

The impact of credit types on household savings levels in South Africa

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Abstract

Despite robust economic growth in post-apartheid South Africa, we have consistently seen high unemployment and severe income inequality amongst its people. Arguably this has resulted in a culture of dependence on consumer credit; consumers are spending future income by using credit. This could result in a decrease in household savings levels amongst ordinary South Africans. Many studies have referred to an increase in consumer credit to supplement people's income support or to offset low wages. This has a major impact on consumers who then find themselves over-indebted due to economic shocks and this could result in a negative impact on disposable income. The study investigates how the various types of credit play a major role on household savings levels in South Africa, and the analysis done in this study, on the various credit types, highlights the differences between secured type credit and unsecured type credit.

The analysis of the relationship between the various credit types on household saving levels in South Africa was done using empirical data from 2008 up to 2106. The data used in the study was extracted from National Credit Regulator, as well as household savings data extracted from South African Reserve Bank. The methodology involves the use of the bounds test approach to co-integration using Autoregressive Distribution Lag models and Granger Causality testing to establish causality. The results indicated that overall there was a positive relationship between total credit and household savings levels in South Africa. However, we also find a significant negative relationship between unsecured credit and household savings levels in South Africa. Further analysis also found that three out of the four credit types tested resulted in a decrease in household savings levels. Given the importance of savings levels to the economy, and also the high risk of economic shocks in South Africa, this study concludes with proposals for tighter regulation in the consumer credit market. It further argues for robust mechanisms to be put in place by stake holders to ensure that consumers are cushioned against economic shocks that could result in over-indebtedness.

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Abbreviations

BRICS – Brazil, Russia, India, China, and South Africa

DEA – Data Envelopment Analysis

GDP – Gross Domestic Product

IMF – International Monetary Fund

LC-PI – Life Cycle Permanent Income model

MFRC – Micro Finance Regulatory Council

MFI – Micro Finance Institutions

NCA – National Credit Act

NCR – National Credit Regulator

NLR – National Loan Regulator

ROE – Return on Equity

SASI – South African Savings Institute

SARB – South African Reserve Bank

SADC – South African Development Community

SFI – Small Financial Institutions

UK – United Kingdom

UN – United Nations

VAT – Value Added Tax

CHAPTER ONE

INTRODUCTION

1.1 Background to the study

South Africa has one of the highest domestic private sector indebtedness levels in the world. As at Quarter 3 of 2015, according to the South African Reserve Bank (SARB) quarterly indicators, the proportion of South African debt to disposable income level was at 77.8%. The SARB further ranked South Africa twelfth in the world, eight places behind the United States at fourth, and four places behind China at 8th. Brazil, was ranked 68th with a proportion of private sector credit to GDP at 67% (WorldBank, 2017). According to Nyaruwata (2009), the indicator most often cited in the literature as one of the measures of the increase in over-indebtedness levels is the household debt-to-income ratio, a major cause of financial distress. Alongside the household debt-to-income ratio is the gross savings to GDP ratio, as illustrated below.

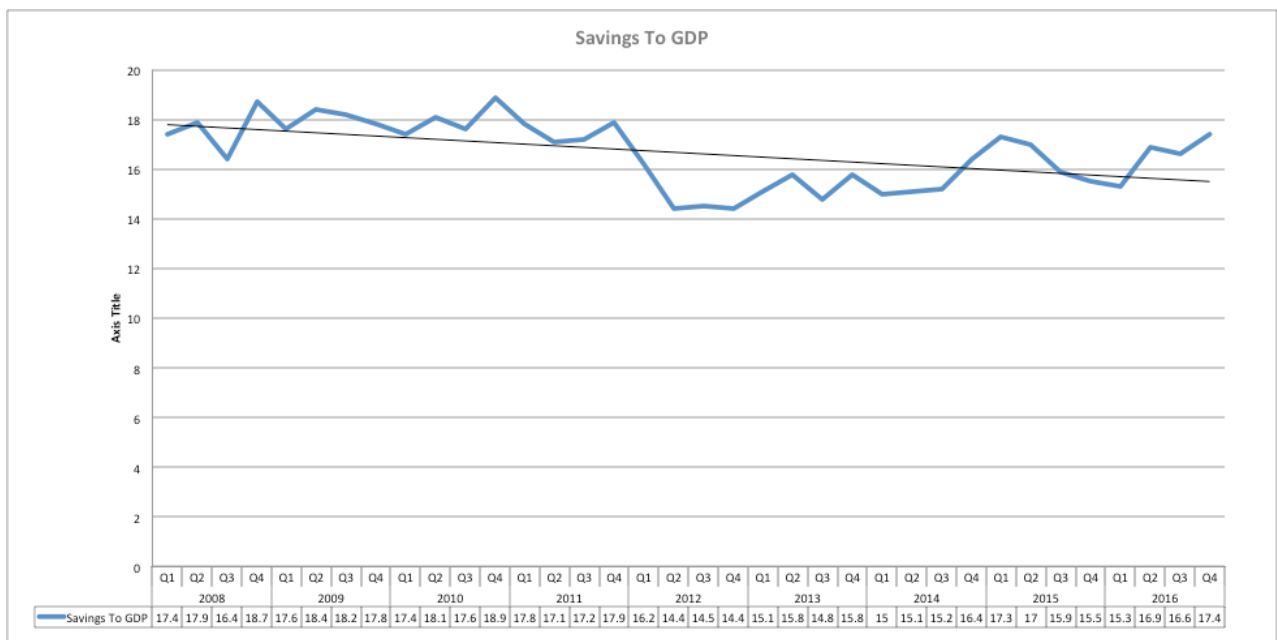


Figure 1 Savings to GDP ratio
Source: Author's compilation using data from South African Reserve Bank online enquiries

Due to this decrease in gross savings levels, as well as the current increase in consumer credit, and more specifically unsecured credit, it is important to assess the relationship between these concepts as well as the impact that these relationships could have on the economy. By the second quarter of 2008, the household debt-to-income ratio in South Africa had peaked at 86.3%. Although this ratio

has subsequently dropped, further research is needed into what impact aggressive credit growth has on savings and indebtedness. There is also the need to consider whether there is scope for possible government intervention specifically focused on unsecured credit and how to gain consensus around strengthening the regulatory and supervisory mechanisms that are currently in place.

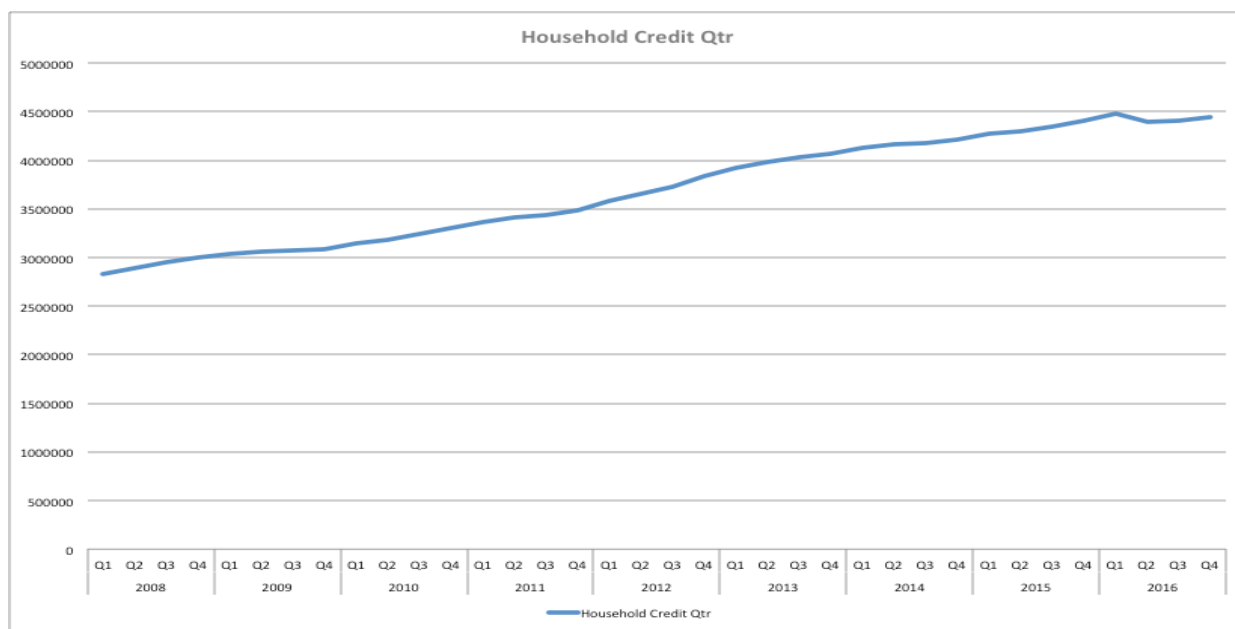


Figure 2 Household Credit per quarter
Source: Authors compilation using data from South African Reserve Bank online enquiries

It is important to recognize that unsecured credit loans, micro-loans, and unsecured credit facilities are key features of emerging and growing economies. Rom (2013) finds that in order for developing countries to improve their economic situation and reduce income gaps, they have to embrace an inclusive financial environment. In many cases, access to credit can accelerate growth and development for a growing economy.

According to Marshall (2008), the lending policies of financial institutions are usually built for developed markets, so they often fail when entering developing countries and can be seen as counterproductive in nature. The major multinational financial institutions that enter into developing countries often fail because they face challenges that are not familiar to them. Their business models are built in highly formalized and developed countries and the financial planners do not know how to deal with some of the problems that occur in developing countries. Finance

and access to credit are important in promoting wider growth in any economy, especially in developing economies. In most cases, the financial institutions have to take up a mediation role between saving and borrowing. This is particularly true within the context of South Africa which has a very complex economic environment made up of a volatile informal banking sector that operates in parallel with a highly regulated formal sector. On the one hand, there is South Africa's formalized financial services sector, backed by a sound regulatory and legal framework, highly sophisticated, boasting dozens of domestic and foreign institutions and providing a full range of products. Financial service offerings include commercial, retail and merchant banking, mortgage lending, insurance products and investments. On the other hand, South Africa finds itself with a fairly large informal and under banked population. Negative economic effects, such as high levels of poverty, structural unemployment problems and a large, previously under serviced and under banked population exacerbate the situation.

With unemployment in South Africa nominally at 26.5% in the fourth quarter of 2016 (see Figure 3 below), the informal economy forms a key component of governmental strategies to address unemployment. Promoting entrepreneurship and removing business barriers will help in employment creation, which in turn could alleviate poverty and support the creation of sustainable livelihoods for the population.

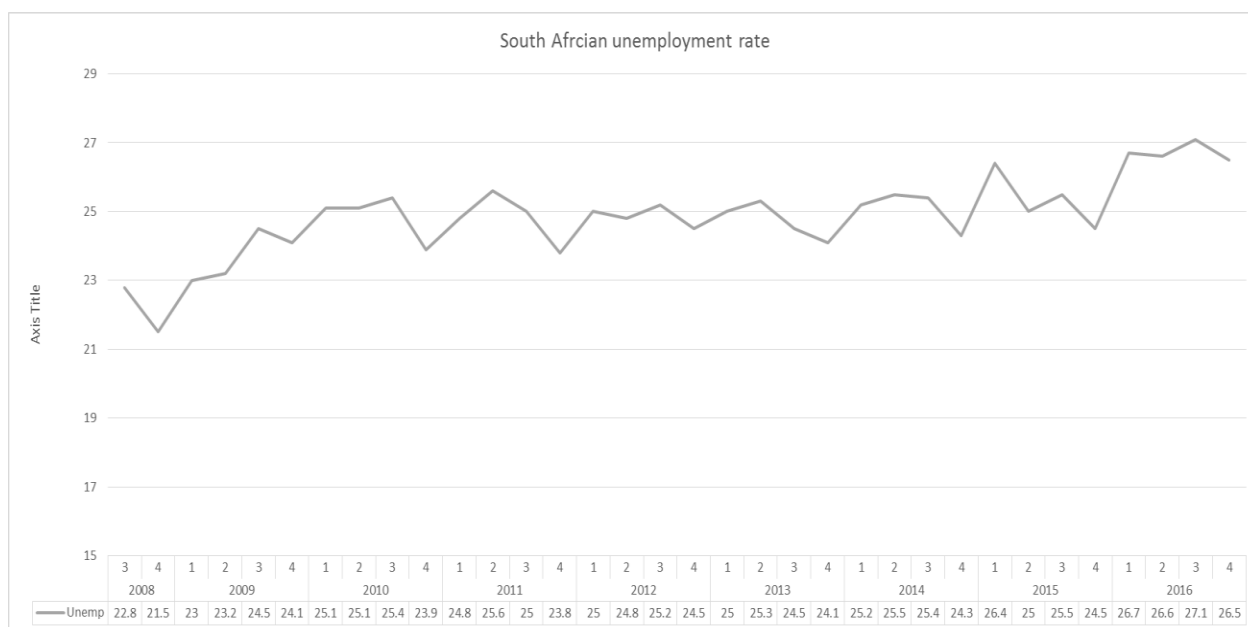


Figure 3 Unemployment rate in South Africa
Source: South African Reserve Bank online enquiries

Modise (2013) concludes that in South Africa the informal and formal sectors play major roles in financial intermediation. He finds that subsequent studies on various credit providers in South Africa make mention of the informal credit providers who offer short term loans and other *stokvel* or informal savings products in local townships to people who could not normally access products from formal banking institutions. There are also the formal banking institutions which offer financial products and services in the South African market but were until recently highly concentrated. As mentioned above, access to credit is an important factor for a developing economy. Modise (2013) also notes that issues such as information asymmetry, which is the situation where “one party to a financial contract has more or better information than the other” (p.10). Increases the cost of credit. Information asymmetry is a big problem in Sub Saharan Africa due to low level of data coverage and credit bureau penetration. These factors restrict access to many credit products as lenders are careful when granting credit. The increase in probability of default risk therefore increases the cost of credit to the customer.

1.2 Problem definition

As discussed, South Africa shares many of the characteristics of less sophisticated economies, specifically those that are rooted in very basic sectors such as mining and agriculture. This has often led to utilization of cheap migrant labor forces, which in itself comes with a host of other social and societal problems, one of the main issues being unemployment. This leads to a low degree of household savings, as people do not have enough money to put away for a rainy day. In South Africa, as in many parts of the continent, debt plays a crucial role in negotiating many people’s daily survival and day-to-day life cycle related events.

This is very common amongst the poorer communities and rural areas. From this we can infer that South African lower income households are more at risk of having their daily consumption needs met in an expensive debt entrapment cycle. The fact that lower income households are using credit to meet their consumption needs is a big problem for South Africa because South Africa has one of the highest private sector debts to GDP levels in the world. It also has one of the lowest household savings rates amongst the developing countries. (WorldBank, 2017)

The rationale for investigating the relationship between various credit types and household savings levels in South Africa stems from the fact that since the early 1990s, as illustrated below in Figure

4, there has been a steady increase in debt as a percent of disposable income. Several factors have influenced this.

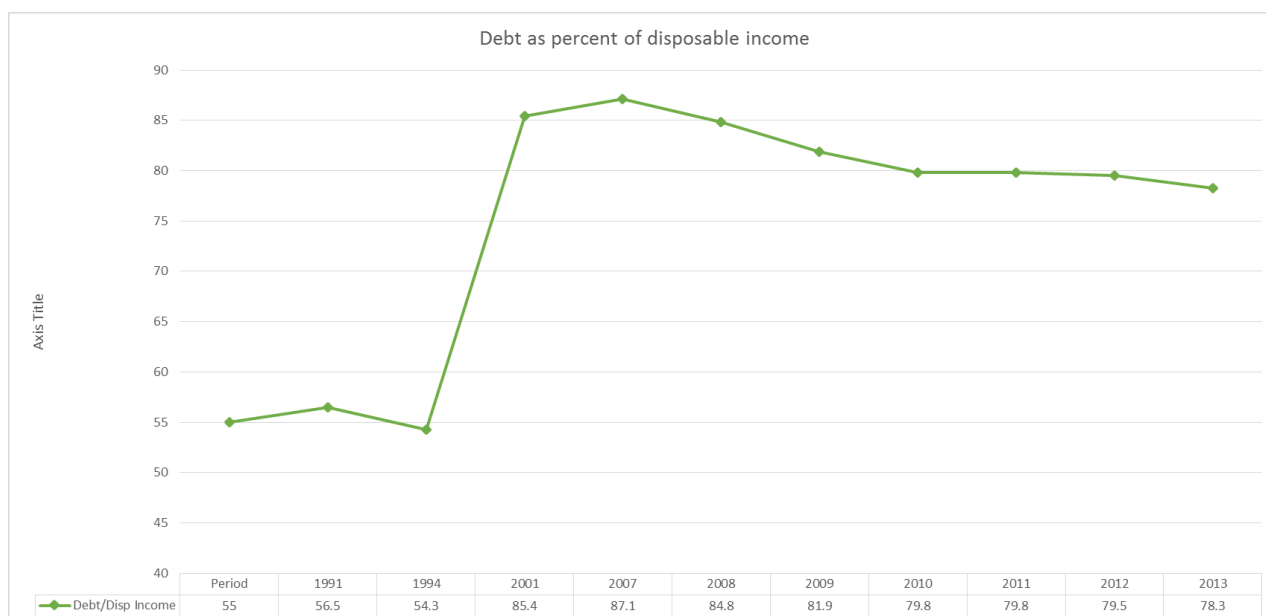


Figure 4 Debt as percent of disposable income
Source: Authors compilation using data from South African Savings Institute

The financial sector has undergone various stages of financial sector deepening over this period as a result of important regulatory changes. One of the key factors that influenced this was legislative change, which was done to create a more inclusive economy in post-apartheid South Africa. The Exemption to Usury Act (1992) removed interest rate ceilings on small loans under R6000.00 with a repayment period of less than thirty-six months. Another legislative change was the promulgation of the National Credit Act (NCA) in 2007. One result of these changes has been the phenomenal growth of the credit industry over this period and, more specifically, the micro-finance industry. This is evidence of how a latent sector of the economy can develop in a short timeframe when given a favorable incentive system.

These incentives have had both positive and negative effects. The positive incentives of these legislative changes to post-apartheid South Africa led to sudden access to formal credit lines through a new range of bespoke financial products. In many cases these mainly targeted the poor. Marwa (2015) notes that rapid growth by micro credit institutions occurred in India and other parts of the world where similar incentives were offered to the local Micro Finance Institutions. He

highlights the micro finance crises of 2010/2011. He further questions whether this growth is “supported by proper economic fundamentals?” (p.3). This research is interested in assessing whether credit disbursed, which includes credit disbursed via Micro Finance Institutions in South Africa, causes a decrease in household savings levels in South Africa. It is well documented that this segment has also seen significant growth in South Africa over this period.

Given the paucity of previous studies on this topic, this research is a timely undertaking, particularly taking into consideration the limited literature and the nature of the micro lending industry in many developing countries. The specific focus of this study is on the various credit types which make up consumer credit as defined by the National Credit Regulator (NCR). A quantitative study has been done in order to establish whether there is a significant relationship between the different credit types and, more specifically, unsecured credit on the low household savings levels in South Africa. The study is exploratory in nature. It investigates the various credit types and focuses on unsecured credit as this can be seen to have grown significantly since the mid-1990s in terms of the number of customers as well as the amounts taken out. This has happened alongside a steady decline in household savings levels over the same period.

According to Ssebagala (2014) the significant increase in over-indebtedness in South Africa was due in part to the many “political and legislative” (p.12) changes that had taken place post 1994. The financial market in South Africa needed to be open and inclusive in order to promote economic growth. Many encouraged the resulting changes in regulation and sudden access to various financial products for more members of society. Bateman (2014) notes “a widespread assumption quickly emerged, suggesting that the micro finance model, which includes unsecured loans, would, among other things, generate significant local employment opportunities, raise average incomes, empower women, reduce inequality, and so, overall, create the basic foundation for sustainable, “bottom-up” local economic and social development” (p.93).

Ssebagala (2014) finds that many of the bigger, more conservative banks were hesitant to offer credit to local, low income earners. This meant that many of these people had to use other, less regulated, alternatives such as local group lending schemes and loan sharks or to borrow from family and friends in order to meet their needs. He also finds that micro-lenders would often target

these individuals who the traditional banks were reluctant to service as this market segment was seen to have a lower level of financial literacy. An important point to make is that while some consumers are able to manage their borrowing effectively and were financially literate, others were not which could result in over-indebtedness and erosion of savings ability.

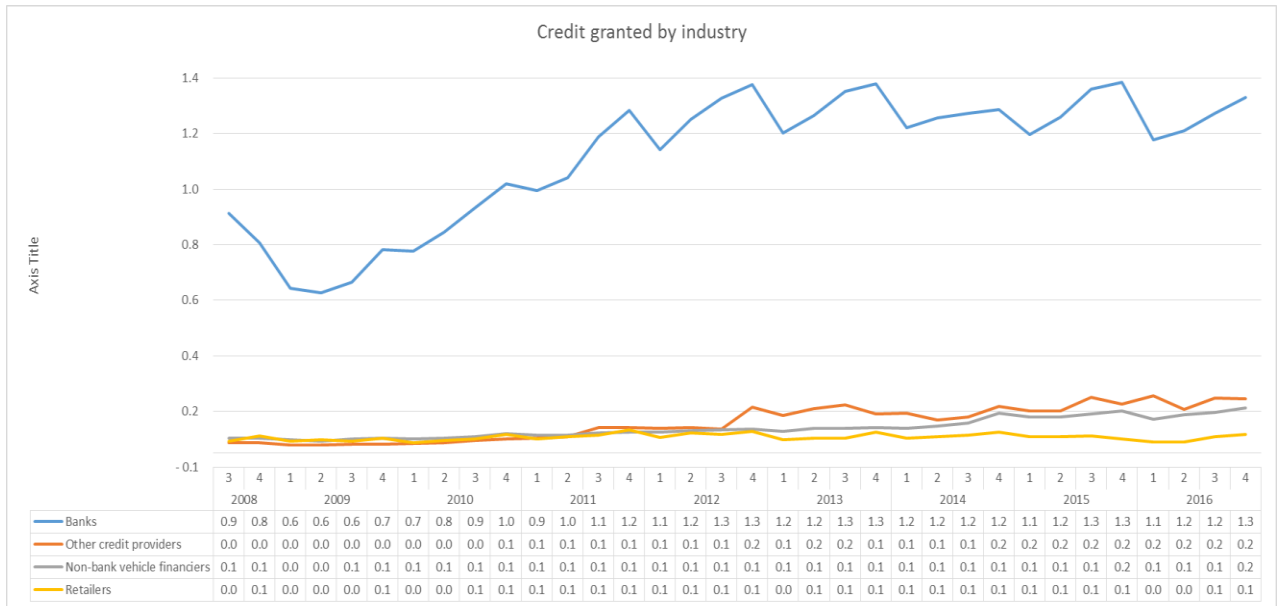


Figure 5 Credit granted by industry
 Source: Authors compilation using NCR Quarterly bulletin

Bateman (2014) notes, “South Africa is one of the many developing countries that opted to deploy the microcredit model as a poverty reduction and local development initiative. Even before the end of the apartheid system the international donor community had arrived in South Africa to help set up new Micro Finance Institutions (MFIs). The end of apartheid then saw this effort stepped up considerably. Much more importantly, changes to South Africa's financial system and regulatory environment encouraged South Africa's traditionally strong private commercial banks to begin to "downscale" into microcredit operations” (p.93).

After the changes in the regulatory framework in South Africa post 1999, the MFIs and credit providers realized that there was almost saturated growth for the advanced economy in South Africa. The logical next step was to market to the less developed, previously under-served segments of the economy. The World Bank reports that there is great potential for faster growth within Africa and South Africa. The impediments to this faster growth include industrial

concentration, skill shortages, chronically low savings rates and apartheid legacy issues such as poor spatial planning and highly segmented labor force (World Bank, 2013).

Ssebagala (2014) concludes that many studies have shown that personal consumer debt problems increase simultaneously with household debt. This has long been a contentious issue amongst researchers who could not reach consensus on whether the factors that influenced the increase in consumer indebtedness correlate to factors that influence consumer debt repayment problems. One would assume that the more debt the consumer takes on, the more difficult it becomes to service this increased debt load. Unexpected events or economic shocks could negatively affect some consumers' income, rendering them unable to service their existing financial obligations. Others might be forced to borrow more in response to rising consumer demands and thus become over-burdened with debt. As such, indebtedness and over-indebtedness will inevitably affect a proportion of the population at any time and in any economic circumstances and not necessarily as the result of an economic shock. Ssebagala (2014) states, "In the best interests of both the credit industry and consumer protection, it becomes imperative to have in place tight legislation and regulations. On the one hand these should prevent the occurrence of over-indebtedness and, on the other hand, alleviate over-indebtedness" (p.5).

The research questions that are to be addressed in this study are:

- Is there a relationship between unsecured credit and reduced household savings levels in South Africa?
- Does increase in other credit types have an impact on household savings levels in South Africa?

1.3 Statement of research objective and hypotheses

The main objectives that this study seeks to achieve include:

- To examine the relationship between unsecured credit and household savings levels in South Africa.
- To assess the impact of other credit types on household savings levels in South Africa.

1.4 Hypotheses of the study

In the context of these research objectives, the appropriate hypotheses for this study are as follows:

- *H₁*: There is a positive relationship between credit and household savings levels in South Africa.
- *H₂*: The increase in the various credit types does have an effect on household savings levels in South Africa.

1.5 Justification for the study

By highlighting the implications of unregulated use of unsecured credit the rationale behind this research is to ensure that there is a protection mechanism in place for consumers of credit as well as tighter regulation of unsecured credit providers. Another factor that one has to take into consideration is the fact that the growth in non-bank credit providers has steadily increased since 2012, as illustrated in Figure 5 above. Not many studies have been done on this topic and it could be useful to do so because this could provide answers as to where the growth in unsecured credit is coming from. A key driver is to understand what role the National Credit Act (NCA) plays or has played in this growth in the credit market and whether this is sustainable.

If this is in fact the case then further research is required to measure the effectiveness of the National Credit Act. The rationale behind the NCA was “to promote and advance the social and economic welfare of South Africans, promote a fair, transparent, competitive, sustainable, responsible, efficient, effective and accessible credit market and industry, and to protect consumers.” (National Credit Advisor, 2018) The promulgation of the National Credit Act was an important piece of regulation and was seen as “one of the most progressive financial regulatory acts in the world” (Rom, 2013, p. 2).

The credit market in South Africa was seen as untransformed in the early parts of the 1990s. Different laws, primarily the Usury Act and the Credit Agreements Act 74 of 1980, regulated the market. In 1992, an exemption notice was filed under the Usury Act, which allowed loan out amounts to be capped at R6000.00, with a maximum term capped at 36 months. Under this exemption notice the interest rate ceiling on loans under R6000.00 was removed. (Ebony Consulting International (Pty) Ltd, 2000). The government introduced another exemption notice in

1999, namely the Exemption Notice, under which the maximum amount permitted for lenders to loan out was increased to R10 000.00, but with a cap on the interest rate. The industry was open to large-scale abuse. For example, “in a law suit concluded on November 11, 1999, the judge upheld most of the new notice for the exemption but struck down the interest rate ceiling which was set at ten times the prime lending rate of that time” (Ebony Consulting International (Pty) Ltd, 2000).

After concerns by government the Micro Finance Regulatory Council (MFRC) was established; its purpose was to manage the sector. Kelly-Louw (2008) notes that many of the laws promulgated for this purpose, were open to interpretation, and poorly enforced. This very often resulted in selective disclosure of credit terms, where some credit providers received special treatment as opposed to others. The result was little or no consumer protection. This situation required highly comprehensive legislation that would ensure oversight, enforce disclosure and information sharing, eradicate reckless lending practices by looking at customer affordability and protect consumers from over-indebtedness.

1.6 Organization of the study

An overview of the content of the different chapters is outlined below.

Chapter 2: Literature Review: a review of literature on the relationships between over-indebtedness levels in South Africa as well as how these compare with other countries.

Chapter 3: Methodology: the theoretical framework followed. This encompasses the various data sets extracted as well as the quantitative methodology used in order to extrapolate quantitative outcomes based on the relevant data.

Chapter 4: Data Analyses: the quantitative results and interpretation of the findings. The research findings and conclusions are also covered in this chapter.

Chapter 5: Summary findings and conclusions based on the quantitative analysis done. This includes a brief recommendations section. Areas for future research are touched on and final conclusions are drawn.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

There are many different reasons for the high level of over-indebtedness in South Africa. Sudden access to unsecured and short-term credit in the early 1990s spurred on government to tighten up regulation to manage the potential exploitation of borrowers by certain types of lenders. The literature suggests a variety of motives for increased levels of over-indebtedness, broadly covered in the review below, with a specific focus on the indebtedness levels in South Africa. This review also compares literature on worldwide indebtedness levels and touches on a wide variety of theories that could explain some of this variation. However, the focus is on research that is connected to credit and, more specifically, unsecured credit within South Africa.

2.2 Overview of literature

With regard to household savings in South Africa, the literature suggests a variety of different factors that have an impact on household savings. Hurwitz & Luiz (2007) find that there were many motives that influenced low savings rates within South Africa. They hold the view that one needs to take a long-term perspective on debt and consumption, using the life cycle theory. What they infer from this theory is that the sample population that was studied, had a different view on savings. They viewed expenditure on credit rather as future earnings instead of a proportion of current earnings. This is important in the context of savings as this describes a certain theoretical framework around household savings. According to Feldstein (1976), “the life cycle theory is the central idea in the modern theory of savings” (p.1). He finds that savings is fundamental in this theory. He relates savings to the different ages of the population of the economy, comparing savings levels among younger workers and older retirees. The finding is that the younger workers earn more and hence save more as opposed to retirees who are no longer saving.

Mckinsey (2012) reports that many urban Africans have a marked tendency to save their money. It was found that 75 percent of those with a bank account reported saving every month. This points to a robust savings culture existing within Africa. The report mentions multiple social and cultural reasons for this savings behavior. Some 31 percent reported that they put aside funds for emergencies and 17 percent said they saved for specific purchases. Even among the poorest classes

there was a strong inclination to save money; 76 percent of these consumers actively did so. The McKinsey report also found that, compared to people from urban areas in western countries in Europe and the United States, in Africa there is a much lower percent with any formal credit agreements. Although many factors influence these findings, the take out from the report was that in as much as there is a savings culture within Africa, access to credit is a major stumbling block for many in terms of wealth creation. In this context these markets remain highly underpenetrated in terms of credit products.

In 2012, Merrill Lynch commissioned a report on the South African banking industry. One of the key findings in the report was that although South Africa was not experiencing a bubble in unsecured credit, they did foresee risks to volume and balance growth going forward. The findings of this report overall translated to a significant slowdown of credit uptake. Among the key determining factors mentioned were increased regulation and further competition from the bigger, more established, banks.

The report stated “the recent increase in market penetration has been driven by very strong growth in the run up to the introduction of the National Credit Act (NCA). The growth was driven by an increase in average loan size and a large increase in volumes as banks tried to secure long-term clients.” (Merrill Lynch, 2012, p. 3) Although the NCA was meant to decrease credit abuse and limit reckless lending, in the run up to the implementation of the NCA lenders were granting higher levels of credit to increase market share because they were unsure what would happen post implementation. This research used data taken post implementation of the NCA to measure the impact of this as well.

Schraten (2014) finds that in as much as the promulgation of the NCA was, in a large part, to protect the consumer and create a competitive credit market, parts of it were slanted towards unsecured lending, often resulting in over-indebtedness. He further proposes that credit counseling could level the information asymmetry problem mentioned in this research. He also explores various options such as credit amnesty which intends to reintegrate over-indebted people back into the credit market, as is evidenced in developed societies.

The literature raises important points in the context of this research. Feldstein (1976) finds,

through the life cycle theory, that younger people save more and earn higher salaries in a growing economy. This links to the McKinsey (2012) findings that there is a culture of savings within the African continent, where the median age is 19. One of the things one could look at is whether high debt levels are eroding people's savings. In his study on savings determinants in South Africa, Ocran (2017) finds that financial sector deepening has a negative influence on household savings levels. This is important, as one of the key factors that occurred in the early 1990s was access to unsecured credit and financial sector deepening.

2.3 Theoretical Frameworks on over-indebtedness and unsecured lending

Not many theoretical frameworks cover over-indebtedness and unsecured lending. Research undertaken by Braucher (2006) describes the various influences on over-indebtedness and classifies the potential influences on bankruptcy filings into two categories: structural and cultural. A downside to this framework is that Braucher does not consider adverse factors or demographic characteristics. In addition, consumer demographic characteristics are considered important. In particular, a lifecycle effect is noted, with younger individuals more likely to be classified as over-indebted relative to older people (Bridges, 2004). This point contradicts Feldstein (1976) who notes that younger people have a higher likelihood of saving their disposable income. Braucher (2006) proposes a dual perspective framework which looks to include adverse events and demographic characteristics and is used by governmental policy makers mainly when deciding on a debt relief system, over-indebtedness and bankruptcy risk at national level.

The standard framework that is often used when analyzing consumption is the Life Cycle-Permanent Income model (LC-PI). Modigliani (1970) notes that "the (LC-PI) has become the dominant conceptual framework for understanding the nature of the consumption saving behavior of the representative consumer and, under special circumstances, the aggregate consumption saving behavior in the economy. The simple LC-PI model is based on a set of well-known assumptions about the behaviors of the representative consumer and the institutional setting, such as the consumer being a rational, far-sighted planner and there being unrestricted access to consumer credit" (p.199).

Apart from the Life Cycle-Permanent Income model, no significant literature has helped understand the irrational aspects of debt accumulation, although there are many theories that address the reasoning that drives different behaviors which lead to over-indebtedness. Bayai (2017) notes, “The profit incentive theory (PIT) is based on the idea that the use of commercial funding sources at any stage of the micro finance institutions (MFI) evolution enables MFIs to meet the microfinance promise” (p.66). The use of commercial funding raises cost consciousness, efficiency and outreach. In concurrence with the institutionalism paradigm, the PIT maintains that donor funding is limited in amount and thus cannot fund microfinance on a mega scale given the increasing demand for microfinance.

Bogan (2012) also finds that there is a vast difference between MFIs, based on funding sources. Many for-profit MFIs have had to push for profits and revenue optimization whilst cutting costs, while MFIs that are funded by grants and other developmental organizations do not chase profits to the same extent but have more of an outreach agenda. These MFIs rather opt for developmental depth by serving the poorest and rural clients.

2.4 Studies on consumer credit and household savings

Evidence of the PIT is reflected in the research of Bogan (2012) which finds that there is increasing international pressure on MFIs to shed subsidies and grant financing. His research finds causal evidence supporting the assertion that increased use of grants decreases efficiency. The major institutions, such as ACCION International, have made considerable efforts to link MFIs with equity financiers and with debt financing, as well as other commercial funding sources. This has provided an avenue for MFIs to seek independence from grants and subsidies.

A study done for the South African Reserve Bank (SARB) in 2000 notes that an inverse relationship can be expected between increases in households’ use of consumer credit and their saving over time. Prinsloo (2000) notes that in South Africa in recent years there has been a significant increase in household indebtedness as a percent of disposable income. The percent noted (77.8%) is clear evidence that a huge proportion of household income is being used to service debt. This is a statistic of great concern both to the householder and to the economy.

Bayai (2017) observes that aggressive lending practices pursued by commercially funded MFIs have resulted in massive growth for unsecured loan portfolios which consist mainly of poorer borrowers and people who have no other option for their credit needs. Unsustainable growth like this has a major impact on both banks as well as MFIs. This phenomenon not only impacts business but has a far greater societal impact. Ntsalaze (2016) finds that debt was a major factor behind the protest actions against the big mining houses in the platinum belt for better pay and increased wages, actions that led to the many deaths in Marikana. Many of the miners owed money due in high loan installments because of the interest charged by unregulated micro-lenders in that region.

This finding is echoed by Rom (2013) who notes “There is a definite line between the benefits of access to finance and the looming dangers of abuse. The Banking Association of South Africa (BASA) has heightened its awareness as to the effects of the uptake in the local context and will present proposals for banks to improve their management for unsecured lending. These proposals aim to ensure effectiveness and efficiency in the credit market and further protect consumers from the evils of over-indebtedness, which were brought to the attention of the general public during the now infamous Marikana shootings” (p.5).

Hurwitz & Luiz (2007) find that the increased access to credit by the larger South African population was in fact due to the political transition that South Africa was undergoing at the time. The legislative changes that enabled this ‘financial sector deepening’ were seen as good sign by the government and were welcomed by many. The authors also find, however, that whilst there was major positive growth in credit consumption in South Africa, the same could not be said for growth in incomes and this led to increasing debt levels. They further note, “according to the Department of Trade and Industry (DTI), most of South Africa’s R362 billion credit markets consist of mortgages, vehicle finance and overdrafts/credit facilities at moderate rates. However, the bulk of South Africa’s consumers do not have access to these products. Most only qualify for in-store cards, hire purchase or micro-loans, all at higher interest rates. In 2003, 72 per cent of credit was extended to about 15 per cent of the population while 67 per cent of the population enjoyed only 6 per cent of total credit granted” (p.112).

Figure 6 below illustrates credit granted by credit type over the period under review, with significant increase in unsecured credit from 2008 to 2016. In support, Jacobs (2010) argues that many low-income consumers tend to be materialistic in nature and thus they incur more debt. His study also suggests the presence of statistically significant relationships between consumers' indebtedness levels and the variables of age and gender. He further finds, however, that there is no statistical significance between materialism, the person's income and determining a consumer's level of indebtedness.

According to Nyaruwata (2009), "the debt-to-income ratio is an aggregate percent and, as a result, does not give us any indication of the relative dispersion of indebtedness" (p.4). Daniels (2001) analyses the underlying trends in indebtedness through survey data. His study uses the 1995 Income and Expenditure Survey and 1999 Wefa Southern Africa income and expenditure data. In this, he states "consumption expenditure devoted to housing, food and beverages, and clothing represents a majority proportion of expenditure in all but the two most wealthy income groups, implying that low cash flow levels are sticky, and thus the demand for debt is highly inelastic at the bottom and middle end of the income distribution. Also the ability to repay debt is low and declining for many income groups at the bottom end of the income distribution between 1995 and 1999 owing to the combined effects of low and decreasing cash flow levels and rising housing costs, which have resulted in substitution shifts away from durable goods and towards consumer goods in the consumption schedule" (p.19). He also finds "dependence on indirect income at the bottom end of the income distribution is material but unpredictable, owing to erratic changes in indirect income between 1995 and 1999, which further implies that the informal sector cannot sustainably be used to buffer income levels in the medium-term" (p.19).

May (2004) finds a difference when comparing homeowners and renters. Homeowners have bigger household debt levels compared to renters. According to this study, the majority of those who are over-indebted are spending more than a quarter of their gross income on servicing debt. A key indicator in this research is the impact of mortgage credit on savings level compared to renters who do not service the home loan.

Schussler (2003) concludes that if one observes the strong annual increase of 54 per cent in the number of bad debt judgments issued in South Africa, combined with a 57 per cent fall in the average value of the debt, then lower-income earners increasingly incurred debt. He finds that the majority of the debt problems, estimated at over 40%, came from loans. The balance was broken down into retail store credit, credit facilities and credit cards. The dynamics of indebtedness in different sectors of the market are likely to be importantly distinct. Figure 6 below illustrates the total credit, granted quarterly per type of credit.

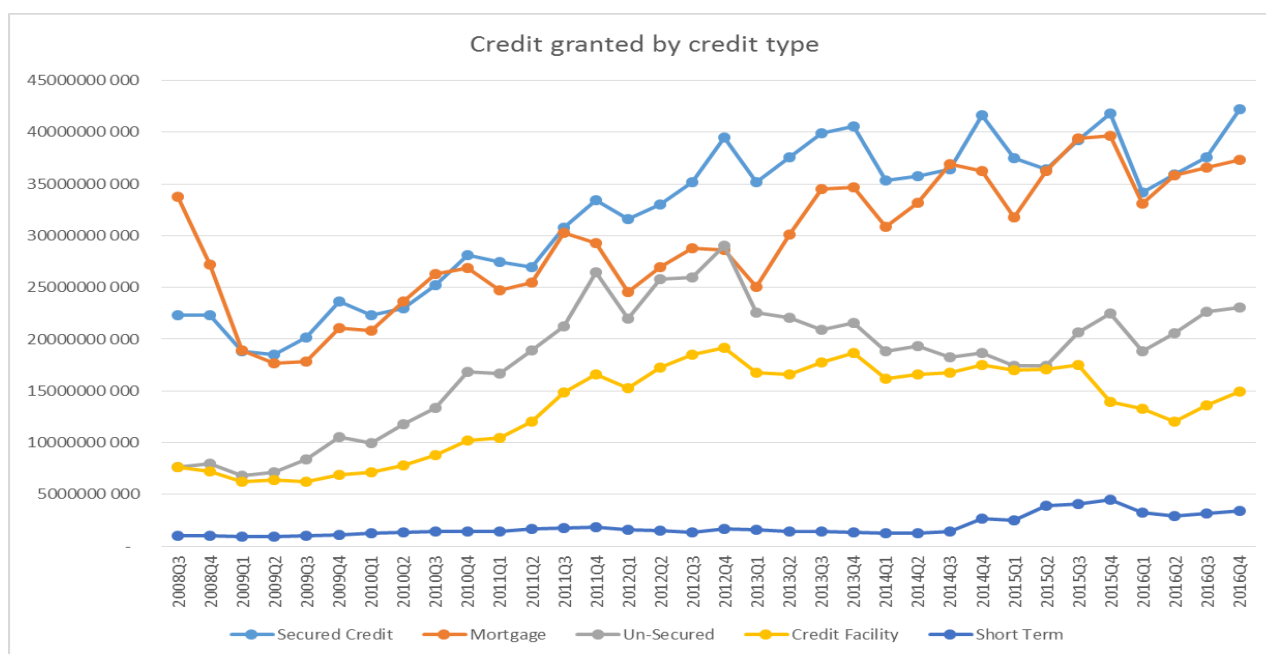


Figure 6: Credit granted by type

Source: Author's compilation using NCR quarterly bulletin

In the higher market segments (people with higher salaries), there is greater access to mortgages and other formal credit. For people in these higher segments who take on debt to purchase more fixed assets, the issue of over-indebtedness can easily be reversed. If they find themselves no longer able to afford the purchase, they have the ability to liquidate the asset and adjust spending habits. The issue, however, is that people who are accessing unsecured loans or credit facilities do not find it easy to adjust or liquidate the asset because they do not have an underlying asset as security for these loans. The borrower in these cases has to continue servicing the loan or facility until it is paid up, or face the threat of legal action, blacklisting at credit bureau or judgments on their credit profiles.

Merrill Lynch (2012) reports that since the late 2000 there has been a significant increase in unsecured lending targeted towards the middle income earner. They observed a partial substitution process of secured lending by unsecured loans. One reason for this was the implementation of the NCA in 2007. Under the NCA, a market for high interest loans in South Africa was created when the Exemption of the Usury Act, was scrapped. This resulted in all loans being governed by the NCA and all lenders had to register with the NCR.

Prior to the NCA, the Usury Act chiefly governed the consumer credit market in South Africa. The Usury Act created a lending rate ceiling for credit for all transactions, except those covered by the exemption. Nyaruwata (2009) finds that “this exemption notice had spurred significant growth in financial services that targeted the middle segment of the income spectrum, as firms were able to obtain significantly higher interest rates and to exploit the interest rate arbitrage opportunity. This rapid proliferation, in conjunction with reckless lending practices, higher interest rate cycles and an increasingly consumption orientated culture contributed to a momentous rise in the incidence of households reporting themselves as financially distressed” (p.4). Ntsalaze (2016) notes “In South Africa, academic literature does not provide a conceptual, comprehensive definition for over-indebtedness. Nonetheless, it is clear that definitions are derived from the indicators or measurements that are being used” (p.81).

2.5 Conclusion

To summarize the literature in this chapter, there have been a range of studies on savings and over-indebtedness as well as unsecured credit. These topics are relevant to this research because they provide breadth of knowledge. Significantly, most studies indicate the importance of household savings in developing economies. Likewise, many also mention the importance and the role of credit in developing countries. The literature also touches on theoretical frameworks around savings and credit. Discussion also covered the impact of credit and unsecured credit, the current legislative frameworks that are in place in South Africa and how this legislation is dealing with over-indebtedness. The literature review also revealed many crucial factors which support the reason for this study because previous research has shown that high credit growth erodes a culture of savings. The literature also shows that economic shocks impact people’s ability to repay loan installments which results in over-indebtedness.

CHAPTER THREE

METHODOLOGY

3.1 Introduction

The main purpose of this research and the research questions is to add to the current body of knowledge and extend our understanding with regards to the impact of recent credit growth by credit providers. More specifically the research investigates the different credit types and the impact these have on household savings levels in South Africa. This chapter discusses the methodology used in this study as well as the models used for testing the two hypotheses presented. The first section describes the steps involved as well as the data used in the analysis. The research approach used to determine the hypotheses is then described. The subsequent sections explain the quantitative methods used to establish the hypotheses. In quantitative research, as with qualitative research, the primary goal is to test the hypotheses. In this case, the researcher endeavored to quantitatively establish the relationship between unsecured lending and household savings levels in South Africa and whether this is a positive or a negative relationship.

3.2 Sample size and data period.

This study sampled the total South African credit variable data per quarter over an 8-year period. The data was extracted from the NCR website, as well as using the South African population's household savings data per quarter over the 8-year period of 2008 to the last quarter of 2016. The household savings data was extracted from the South African Reserve Bank online enquiries portal. As part of the analysis, the credit data extracted was grouped into the various different credit types such as mortgage loans, secured credit, credit facilities, short term credit and unsecured credit. These make up the total credit pool that falls under the NCR.. Quarterly data on total household consumption for South Africa over the same period of time was also extracted and is used within the model selected as one of the determinants of household savings.

The data used in this study is quarterly time series data that covers the period from quarter three 2008 up until quarter four 2016. The selection of data from 2008 is because this data is post implementation of the first iteration of the NCA, and is deemed reliable and relevant for the purpose of this study. Also, as discussed, the data was extracted from the NCR website as well as the SARB online enquiry portal. The level to which these sources of data are appropriate is

significant as this is actual data taken from relevant authority bodies tracking performance of these variables over time. The data extracted from the NCR reports, which pertain to national credit data, presents total credit disbursed per quarter. This data was then broken up by type of credit, and also according to the value of credit disbursed over the period in review. This secondary data was used in the various models in this research for the purpose of testing the hypotheses. The same was done to collate data on household savings levels per quarter. This data discusses the quarterly household savings as a percent of GDP in South Africa and was sourced from the SARB online enquiries portal. As with the credit data, this was also used in the relevant models as the dependent variable. When selecting the data for this analysis, the researcher chose random data for this study. This was done so as to mitigate the risk of sample selection bias and therefore sample selection bias correction procedures, such as the Heckman procedure, were not deemed necessary at this time.

The researcher chose to collect secondary data from quarterly reports extrapolated from the NCR website for data on all credit disbursed nationally. For savings data, quarterly reports were extracted from the SARB for the same period under observation. In the study, secondary data refers to data that was not collected by the researcher. In research, it is commonly accepted that secondary data is usually data from sources such as census data, information collated by government departments, regulatory or authority bodies, or from Stats SA.

The secondary data used in this study was collated by the NCR based on mandated monthly credit reports received from all credit providers registered with the NCR within South Africa as well as the SARB which tracks all banking and transactional information on savings accounts for all registered banks in South Africa. Primary collection of this data was not feasible as the researcher did not have access to this type of data source and it made sense to access this data from websites of relevant organizations. The data extracted from the downloaded reports was used as raw data for the quantitative analysis.

3.3 Data variable definitions.

- Unsecured credit - Unsecured credit transactions include all transactions in respect of which the lender does not have any security (other than credit facilities or short-term credit).
- Secured credit - This credit type includes a range of secured credit agreements, such as pension-backed loans, insurance-backed loans, retail furniture accounts and motor vehicle accounts and consists of all credit that is secured, other than mortgages and credit facilities.
- Mortgage credit - this pertains to loans that are backed by property, usually a fixed property such as a house or land.
- Credit facilities – These can be defined as credit or garage cards as well as store cards, overdrafts or revolving facilities.
- Short term credit – these are all loans with a term less than six months.
- Total credit is the sum of all credit types as defined by the NCR.
- Household savings data was obtained from quarterly GDP reports previously published by the SARB and extracted using the SARB online enquiries portal.

For the purposes of this study, the above variables are made up of all credit disbursed for the quarter and broken down into the various different credit types described above. In this research a quantitative methodology was used to test the relationship between unsecured credit and household savings levels. When collecting data that could be analyzed using quantitative means, Easterby-Smith (2002) claims, that the researcher will have either primary data or secondary data. There are advantages and disadvantages to using both and neither can be claimed to be more correct. In this research we used secondary data extracted from various regulatory sources, as collecting raw data of this data would not have been possible.

Data Methodology

This study used the total population variables per quarter. This was due to the time constraints and resource limitations because it was not possible to manually collate all data from all financial institutions in the limited time period. We also opted not to do sampling so as to have as enough data for a meaningful outcome. Statistics data sampling is a statistical analysis technique used to select, manipulate and analyze a representative subset of data points in order to identify patterns

and trends in the larger data set being examined. If a sample is not randomly selected, it will probably be biased in some way and the data may not be representative of the population. It is noted that if one wants to achieve the research objectives and the issues to be investigated, it is most appropriate to generate measurable and testable data whilst being as objective and unbiased as possible. In some studies a non-probability sample of the population can also be used. Saunders (2009) asserts that a non-probability sample is most often used when adopting a case study strategy. A non-probability sample is one in which the probability of each case being selected from the total population is not known (Oppenheim, 2000).

3.4 Analytical Framework

The nature of this study was quantitative. The aim of the research was to test the impact of the predictor variable on the criterion variable using quantitative methods. The data used is time series data which comes with temporal ordering, as opposed to cross-sectional data. This is important to note when doing research of this nature so as to make sure the correct statistical methods are followed when working with time series data.

Because this research employed quantitative methods, the data used was in the form of numbers or was numeric. This quantitative data was collected in the form of quarterly data compiled by NCR reports downloaded from the NCR website, as well as quarterly compiled savings data extracted from SARB online enquiries. These quarterly reports contain time series data on all credit taken out by customers per quarter which is then broken down into various different groupings such as the various credit providers, credit volumes and amounts taken, and the various credit products.

As is normal when utilizing data that is extracted over time, the researcher used time series analysis as a basis for this study. Used in econometrics, time series data often appears to be non-stationary which results in statistical issues when used in analysis. It is also known that the use of non-stationary data to run regression may produce spurious regression. Various statistical tests are used to detect the presence of non-stationarity. In the past decade there has been a huge amount of attention paid to testing relationship levels between different variables in economics. These types of analysis mainly employed the use of co-integration techniques. Given the hypotheses of this study and the quantitative approach followed, it was observed that a great deal of research reported

in the literature adopted the three-stage methods approach to this type of study. This informed the methodology adopted for this analysis as well.

Dhungel (2014) uses the unit root test, co-integration test and, finally, Error Correction Model as the econometric tools to establish the relationship between electricity consumption and foreign aid. This study follows in the same manner as Riba (2016) who estimates the relationship between taxes and economic growth with the linear time-series model as used by Han et al. (2010). Alhassan & Fiador (2014) follow a similar structure by examining long running causal relationships between insurance penetration and economic growth in Ghana. Following this, it could be inferred that using the three-stage method to test for relationships between unsecured credit and low household savings as percent of GDP would produce the best results as this method is most often used when testing time series data in econometrics.

The researcher then tested the causal relationship between savings to GDP levels and unsecured credit. This was examined using the Granger Causality test. As this research was testing for a relationship between total credit and household savings and if the various credit types have an impact on savings levels. Household savings as a percent of GDP was used as the dependent variable and the various proportionate credit types were used as the independent variables. Total credit, as a percent of GDP as this was what we were testing for in this analysis, as well as household consumption as a percent of GDP, which is a determinant of household savings and could be used as a control variable in this study.

Income could also be used as a control variable in this study as it is commonly accepted as a key determinant for savings. Likewise consumption can also be used as both can be seen as factors that are important in savings. As mentioned above, individual testing was done on all of the various credit types such as secured credit, mortgage, credit facilities, unsecured credit and short term credit as independent variables because these variables collectively make up the total credit pool within South Africa and are important in order to test the hypotheses. The second part of the analysis is also to determine if the increase in any of the various different credit types has an impact in household savings in South Africa.

The general model used in this research is as below:

$$Sav_t = \beta_0 + \beta_1 Credit + \beta_2 Cons + \varepsilon_t \quad (1)$$

This is then transformed by the logarithms and the log linear equations used as described below:

$$Sav_t = \beta_0 + \beta_1 \ln(Uns) + \beta_2 \ln(Cons) + \varepsilon_t \quad (2)$$

$$Sav_t = \beta_0 + \beta_1 \ln(Sec) + \beta_2 \ln(Cons) + \varepsilon_t \quad (3)$$

$$Sav_t = \beta_0 + \beta_1 \ln(Mor) + \beta_2 \ln(Cons) + \varepsilon_t \quad (4)$$

$$Sav_t = \beta_0 + \beta_1 \ln(Credf) + \beta_2 \ln(Cons) + \varepsilon_t \quad (5)$$

$$Sav_t = \beta_0 + \beta_1 \ln(Short) + \beta_2 \ln(Cons) + \varepsilon_t \quad (6)$$

Variable - **Sav** = Household savings to GDP,

Variable - **Credit** = Total credit as a percent of GDP,

Variable - **Uns** = Unsecured credit as percent of total credit,

Variable - **Sec** = Secured credit as a percent of total credit,

Variable - **Mor** = Mortgage as percent of total credit,

Variable - **Credf** = Credit facilities as percent of total credit,

Variable - **Short** = Short term loans as percent of total credit,

Variable - **Cons** = Household consumption as percent of GDP,

ε = Error term (this is the residual term between observed and estimated values),

t = time,

β_0 = (Intercept),

β_1 = (Slope coefficient) these are parameters that are to be estimated and represent long run coefficients.

3.5 Model Estimation

Following the convention in time series analysis, this study first examined the unit root properties of the variables. This was followed by the co-integration approach for examining the existence, or otherwise, of a long-run causal relationship between the variables used in this study and the resulting error correction model. The Granger Causality test was used to determine the directions of the causality. Each of these techniques is described below.

Unit root test

The unit root test is most commonly used to test for stationarity in data. The conventional

Augmented Dickey Fuller (ADF) test is one of the common methods used to test for stationarity in time series data. Because the data used was collated over time, it was important to test for stationarity in the data. The model used in this research tested the null hypothesis that the series has unit root. This is evidenced by a test statistic that is less than the critical value at 1%, 5% and 10%. The null hypothesis was rejected when the test statistic was greater than the critical value. This indicates that the series was stationary and least square regression (OLS) could then be performed on the variables.

ARDL bounds test for co-integration

In this research, the ARDL bounds test was used to test for co integration. Persaran and Shin first developed the ARDL bounds testing technique in 1999. This was later extended by Persaran, Shin, and Smith (2001). Based on the study done by Belloumi (2014), they note “the ARDL technique has the advantage of providing consistent estimates of the long run coefficients that are asymptotically normal irrespective of whether the underlying regressor is (1) or (0)” (p.269). The ARDL model has three advantages in comparison with previous and traditional co-integration methods. The first one is that the ARDL test does not require all the variables under study to be integrated to the same order and it can be applied when the underlying variables are integrated of order one, order zero or fractionally integrated. The second advantage is that the ARDL test is relatively more efficient in the case of small and finite sample data sizes. The last and third advantage is that by applying the ARDL technique, unbiased estimates of the long-run model can be obtained. The use of this approach in this research was supported by the short data span, as there were a maximum of 34 observations. Besides that, the ARDL approach is more efficient for small sample datasets. It is also noted by Belloumi (2014) that the OLS estimators of the short run parameters are consistent and the ARDL based estimators of the long run coefficients are super-consistent in small sample sizes.

Error correction model

In this research, the Error Correction Model (ECM) was used to investigate the short as well as long run equilibrium. The ECM tells us the degree to which the equilibrium behavior drives short run dynamics, according to Dhungel (2014). This author also finds that equilibrium relationships, in turn, have implications for short run behavior, and also the speed in which one or more series moves to restore equilibrium.

Granger Causality test

Once the co-integration analysis had been completed and it was established that the variables were co-integrated, the ECM-Granger Causality test was used to determine the direction of the causality between the variables. It should be noted that if co-integration exists, it has to be bi-directional, uni-directional or with neutral causality between the variables.

3.7 Conclusion

This chapter focused on the research methodology and set of data that this study used. Further, it explained how the research was done. As discussed, the three-staged method was adopted for this analysis using the unit root test for stationarity, ARDL and bound testing for co-integration and then the error correction model for long run and short run was investigated. Finally Granger testing was used for causality testing. This methodology is commonly used in econometrics when working with time series data so as to not get spurious results. Having presented the methodology and discussed the data used, the study now reports the results of this research and analyses the results in the next chapter.

CHAPTER FOUR

DISCUSSION OF RESULTS

4.1 Introduction

This chapter presents the analysis of the results generated by the models used in the empirical study. The chapter comprises the analysis of the descriptive statistics, correlation and regression outcomes as well as directional Granger causality test results.

4.2 Descriptive Statistics

Table 1 illustrates the descriptive statistics of the variables defined in Chapter Three and used in this study. The analysis comprised 34 observations for each of the following proportional credit types, as well as household consumption, total credit and household savings. The makeup of the data is as follows: credit facilities as a percent of credit; unsecured credit as a percent of credit; mortgage loans as a percent of credit; secured credit as a percent of credit; short term credit as a percent of credit; total credit as a percent of GDP; household consumption as a percent of GDP; and household savings as a percent of GDP.

As can be seen in Table 1 below, the mean for the mortgage and secured credit is significantly higher than the means for short term credit, credit facility and unsecured credit. This indicates that secured credit, in most instances, constitutes the majority lending facility in a quarter (in percent terms). This, however, seems to fluctuate quite significantly. This is specifically so within the mortgage lending space where the range of 0.224 is slightly higher than unsecured credit at 0.148 relative to the other credit types. This range, however, could be due to an outlier in the data, as the coefficient of variation for mortgage lending of 0.139 suggests a low overall variation compared to the unsecured lending 0.188 which is indicative of a lower relative spread.

Due to the mean and median of each variable being relatively close to one another for each of the variables, the data seems to be symmetric (i.e. not skewed to either side). More evidence for an outlier in the mortgage data is the inter-quartile range (IQR), which is very similar to the IQR for the unsecured credit types.

The outlier in the mortgage data also seems to affect the measures of skewness and kurtosis for this variable (suggesting a skewed distribution, with a wide spread). However, this does not seem to be the case according to the IQR and mean/median of mortgage lending.

Table 1: Descriptive Analysis

	<i>Mean</i>	<i>Median</i>	<i>Minimum</i>	<i>Maximum</i>	<i>Standard Deviation</i>	<i>Skewness</i>	<i>Kurtosis</i>	<i>Count</i>
Short Term	0.01955	0.01755	0.01178	0.03672	0.007	1.06373	3.14988	34
Credit Facility	0.13827	0.14349	0.1052	0.16842	0.02065	-0.10436	1.40936	34
Un-Secured	0.18583	0.18367	0.10586	0.24672	0.03507	-0.0742	2.67569	34
Mortgage	0.31689	0.31714	0.24231	0.46685	0.04435	1.07126	5.61418	34
Secured Credit	0.33946	0.3383	0.30809	0.3765	0.01742	0.18678	2.60723	34
Credit to GDP	0.03128	0.0315	0.0226	0.0394	0.00418	-0.27245	2.65351	34
Consumption to GDP	0.16637	0.1648	0.1571	0.1803	0.00623	0.79006	2.4902	34
Savings to GDP	0.16535	0.1645	0.144	0.189	0.01328	0.00169	1.81903	34

Source: Author's compilation using NCR and SARB data

4.3 Correlation and multi co-linearity

A correlation matrix for all variables was obtained and is presented in Table 2 below. The strength of correlation speaks to variable selection within the model, with correlation cut-offs for purposes of this study set as follows. Should the correlation value obtained be a value of 0.70 and higher, it is considered to be strong and this indicates normality. If, however, the correlation value lies between 0.35 and 0.70, it is considered to be fair and if the correlation value is less than 0.35, it is considered to be weak. Generally, in statistics a positive correlation value indicates a direct association and negative values would then indicate an inverse association.

To summarize, the primary objective of this study seeks to determine the presence of a relationship while the secondary objective considers the nature of the relationship. Table 2 below outlines the correlation matrix for all variables tested. The correlation tested the levels of savings to GDP, which was significantly linked to secured credit as percent of total credit, credit facility as a percent of total credit, unsecured credit as a percent of total credit and mortgages as a percent of total credit. Based on the values within the matrix, the first line of test for normality and variable selection was assessed by evaluating the values under the first column between savings to GDP and each of the independent variables.

Table 2: Correlation Matrix

	Short Term	Credit Facility	Un-Secured	Mortgage	Secured Credit	Credit to GDP	Consumption to GDP	Savings to GDP
Short Term	1.							
Credit Facility	-0.317*	1.						
Un-Secured	-0.149	0.581***	1.					
Mortgage	0.118	-0.765***	-0.874***	1.				
Secured Credit	-0.028	-0.282	-0.417**	0.072	1.			
Credit to GDP	-0.249	0.655***	0.619***	-0.505***	-0.636***	1.		
Consumption to GDP	0.001	0.093	0.169	-0.152	-0.065	0.533***	1.	
Savings to GDP	0.085	-0.575***	-0.399**	0.465***	0.26	-0.513***	-0.147	1.

Source: Statplus output using NCR and SARB data

*** Denotes statistical significance at 1% level, ** Denotes statistical significance at 5%, * Denotes statistical significance at 10%.

The aim of the analysis was to test for the relationship between savings level to GDP and unsecured credit. From the above correlation matrix, a negative correlation for the credit facility variable at -0.317 can be observed which was also found to be statistically significant at 10 percent. There is also a negative correlation value for the unsecured variable, which reflects as -0.399 and was also found to be statistically significant at 5 percent. Additionally, as both the values are negative, this indicates an inverse or negative relationship between the savings to GDP and the two unsecured credit variables: namely unsecured credit and credit facilities. The other three variables, i.e. short term mortgage and secured credit, are positive and reflect as 0.08, 0.46, and 0.25 respectively. Mortgage credit and total credit were found to also be significant at 1 percent, while short term credit and secured credit were not statistically significant. It is also interesting to note that although consumption to GDP reflects a negative R-value at -0.14, it is not significant as opposed to total credit, which, at -0.51, is highly significant.

The relationship between unsecured credit and household savings to GDP, as well as total credit to GDP and household savings to GDP, is statistically significant at a 5% and 1% level respectively. In order to better understand the relationship between household savings levels and the various credit variables tested, further time series analysis such as the ADF unit root test was undertaken to test the data for stationarity, as well as the bounds test as well as the ECM test was undertaken in this study. The causality test was also run to test the bidirectional cause of each variable on household savings levels.

4.4 Unit root testing

The conventional Augmented Dickey-Fuller test for unit root was used to test for stationarity in the data. The data is stationary when the mean and constant become stationary over time. This is a key requirement when analyzing time series data. It is also important when doing bounds testing that the variables are stationary, either at level or where first differenced. This has to be done to avoid spurious results. The results of the unit root test, as illustrated in Table 3 below, show that all the data variables become stationary at first differenced I (1) except the variable consumption, which becomes stationary at level I (0). Also worth noting is that out of all the variables tested, only the unsecured variable had a Schwarz Information Criteria (SIC) lag level of 1, with the other variables all having SIC lag levels of 0. Prior to the unit root test, a visual test was done on the data to determine model type. Mortgage, unsecured and short-term credit utilized the model without constant and trend. This was evident when a visual inspection of the graphed data was done as well (See Appendix 1 to 5 for graphs of data variables.) The variables of savings, consumption, credit, credit facility and secured credit had a constant but no trend. This model type was used in the E-views models to determine unit root. The type 1 test on E-views was utilized on the ADF unit root model as illustrated in Table 3 below.

Table 3: ADF Unit root results

	SIC Lag length	Test Statistic		CV @ 5%		Model Type		
		I(0)	I(1)	I(0)	I(1)	I(0)	I(1)	
Savings to GDP	0	-1.889	-6.725	-2.954	-2.957	FTR	Reject	*
Consumption to GDP	0	-6.663	-10.142	-2.954	-2.957	Reject	Reject	*
Credit to GDP	0	-2.144	-5.822	-2.954	-2.957	FTR	Reject	*
Credit Facility	0	-1.631	-5.198	-2.954	-2.957	FTR	Reject	*
Mortgage	0	-1.935	-3.301	-1.951	-1.952	FTR	Reject	**
Secured	0	-2.844	-6.013	-2.954	-2.957	FTR	Reject	*
Un-Secured	1	-0.157	-2.276	-1.952	-1.952	FTR	Reject	**
Short term	0	-0.323	-5.387	-1.951	-1.952	FTR	Reject	**

Note: *FTR = Failed to Reject $H \neq 0$* ;

* indicates model without trend; ** indicates model without constant or trend. Source: Output of ADF

4.4 ARDL bounds testing for co-integration

For the ARDL bounds test the null hypothesis is that co-integration does not exist. To test this, the two sets of critical values were compared for a given significance level, as used by Persaran (1995). The null hypothesis of no co-integration is rejected when the value of the f-statistic exceeds the upper bounds of the critical values of the particular significance level, while it is accepted if the f-statistic is lower than the lower bounds of the critical values. If the f-statistic is in between the lower bounds and upper bounds then the co-integration test is inconclusive.

In the model, a maximum lag of 1 for consistency for the conditional ARDL vector error correction model was chosen using the SIC criterion. The calculated f-statistics are reported in Table 4 below where the various credit types are run as ARDL models where they are considered, and savings is used as the dependent variable. From these results we can see that the models 2, 3 and 6 that were tested: i.e. the variables of unsecured credit, secured credit and short term credit respectively found that the null hypothesis of no integration cannot be rejected because the f-statistic falls below the lower bound of the critical values in the Persaran table, which reflects a short-term relationship. This is opposed to the rest of the models, where we reject the null hypothesis of no integration and accept that there is a long run relationship over time because the f-statistic value of those models falls above the upper bound of the critical values found in the Persaran tables. This is somewhat intuitive as it makes sense that short-term credit and unsecured credit would impact household savings in the short run. It is interesting that the model indicates that secured credit also has a short run impact.

Table 4: Bounds test results

	F-stat	I(0)	I(1)	Confidence Level	Lag	Outcome	Persaran Table
Model 1	4.18	3.62	4.11	0.05	1	Reject	CI(ii) Case II
Model 2	2.14	3.62	4.11	0.05	1	FTR	CI(ii) Case II
Model 3	2.68	3.62	4.11	0.05	1	FTR	CI(ii) Case II
Model 4	5.3	3.62	4.11	0.05	2	Reject	CI(ii) Case II
Model 5	5.92	3.62	4.11	0.05	1	Reject	CI(ii) Case II
Model 6	2.022	3.62	4.11	0.05	1	FTR	CI(ii) Case II

Source: Author compiled e-views output of bounds test

F-statistic > upper bound value results in variables having long run relationship.

F-statistic < lower bound value results in variables having short run relationship.

H0 = variables have long run relationship; H ≠ 0 variables do not have long run relationship

Note: Model 1(Total Credit), Model 2(Unsecured), Model 3(Secured), Model 4(Mortgage), Model 5(Credit Facility), Model 6(Short Term)

4.5 Long run and short run regression results

The long run estimates are presented in Table 5 below. Here we can observe that the credit variables had both a positive and a negative relationship with savings. It is evident, however, that total credit has a definite negative relationship with savings in the long run, as is reflected in model 1. The credit variable has a negative coefficient of -1.336 at a 5% significance level. We also observe that mortgage (model 4) has a positive relationship at a 10% significance level at 0.093. The last credit variable, which also has a significant relationship with the dependent variable, is credit facility (model 5), which has a negative coefficient of -0.267 at a 1% significant level. The outcomes of the model are interesting in that they also show that some credit types have a positive effect on savings, i.e. secured at 0.11% and mortgage at 0.09%, whereas some have a negative effect on savings, such as unsecured at -0.08%, credit facility at -0.267% and short term at -0.06% in the long run.

Table 5: Estimated Long run estimates using ARDL

		Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
Constant	Coefficient	0.011 **	0.162 *	0.17	0.20	0.206 **	0.158 *
	<i>Std. Error</i>	<i>0.10</i>	<i>0.09</i>	<i>0.12</i>	<i>0.12</i>	<i>0.07</i>	<i>0.09</i>
Credit	Coefficient	-1.336 **	-0.08	0.110	0.093 *	-0.267 ***	-0.06
	<i>Std. Error</i>	<i>0.54</i>	<i>0.05</i>	<i>0.10</i>	<i>0.05</i>	<i>0.09</i>	<i>0.23</i>
Consumption	Coefficient	0.62	-0.51	-0.88	-0.80	-0.41	-0.63
	<i>Std. Error</i>	<i>0.63</i>	<i>0.43</i>	<i>0.59</i>	<i>0.57</i>	<i>0.38</i>	<i>0.45</i>

*Note: Model 1(Total Credit), Model 2(Unsecured), Model 3(Secured), Model 4(Mortgage), Model 5(Credit Facility), Model 6(Short Term); *** Denotes statistical significance at 1% level, ** Denotes statistical significance at 5%, * Denotes statistical significance at 10%.*

Source: Author compiled e-views output of Long run estimates

4.6 Short run estimates and outcomes

The results of the short run error correction terms are presented in Table 6 below. As was observed in Table 5, not all of the credit variables have a negative relationship with savings. This means that they would have a positive effect on savings levels in the short run. This is reflected as 0.09 for secured credit and 0.29 for credit facility. Surprisingly, mortgage credit and credit facility have the most impact on savings levels in the short run across for this model. It is also interesting that of the credit variables tested in the model, unsecured credit, secured credit and short term credit were not significant at 1%, 5% or 10%.

“When running short run estimates to calculate the error correction term for the model, it is important that the coefficient is a negative value and its p-value should be statistically significant for the model to be significant.” (Riba, 2016). All Error Correction Term (ECT) values reflected in Table 6 below are negative values and all p-values are statistically significant at 1%, 5% or 10%.

Table 6: Short run estimates

		Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
Constant	Coefficient	1.45	0.01	9.08	0.01	8.79	5.61
	<i>t-Statistic</i>	<i>1.79</i>	<i>1.44</i>	<i>1.86</i>	<i>2.10</i>	<i>2.22</i>	<i>1.75</i>
D(Credit)	Coefficient	0.46	-0.06	0.09	-0.11	0.29	-0.03
	<i>t-Statistic</i>	<i>0.51</i>	<i>-0.50</i>	<i>0.74</i>	<i>-1.09</i>	<i>1.60</i>	<i>-0.07</i>
D(Consumption)	Coefficient	-0.4	-0.22	-0.26	-0.31 *	-0.16	-0.27
	<i>t-Statistic</i>	<i>-1.31</i>	<i>-1.11</i>	<i>-1.54</i>	<i>-1.80</i>	<i>-0.92</i>	<i>-1.53</i>
ECT (-1)	Coefficient	-0.82 **	-0.76 *	-0.91 **	-1.15 **	-1.08 ***	-0.84 **
	<i>t-Statistic</i>	<i>-2.22</i>	<i>-1.88</i>	<i>-2.39</i>	<i>-2.49</i>	<i>-2.81</i>	<i>-2.25</i>
F-statistic		1.60	1.59	1.69	1.89	2.31	1.52
P-value		0.03	0.07	0.02	0.01	0.00	0.03
Durbin-Watson stat		1.93	1.97	2.02	2.00	1.91	1.98

*Note: Model 1(Total Credit), Model 2(Unsecured), Model 3(Secured), Model 4(Mortgage), Model 5(Credit Facility), Model 6(Short Term); *** Denotes statistical significance at 1% level, ** Denotes statistical significance at 5%,* Denotes statistical significance at 10%*

Source: Author compiled e-views output of Short run estimates

From the results in Table 6, it is evident that the ECT coefficient is negative across the models for all the credit types tested. Additionally, the p-value for model 1, model 4 and model 6 is significant at 5% level. Model 2 and model 5 are significant at 10% and 1% respectively. The ECT coefficient percent shows how quickly the short-term disturbances return to the long-term equilibrium. In model 1, the short-run disturbances from long run were corrected at a rate of 82% per time period towards long run equilibrium. Although the number is slightly high, it could be considered to be indicative of an almost immediate adjustment within the period.

4.7 Causality test

Table 7 below reflects the outcomes of the Granger Causality test on the data and reveals interesting findings. These indicate that unsecured credit, mortgage credit and credit facility cause an increase in household savings as a percent to GDP. This result is in line with expectations and with similar findings by Rogg (2000), in Latin America. Although we find that most of the credit

variables have an effect on savings levels, it is interesting that the variable of total credit has a causal effect on savings as a percent to GDP. This could be explored in further studies on this topic. From these outcomes, we can infer that an increase in unsecured credit causes a decrease in household savings to GDP, as per the research hypothesis. Secondly, mortgage credit and credit facility are other credit types that have a negative impact on household savings levels.

Table 7: Granger causality outcomes.

Null Hypothesis	Lagged	F-statistic	Prob	Result	Outcome
Unsecured credit does not Granger Cause Savings to GDP	1	8.42	0.00	Reject	Unsecured credit causes Savings to GDP
Secured credit does not Granger Cause Savings to GDP	1	0.07	0.78	FTR	
Mortgage credit does not Granger Cause Savings to GDP	1	14.98	0.00	Reject	Mortgage credit causes Savings to GDP
Credit Facility does not Granger Cause Savings to GDP	1	8.91	0.01	Reject	Credit Facility causes Savings to GDP
Short term credit does not Granger Cause Household savings to GDP	1	0.15	0.69	FTR	
Total Credit does not Granger Cause Savings to GDP	1	3.49	0.07	FTR	

Source: Author compiled e-views output of Granger Causality tes

In addition to the statistical outcomes above, all the models used for the analysis in this study had passed the diagnostic tests for Heteroskedasticity, and serial correlation. Appendices 7 to 12 and 13 to 18 illustrate the outcomes for the LM tests for serial correlation and CUSUM tests conducted on the model utilized in this analysis respectively. The CUSUM tests were performed for all models used in this analysis, including the bounds test and co integration test using ARDL models.

The CUSUM tests graphed in Appendices 13 to 18 illustrate the stability of the model and are usually a good indicator of the predictive power of the model. This is confirmed by the stability of the parameters, given all the coefficient values inside the critical bounds. In her evaluation of the various tests employed on the recursive analysis of the stability of linear regression relationships, Dufour (1982) emphasizes the importance of parameter stability in good predictive models.

4.8 Conclusion

In conclusion of this chapter we summarize the outcomes of the various models run in this analysis. The correlation analysis indicates that there was significant relationship between credit and savings. It also shows a significant negative relationship between unsecured credit variable and household savings. The ADF unit root test for stationarity found that all variables become stationary at first differenced I (1) except the variable consumption. The bounds test results reflected that the variables of unsecured credit, secured credit and short term credit respectively found a short-run relationship. Compared to the variables credit facility and mortgage credit which had a long run relationship. The causality test found that unsecured credit caused decrease in household savings along with mortgage credit and credit facility. These findings are further unpacked in chapter 5 below.

CHAPTER FIVE

CONCLUSIONS AND RECOMMENDATIONS

5.1 Introduction

This chapter provides a summary of the study and the conclusions based on the findings from the empirical analysis done in this research. The purpose of this study was to establish whether there is a significant positive relationship between credit and household savings in South Africa and if this has had an impact on household savings levels in South Africa over the period tested (2008 to 2016). The second test was to see whether an increase in any credit type also has an effect on household savings levels in South Africa.

5.2 Summary and Conclusion of the Study

The purpose of this study was to understand the relationship of unsecured credit and other credit products on savings levels in South Africa. The results indicated that unsecured credit and credit facilities had a negative effect on savings level in South Africa. The study also showed that mortgage credit had a positive effect on savings levels in the long term.

The study examined the relationship between overall credit and household savings levels in South Africa during an eight-year period, collated per quarter 2008-2016. Time series analysis, ADF test for stationarity, ARDL bounds testing and long run and short run regression models were used. The empirical results produced multiple findings across the various models that were tested. The key finding was that there was a significant positive relationship between overall credit and household savings. The unsecured credit variable was found to be significantly and negatively related to household savings levels in South Africa. The results also show that while credit variables overall have a positive relationship with household savings levels in the long run, in the short run the relationship is largely negative. The results of the test for linear association therefore suggest that linear relationships exist, although they differ based on the different credit types. Some had a positive relationship with savings levels (positively influenced savings levels) whilst other credit types had a negative relationship on savings levels (negatively influenced savings levels). On the basis of the empirical results on the impact of credit on national savings levels in South Africa and the literature on the causes and consequences of over-indebtedness, it was found

that the credit variable which had a significant negative relationship on household savings levels in South Africa. The conclusion of this dissertation is that there is a significant relationship between credit and household savings in South Africa. More significantly is that there is a highly negative relationship between unsecured credit and household savings which is concern. A recommendation of this study is that government should ensure a tighter regulatory framework on unsecured credit in South Africa.

5.3 Policy implications of findings

The outcomes and findings of this research corroborate the hypotheses formulated: unsecured credit has a definite negative impact on household savings levels in South Africa. Because of crippling unemployment and low saving levels in South Africa, it is important for government to intervene. One lesson for government is what happened at Marikana where rising levels of indebtedness led to higher wage demands and violent labor unrests which sparked one of the worst police shootings in recent times (Rom, 2013). It is therefore important for government to ensure that regulation places proper focus on unsecured lending. As per Section 18(1) of the NCA, one recommendation is that regular reporting by credit providers should be sent to the Minister of Trade. It is further recommended that more robust monitoring of specific credit types, as well as thresholds and triggers, should be built into these reports and compliance mechanisms put in place for the credit providers. Government should look to provide more protection mechanisms for credit-indebted people, particularly vulnerable consumers.

5.4 Avenues for future study

This research has shown that there are opportunities for further studies around over-indebtedness and savings levels in South Africa, particularly where this over-indebtedness pertains to credit. Whilst this research established that there is a negative relationship between unsecured credit and household savings in South Africa, it also determined that overall credit did not have a negative effect on saving. The limitations of this study are that it did not examine the potential effects of other factors such as formal and informal credit products. There is also opportunity to further examine those credit products which have a positive effect on savings and the role they play in over-indebtedness. Another limitation on this research is the role of credit providers and, more

specifically, the impact of credit granting rules on over-indebtedness. Examples of factors that could influence over-indebtedness are interest rates and risk-based pricing. Various questionable collection methods employed by credit providers also need to be researched in order to create a better understanding of the thresholds that should be set to ensure that clients are not over exposed. All these factors play crucial roles in pushing credit-indebted people over the edge. It is therefore important that there is research done on these factors and the role they play.

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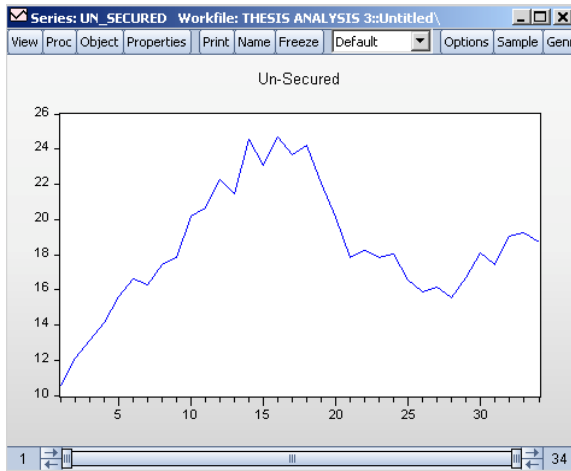
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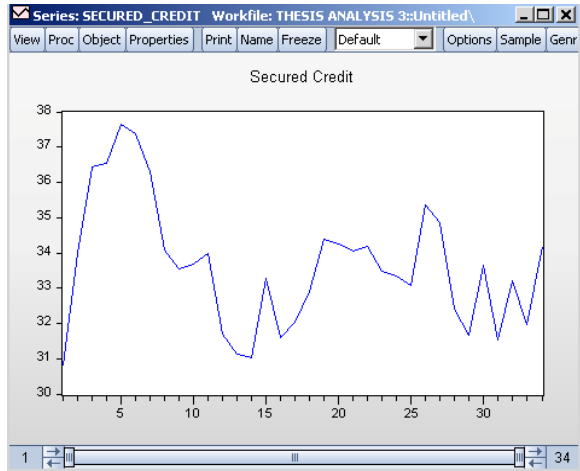
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Appendices

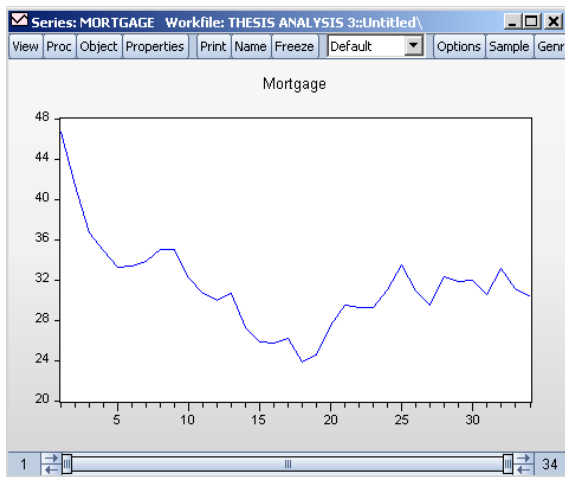
Appendix 1



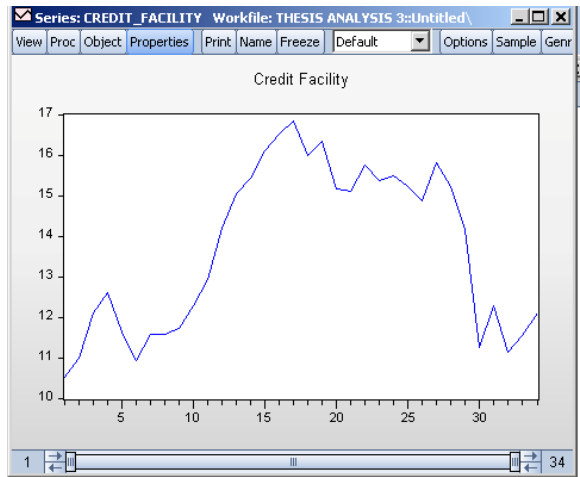
Appendix 2



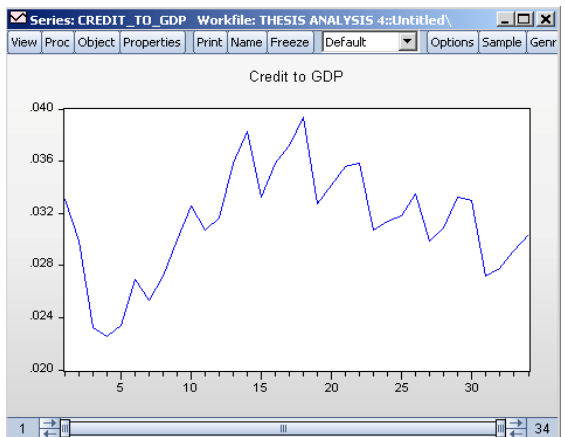
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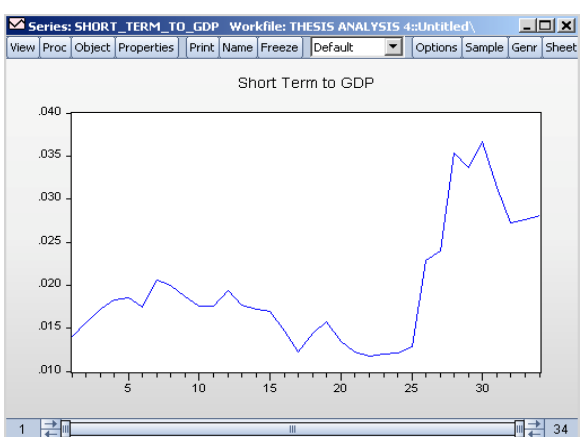
Appendix 4



Appendix 5



Appendix 6



Appendix 7 (LM test output Model 1)

Breusch-Godfrey Serial Correlation LM Test: Null hypothesis: No serial correlation at up to 1 lag			
F-statistic	0.011545	Prob. F(1,24)	0.9153
Obs*R-squared	0.015386	Prob. Chi-Square(1)	0.9013

Appendix 8 (LM test output Model 2)

Breusch-Godfrey Serial Correlation LM Test: Null hypothesis: No serial correlation at up to 1 lag			
F-statistic	0.010524	Prob. F(1,24)	0.9191
Obs*R-squared	0.014025	Prob. Chi-Square(1)	0.9057

Appendix 9 (LM test output Model 3)

Breusch-Godfrey Serial Correlation LM Test: Null hypothesis: No serial correlation at up to 1 lag			
F-statistic	0.690143	Prob. F(1,24)	0.4143
Obs*R-squared	0.894469	Prob. Chi-Square(1)	0.3443

Appendix 10 (LM test output Model 4)

Breusch-Godfrey Serial Correlation LM Test: Null hypothesis: No serial correlation at up to 1 lag			
F-statistic	0.572071	Prob. F(1,24)	0.4568
Obs*R-squared	0.745003	Prob. Chi-Square(1)	0.3881

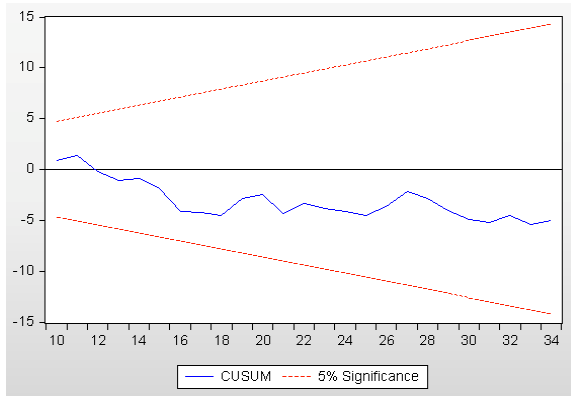
Appendix 11 (LM test output Model 5)

Breusch-Godfrey Serial Correlation LM Test: Null hypothesis: No serial correlation at up to 1 lag			
F-statistic	0.089052	Prob. F(1,24)	0.7680
Obs*R-squared	0.118297	Prob. Chi-Square(1)	0.7309

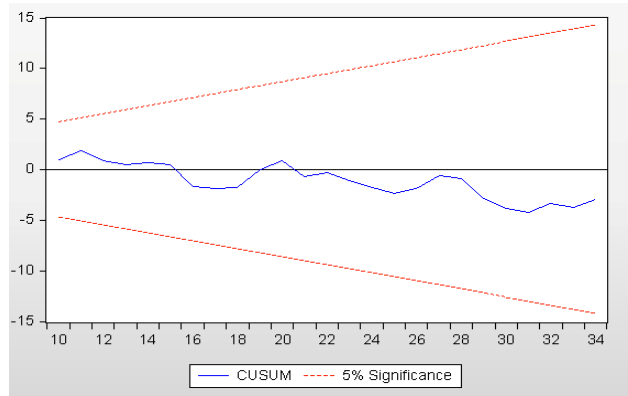
Appendix 12 (LM test output Model 6)

Breusch-Godfrey Serial Correlation LM Test: Null hypothesis: No serial correlation at up to 1 lag			
F-statistic	0.016859	Prob. F(1,24)	0.8978
Obs*R-squared	0.022463	Prob. Chi-Square(1)	0.8809

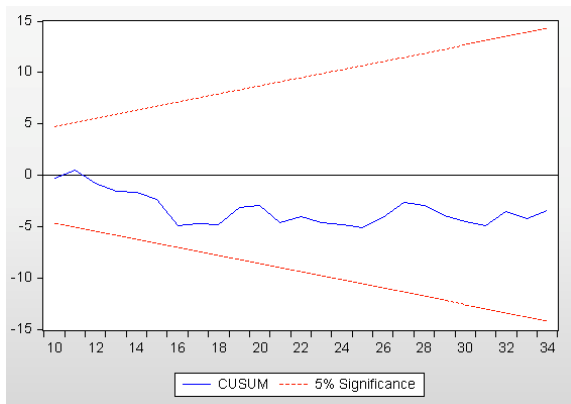
Appendix 13 (CUSUM test model 1)



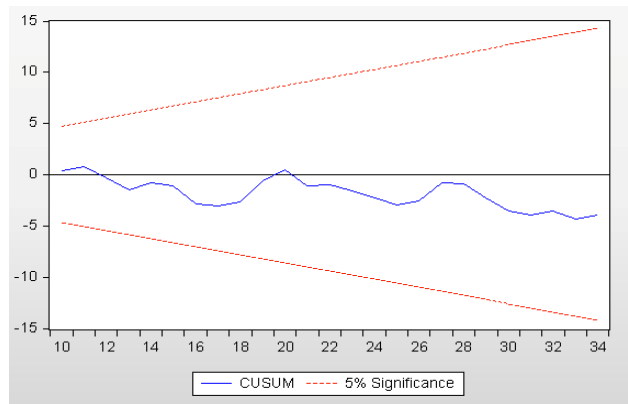
Appendix 14 (CUSUM test model 2)



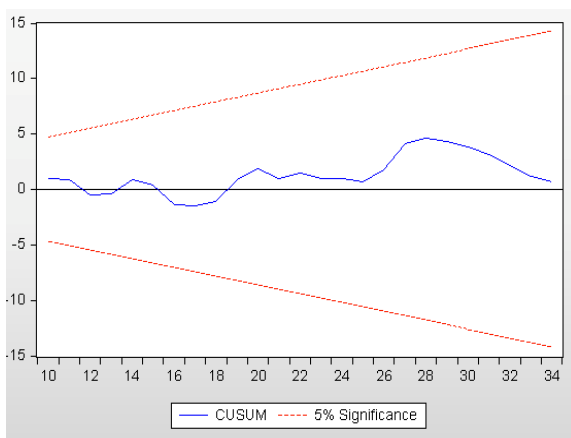
Appendix 15 (CUSUM test model 3)



Appendix 16 (CUSUM test model 4)



Appendix 17 (CUSUM test model 5)



Appendix 18 (CUSUM test model 6)

