
1984	18%	40,224,271.00	41,195,275.00	86.62%	1%	7%
1985	17%	41,724,236.00	45,825,551.00	84.77%	1%	7%
1986	20%	58,842,290.00	51,495,758.00	94.31%	1%	7%
1987	20%	52,420,116.00	52,268,927.00	95.97%	1%	7%
1988	18%	64,928,313.00	47,960,240.00	89.49%	1%	6%
1990	15%	73,208,000.00	87,938,000	97.67%	1%	9%
1991	16%	90,223,000.00	95,275,000	95.52%	1%	9%
1992	16%	142,489,000.00	172,251,000.00	93.87%	2%	13%
1993	17%	147,909,000.00	188,787,000.00	148.43%	4%	13%
1994	12%	114,060,000.00	151,083,000.00	150.28%	3%	10%
1995	22%	122,573,000.00	174,747,000.00	153.64%	3%	10%
1996	21%	148,085,000.00	150,373,000.00	146.03%	2%	3%
1997	23%	179,333,000.00	97,310,000.00	162.09%	2%	2%
1998	22%	194,288,000.00	371,013,000.00	164.66%	5%	6%
1999	18%	391,804,000.00	411,674,000.00	72.05%	2%	13%
2000	23%	402,341,000.00	408,697,000.00	76.35%	2%	11%
2001	16%	541,792,000.00	343,994,000.00	77.26%	2%	9%
2002	17%	348,825,000.00	(1,428,768,000.00)	83.71%	-8%	-56%
2003	13%	305,169,000.00	246,608,000.00	85.39%	1%	10%
2004	10%	359,485,000.00	(330,102,000.00)	88.44%	-2%	-14%
2005	10%	444,600,000.00	298,674,000.00	90.28%	1%	15%
2006	19%	469,972,000.00	65,562,000.00	87.67%	0%	4%
2007	14%	391,322,000.00	10,107,000.00	88.13%	0%	1%
2008	15%	208,655,000.00	17,541,000.00	75.63%	0%	1%
2009	18%	373,350,000.00	166,606,000.00	75.30%	1%	6%
2010	23%	548,520,000.00	379,089,000.00	63.17%	2%	10%
2011	13%	473,824,000.00	286,098,000.00	64.37%	2%	6%
2012	18%	478,102,000.00	161,355,000.00	70.47%	1%	3%
2013	15%	565,888,000.00	304,590,000.00	74.57%	1%	5%
2014	8%	564,498,000.00	394,341,000.00	76.61%	1%	6%
2015	6%	541,698,000.00	292,358,000.00	78.31%	1%	4%



## APPENDIX D: INTEREST CHARGED Y FINANCIAL INSTITUTIONS

Year	Land Bank	Agricultural cooperatives	Commercial banks		Average	Prime	Land Bank	Agricultural cooperatives	Commercial banks	Average
1980	7.67	9.21	9.66	9.435	8.86	9.5	- 1.83	- 0.29	0.16	- 0.06
1981	8.93	11.31	13.57	12.44	11.32	14	- 5.07	- 2.69	- 0.43	- 1.56
1982	10.48	16.17	18.07	17.12	14.97	19.33 3	- 8.85	- 3.16	- 1.26	- 2.21
1983	9.60	14.57	16.55	15.56	13.63	16.66 7	- 7.07	- 2.10	- 0.12	- 1.11
1984	11.34	15.24	22.09	18.66 5	16.33	22.33 3	- 10.99	- 7.09	- 0.24	- 3.67
1985	14.50	14.52	21.75	18.13 5	17.01	21.5	- 7.00	- 6.98	0.25	- 3.37
1986	13.25	9.73	14.43	12.08	12.50	14.33 3	- 1.08	- 4.60	0.10	- 2.25
1987	12.42	13.18	14.02	13.6	13.22	12.5	- 0.08	0.68	1.52	1.10
1988	14.15	15.60	15.23	15.41 5	15.00	15.33 3	- 1.18	0.27	- 0.10	0.08
1989	16.88	18.70	19.71	19.20 5	18.45	19.83 3	- 2.95	- 1.13	- 0.12	- 0.63
1990	18.25	18.75	21.00	19.87 5	19.36	21	- 2.75	- 2.25	0.00	- 1.13
1991	18.25	18.75	20.31	19.53	19.13	20.31 3	- 2.06	- 1.56	0.00	- 0.78
1992	17.61	18.54	19.01	18.77 5	18.40	18.83 3	- 1.22	- 0.29	0.18	- 0.06
1993	15.55	16.81	16.22	16.51 5	16.19	16.16 7	- 0.62	0.64	0.05	0.35
1994	15.12	15.86	15.51	15.68 5	15.50	15.58 3	- 0.46	0.28	- 0.07	0.10
1995	16.58	18.04	17.81	17.92 5	17.48	17.89 6	- 1.32	0.14	- 0.09	0.03
1996	15.00	19.41	19.34	19.37 5	17.95	19.52 1	- 4.52	- 0.11	- 0.18	- 0.15
1997	14.97	20.20	20.13	20.16 5	18.47	20	- 5.03	0.20	0.13	0.16
1998	17.14	21.44	21.58	21.51	20.08	21.79 2	- 4.65	- 0.35	- 0.21	- 0.28
1999	15.88	18.12	17.94	18.03	17.33	18	- 2.12	0.12	- 0.06	0.03
2000	13.64	14.59	14.71	14.65	14.32	14.5	- 0.86	0.09	0.21	0.15
2001	12.98	14.00	13.86	13.93	13.62	13.77 1	- 0.79	0.23	0.09	0.16
2002	14.97	15.48	15.60	15.54	15.35	15.75	- 0.78	- 0.27	- 0.15	- 0.21
2003	14.75	15.21	15.16	15.18 5	15.04	14.95 8	- 0.21	0.25	0.20	0.23
2004	13.52	10.69	11.01	10.85	11.72	11.29 2	2.23	- 0.60	- 0.28	- 0.44
2005	12.25	10.74	10.50	10.62	11.15	10.62 5	1.63	0.12	- 0.13	0.00
2006	11.39	10.92	11.01	10.96 5	11.10	11.16 7	0.22	- 0.25	- 0.16	- 0.20
2007	12.14	13.02	12.87	12.94 5	12.68	13.16 7	- 1.03	- 0.15	- 0.30	- 0.22
2008	13.83	14.59	14.84	14.71 5	14.43	15.12 5	- 1.30	- 0.54	- 0.29	- 0.41
2009	14.85	16.05	16.09	16.07	15.67	11.70 8	3.14	4.34	4.38	4.36
2010	9.17	9.27	9.72	9.495	9.39	9.833 3	- 0.66	- 0.56	- 0.11	- 0.34

2011	7.88	8.93	8.98	8.955	8.61	9	- 1.12	- 0.07	- 0.02	- 0.04
2012	8.16	9.23	8.91	9.07	8.77	8.75	- 0.59	0.48	0.16	0.32
2013	8.13	8.41	8.51	8.46	8.35	8.5	- 0.37	- 0.09	0.01	- 0.04
2014	8.27	9.02	8.74	8.88	8.68	9.125	- 0.86	- 0.11	- 0.39	- 0.25
2015	9.01	9.60	9.39	9.495	9.34	9.416 7	- 0.41	0.18	- 0.03	0.08