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FACULTY OF COMMERCE

DEPARTMENT OF ECONOMICS

**BANKING COMPETITION-FINANCIAL STABILITY NEXUS OF THE ZIMBABWE
COMMERCIAL BANKING SECTOR (2009-2018)**

BY

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MAY 2020

This dissertation is submitted in partial fulfilment of the requirements of the Bachelor of Commerce Economics (Honours) Degree in the Department of Economics at Midlands State University, Gweru Zimbabwe 2020.

SUPERVISOR'S APPROVAL FORM

The undersigned certify that they have supervised **Liberty Ruruma (R166130Y)** dissertation entitled: *“Banking Competition-Financial Stability nexus of the Zimbabwean Commercial Banking Sector (2009 – 2018)”*, submitted in partial fulfilment of the requirements of Bachelor of Commerce Economics Honours Degree at the Midlands State University.

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CHAPTER 1

CHAPTER 2

CHAPTER 3

CHAPTER 4

CHAPTER 5

DATE/...../.....

APPROVAL FORM

The undersigned certify that they supervised, read and recommend to the Midlands State University for acceptance of a research project entitled: “*Banking Competition-Financial Stability nexus of the Zimbabwean Commercial Banking Sector, Panel Data Analysis (2009 – 2018)*.” submitted by **Liberty Ruruma (R166130Y)** in partial fulfilment of the requirements for the Bachelor of Commerce Honours Degree in Economics.

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DECLARATION

I, **Ruruma Liberty**, do hereby declare that this is a true and unpublished research which presents my own work, and has never been previously submitted for a degree at Midlands State University or any other university, college or any institution.

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...../...../.....

Student Signature

Date

DEDICATION

I would like to dedicate this research project to my loving and caring family, Mrs. E Ruruma, my brothers with their wives and children and without forgetting my only sister Nyasha. My deepest respect and honor for their encouragement and unending support throughout the degree.

ACKNOWLEDGEMENTS

Firstly, I would like to acknowledge the Almighty God for His abundantly Love, Grace and Protection during the entire period of the programme and for making realize my dream of being an Economist. This research project makes me indebted to some people. Without them, it could have never been a success but a fruitless strives.

Secondly my sincere gratitude goes to my supervisor Mr R. Mandishekwa and Doctor C. Dzingirai for their continuous support and offering highly expert knowledge, your support proved to be a vital ingredient to the research. I would like also to show appreciation to Mr T. Chipunza, Mr E. Ndlovu, Mr M. Charumbira, Ms E. Manzote, Mrs V.S. Masere, Doctor Z. Tambudzai, Mr F. Mhere and the entire Economics Department for their support and exceptional guidance.

An honourable mention goes to my lovely mother Mrs E. Ruruma, my brothers Pastor T. Ruruma and his family, Mr M. Ruruma and his family, Mr O. Ruruma and his family, my young brother Honest, my only sister Nyasha Ruruma and all the AFM on campus family members. As well my friends particularly Ronald Dzinduwa and Duduzani Sibanda for their unconditional and unwavering support and understanding during the time I dedicated to this research. Needless is to say that I'm forever indebted to these people for their financial support, love, understanding, endless patience and encouragement they rendered to me when it was required.

Lastly, I would like to say thanks countless times to all who supported to the successful completion of this research you will be remembered endlessly. Without doubt, your support helped to reach this far.

May the Almighty God bless you all in JESUS' name!

ABSTRACT

The motive behind carrying out of this study was the distress and alarm in the banking sector of Zimbabwe due to liberalized of the financial system by relaxation of entry restrictions resulting in increased participation of private sector, with the aim of enhancing competition of the sector. The focus of this study was to investigate on the effectiveness of competition-financial stability nexus in the banking sector of Zimbabwe based on the dominance of the five banks listed on the Zimbabwe Stock Exchange (ZSE) and is premised on establishing the effect of competition on financial stability. The research complements existing literature by inferring the effect of competition on stability, over the duration 2009 to 2018. The measurement of competition was the Lerner index (measure the market concentration) and then, calculation of the Z-Score to measure the distance to distress. The results from the Lerner index used to exhaustively affirm monopolistic competition as the predominant competitive environment in Zimbabwe. The study also through Z-score and Lerner indices with OLS estimation method found results aligned towards competition-fragility view. The outcomes have affirms for policy formulation in the Zimbabwean banking sector through its agency of regulation and supervision to maintain financial stability armed with the mechanism for setting reforms in a monopolistic competitive environment. Firstly, it would be prudent to implementing stringent capital regulations under the Basel III and regulation such as risk-adjusted deposit insurance. Secondly, regulatory authorities should introduce income diversification thresholds for commercial banks. Finally, it is also important for policy makers to facilitate designing institutions, including regulatory policies to create efficient financial markets in Zimbabwe that allocate society's savings to their best use and support real markets.

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LIST OF ACRONYMS

CBZ	Central Bank of Zimbabwe
E/TA	Equity to Asset Ratio
ESAP	Economic Structural Adjustment Programme
FBC	First Bank Corporation
GDP	Gross Domestic Product
GDPG	Gross Domestic Product Growth Rate
GFC	Global Financial Crisis
GMM	Generalised Method of Moments
HHI	Hirschman-Herfindarl Index
IMF	International Monetary Fund
NPLs	Non Performing Loan(s)
OLS	Ordinary Least Square
RBZ	Reserve Bank of Zimbabwe
ROA	Return on Assets
TBTF	Too-Big To-Fail
FGLS	Fit Generalised Least Square
WB	World Bank
ZABG	Zimbabwe Allied Bank Group
ZB	Zimbabwe Bank
ZSE	Zimbabwe Stock Exchange

CHAPTER ONE

INTRODUCTION

1.0 Introduction

Banking sector of Zimbabwe comprises of merchants, building societies, commercials and savings banks. Financial system stability means nonexistence of instability, which is the absence of fluctuations in the financial assets prices (Crockett, 1997). Competition in the banks enhances rivalry especially in service and products provisions. According to Fiordelisi and Mare (2014) cited that banking competitive banks is the basis of a secure and safe country as competitive banking enhances proficient distribution of banking commodities to the debtors and savers. Richard (2011) cited that performing banks enhances economic growth, while poorly performing banks hinders to economic progress and intensify poverty. Hence, absent of competition in banks is nocuous to the performance of the nation as a whole.

Worldwide financial crisis invoked the attention of policy makers as well as the responsibility of the state in competition policies (thus, policies and laws that influence the degree to which banks compete). Beck (2008) cited that the crisis and supervision maintain of the dominant banks enhances banking concentration, hinders rivalry as well as opportunities to finance, and can also leading to future wavering as a result of distress linked with too-big-to-fail institutions.

1.1 Background of the Study

The bank competition and stability nexus is one of the top priorities topics researched (Soerdarmono *et al.*, 2013). However, up-to-date both theoretical and the empirical evidence allude contradicting conclusions. There is evidence in support of the “competition-stability” hypothesis which says that improved bank rivalry enhances stability thereby reducing chances of failure to pay and as a result systemic risk (Tabak *et al.*, 2012). Adding together, they cited that increased loan rates result losses as debtors boost their capital in riskier activities aiming to improve their capacity to repay loans. Contrarily, the “competition-fragility” hypothesis highlighted that higher bank concentration improves stability of banks. This observation propound that banks operate in less competitive environment earn greater profit precincts, thus

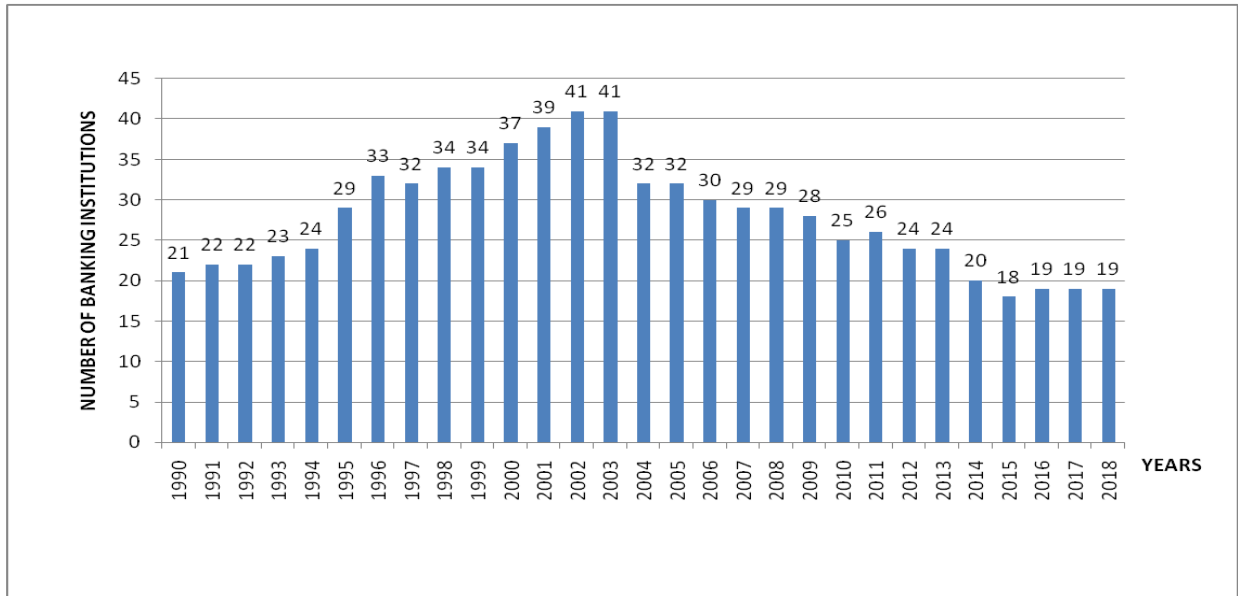
creating a bumper from disaster and also lowering their funds to devote in riskier markets (Agorakie *et al.*, 2011).

Difference researches have delved on the nexus of stability-banking competition in developed and developing economies. On a research done by Akins and Rusticus (2016) used both pre and post financial crisis facts to corroborate the “concentration-stability” hypothesis among rivalry and risk taking and they alluded that improved competition in banks is associated with sensitive degree of financial distress. On another note Jeon *et al.* (2013) alluded on non- linear connection among competition and stability dependant on bank characteristics. This was so due to its concession in the risk changing and interest consequence affirming the advantageous effect of improved competition on financial stability. Whilst modern theory proof hold toward the positive outcome of competition on stability, Fiordelisi and Mare (2014) found results in favour of this hypothesis. Instead, they advocate the departure in views. Similarly, Boyd and De Nicolo (2005) postulate that, regulators are likely to employ too-big-to-fail policies that facilitate risk-taking activities by banks.

Furthermore on the African platform Hope, Gwatidzo and Ntuli (2013) contacted a research on the competition-financial stability nexus in 10 African banks. Their results were in line with “competition-fragility” hypothesis. They assert that several macro variables improve stability of institution and also advocate for continent-wide bank alliances.

Moreso on the economy of Zimbabwe after independence, the Government inherited a sound banking system which was considered to be the second from the best after South Africa (RBZ, 2014). In 1980’s, the banking sector propelled as an oligopoly with few foreign banks dominating the market. In 1990, the economy adopted the Economic Structural Adjustment Program (ESAP), through which as part of the package, the financial sector was liberalised. This resulted in black owned banks entering the market and competing with foreign banks. The banking sector could not resist the economic meltdown which started in 1997 which resulted in the United Merchant Bank collapsing. However, other banking institutions were still joining the sector. The Zimbabwean banking institutions from 1990 to 2018 is presented in Figure 1.1

Figure 1.1: Trends of Zimbabwean Banking Institutions (1990-2018)



SOURCE: RBZ ANNUAL SUPERVISION REPORTS.

The figure 1.1 indicates the trend that the banking sector has been contracted to 32 in 2004 from 41 in the previous year. The banking sector in Zimbabwe was hit by a financial crisis between years 2003 and 2004 causes several banks placed under curatorship by the central bank while others being closed (RBZ, 2012). Consequently, the RBZ came up with the Allied Financial Services initiative where struggled banks which capable were to be put into a single institution called the “Zimbabwe Allied Banking Group” (ZABG) (RBZ, 2013). These have implications on the assurance of the general public in the sector since collapse of a single bank can be associated with contagion effects.

The country faced one of the worst hyperinflation episodes since during the period 2000 to 2008. The hyperinflation environment deteriorated profits of the banks in real terms. Chipika and Malaba (2011) cited that banks financial statements were extremely hindered by the hyperinflation; they sunk in real terms as of the sufferers on hyperinflation endorsed to the highly inverse real returns on government securities and elevated levels of statutory reserves. Savings of banking public in banks were eroded owing to improved in inflation.

Sanderson Abel and Pierre Le Roux conducted research to assess the degree of competition in Zimbabwe’s banks from 2009 to 2015. Study results showed that monopolistic competition was

prevailing in the market during the period examined. They confirmed banking in Zimbabwe is growing towards ideal competition. The accelerated competition was manifest through improved marketing of products, heavily promotions, and extended loan tenure as banks tried to surpass one another. The research outcomes recommended that the government should not tamper with market forces as this hinders the level of competition.

Structural reforms in the economy have affected with a collapse in savings and investment rates. In 2000 savings have fallen significantly and by 2015, were recorded -11% of GDP (IMF, 2014). Home and overseas investment also disheartened, averaging 15.9% from 2009 to 2014. These drastic have been mainly exaggerated by the political economy where not have clarity and consistency in connection to land reform and indigenisation policy has damaged business confidence. Thus, leading to deposits runs in many banks and for the few businesses that existed banks were competing for deposits.

Stability policy wakened to limelight due the 'GFC' of 2008 since the system had only focused on economic policy issues there by liberalising the financial sector, thus led to banks and non-banking institution developing technological products. The financial system policy was compelled by the infectivity due depended of the globalised financial systems amongst economies worldwide. Zimbabwe shows to be isolated from the harsh of the "GFC" due to its primarily undersized markets and inconspicuous amalgamated by global markets (IMF, 2014).

Other challenges faced by the banking sector of Zimbabwe comprise of being short of adequate capital, failure of the RBZ to carry out its function of lender of last resort throughout the era of multicurrency system among others (Sakarombe, 2018). These effects have led to the reduction of Zimbabwe banks. RBZ (2018) cited that, 27 banks were operating in 2010 and dropped to 19 banks currently operate in 2018. The banks' distress uncovered the extent banks operate in the market by captivating on unsecured lenders in the pursuit of well-paid outcome and trading in technological financial products. Indirectly, these entire events took place in the banking sector result to investors taking cuts in their investment held with banks. Schaeck and Cihak (2014) cited that, regulation failures or weak market discipline to the distress of financial institutions and hence strive for competition among banks.

1.2 Statement of the Problem

Crocket, (1997) cited that, keeping financial stability is an objective of the public policy which if not taken into account has inverse effects on productivity, consumer welfare, economic growth and financial stability as consequences of banks' activities. The latest bail in to helping deteriorating banks the RBZ embarked due to collapse of several banks for example, Kingdom bank, led to incorporation of the losses by institutional as well as confidential individual investors also (IMF, 2014). There is distress and alarm in the banking sector of Zimbabwe resulted from liberalized financial system by soothing entry constrains leading in improved private sector contribution, with intend to increase rivalry in the sector. Zimbabwe banking sector have faced episodes of severe financial distress in previous three decades. The recurrence and proliferation of financial disaster since the 1990s, which hinders both public and private sector and the costs they geared are the major concern. Amongst them is the collapse of more than 22 banks between 1990 and 2018 (RBZ 2018). All these episodes of distress require a well formulated supervisory based on complete empirical study.

1.3 Objective of the Study

The overall thrust for the research is to pioneer an empirical investigation on the nexus of competition-financial stability in Zimbabwe. Specifically, the study desires to:

- analyze the two divergent hypotheses linking bank competition to stability, that is, Competition-fragility and Competition-stability and place Zimbabwe's predilection.
- ascertain if the Zimbabwean's banking system is strong and the effects that originate thereafter.

Fulfilling of these objectives will tile a means to formulate policies on banking competition through its agents of regulation in the financial system.

1.4 Study Hypothesis

The research is constructed on:

H₀: there is no significant influence of banking competition on financial stability for banks in Zimbabwe.

H₁: there is a significant influence of banking competition on financial stability for banks in Zimbabwe.

1.5 Study Significance

Studies of “banking competition-financial stability” nexus have been carried out internationally and there have been three outcomes obtained. Firstly, most of the premature studies favoured the “competition-fragility” hypothesis (Broecker, 1990; Keeley, 1990; Agoraki *et al.*, 2011). Secondly, a different group of studies favoured the “competition-stability” hypothesis (Boyd and De Nicolo, 2005; Fiordelisi and Mare, 2014). Lastly, there are the recent studies that seem to affirm that there is a non-linearity nexus of competition and stability (Berger *et al.*, 2009; Beck *et al.*, 2013). On studies done so far to ascertain the banking competition-financial stability nexus internationally, none of them managed to broadly look at the influence of banking competition on the stability in the economy (Zimbabwe) during its introduction of reforms 1990-2018. Sakarombe (2018) did a research on financial inclusion-banking stability nexus in Zimbabwe employing a system GMM to investigate the nexus. This research is there to broaden the literature on the “bank competition-financial stability” nexus taking into consideration the country Zimbabwean. Specifically, it explores the nexus of stability and bank competition and the role played by the bank variables in influencing stability. In addition, it alludes to the role that macroeconomic-specific variables play in explaining stability. This research covers the gap, empirically by examining the consequence of competition amongst the banks and confirms the results on the Zimbabwe banks’ predilection when it comes to the competitive scenery.

The study is also going to assist in the formulation of policies for the supervision basing on the acknowledged competitive environment so as to bring stability in the Zimbabwean banking sector.

1.6 Delimitations

The research focuses on 5 commercial banks in Zimbabwe listed on the ZSE that exist during the era (2009-2018), uses data collected from Banks Annual Financial Reports, World Bank, IMF, and the Central Statistic Records.

1.7 Limitations of the Study

The researcher may face limitations in accessibility for data to be collected and analyzed especially that some Banks may consider their information as confidential. Therefore some of the data from these elevated levels institutions may fall short to indicate the real features on the ground due to window dressing of information and they also craft employ averages of the banks. Included figures revealed of financial reports are estimates on most cases, sometimes they may

not be real figures and then might reduce efficient and resonance analytical for valuable suggestion for policies.

1.8 Organisation of the Study

This Chapter gives a review of the general connection between banking competition and financial stability in Zimbabwe. In Chapter Two, the research produces the essential comprehension of recognition (theoretical studies and as well as empirical studies present in economics literature) towards the relationship of the two variables internationally. Thereafter, Chapter Three is for methodology (model specification with relation to how others scholars tested the variables). Further to that, Chapter Four is for the data presentation and interpretation of the results. Then lastly, Chapter Five displays findings and additionally recommend for additional studies and research conclusion will be drawn for policies adoption.

CHAPTER TWO

LITERATURE REVIEW

2.0 Introduction

Researcher has required validating the nexus of competition-bank stability by examine if the stability responds upwards or downwards when competition is elevated. Two schools introduced after that a debate of the “bank competition- stability” nexus from the developed markets and then moving onto developing economies. The delimitations of the studies are examined and the insightful for a research from a new viewpoint is burrowed into.

2.1 Theoretical literature review

Analyse competition amongst banks and its possessions, two theories have been projected without clear analysis to date, the “competition-fragility” and the “competition-stability” theories.

2.1.1 The competition-fragility Hypothesis

The traditional ‘charter-value’ hypothesis or the ‘competition-fragility’ hypothesis propounded, Keeley (1990) cited that improved competition amongst banks led several banks being involved in riskier activities thereby increasing their vulnerability. Increased in the charter-value from cartel profits discourage banks from complex in risk-taking activities and consequence in subordinate the likelihood of bank distress.

They are other channels in which greater competition leads to greater fragility. The consequence that rivalry has on bank supervision is frequently accessible throughout the initiative that intense banks are easier to watch over resulting in additional soundness (Beck, 2008). Furthermore Saez and Shi (2004) cited that, more fragility occurs throughout the connection of bank competition and disbursement systems. This path shows that extreme competition can erode surplus liquidity in the banking sector such that in the shock era the possible for pooling interbank liquidity is deteriorated resulting to decreased firmness. Finally, other path occurs throughout the inverse consequence that competition has on collection diversification. Theoretical model developed by Mishkin (1999), cited that greater market share enhances improved risk diversification in loan selection, which help in alleviate bank wounded in era of economic recessions. There is

extended literature which is in favour of the “competition-fragility” hypothesis coined by Tabak *et al.* (2012) postulates that in collusive markets, banks benefit from greater premiums and as a result mitigate a shock from crises hence invalidating any jeopardy captivating incentives. Keeley (1990) postulate that competition hinders yield limits and encourages bank to commence hazardous product offering resulting in financial distress.

2.1.2 The competition-stability Hypothesis

In recent years, “competition-fragility” hypothesis challenged with the “competition-stability” view. In their research Boyd and De Nicolo (2005) cited that superior market power can hinders banks’ stability. In this examination, improved market power increases the chance of bank distress for the reason of the risk changing progression due to the existence of informational asymmetry exertion. Stiglitz and Weiss (1981) cited that, “restricted or no competition can simply upshot in moral hazard and adverse selection, which, in revolve can hinders banks’ loan collection value.” Exclusively, greater rates placed by banks benefiting from cartel supremacy can inversely impact the worth of agents acquiring loans that way boost non performing loans in the banking sector.

Furthermore mentions “too-big to-fail” policy as a way to describe “competition-Stability” hypothesis. The motive following the “TBTF” hypothesis is regulators are probable to help systemically vital banks in order to ease the possessions of a blow. On the other hand, while well-built banks have that advantage they are probable to be bailed out by authorities so as to curb the shocks, they are supplementary prone to threat winning which makes the system less steady. Fiordelisi and Mare (2014) argue that bank competition enhances the aptitude of the financial system to detect vulnerability early signs of distress before a crisis actually happens and also enhances efficiency in the product and services provisions.

On another note Jeon *et al.* (2013) cited that the nexus of competition-financial stability as attaching on the description of dissimilar banks and ascertaining concession among the interest consequence and risk winnowing consequence being attributable to the non-linear connection among the two. Similarly, in procession with the view of Boyd and De Nicolo (2005) they favour the “competition-stability” construct.

2.2 Empirical review

Firstly, mainly premature researches favoured the “competition-fragility” view (Keeley, 1990; Broecker, 1990; Agoraki *et al.*, 2011). Secondly, other set of researches viewed the “competition-stability” hypothesis (Boyd *et al.*, 2006; Soerdarmono *et al.*, 2013; Schaeck *et al.*, 2009; Fiordelisi and Mare, 2014). Thirdly, the latest sets of researches appear to advocate that there is non-linearity in the nexus of “competition-stability” (Berger *et al.*, 2009; Tabak *et al.*, 2012; Beck *et al.*, 2013).

Banking systems that are greater competitive or greater concentrated are more stable than those with average levels of competition. Most results from researches in the era prior to the 2000s are mainly in favour of the “concentration-stability” hypothesis. Particularly, Broecker (1990) used USA banks’ data and employed Generalised Method of Moments (GMM) regression method and found results in favour of the “competition-fragility” hypothesis thus an inverse association connecting banks number and average banks’ credit quality. Keeley (1990) cited further results by showing that increased competition resulted from deregulation eliminate bank charter values thereby leading banks involved in riskier activities. Lastly, a recent research by Agoraki *et al.* (2011) employed Generalised Method of Moments (GMM) regression method. Applying a bank-level panel data of Central and Eastern European countries and used the Lerner Index as proxy for bank competition and Z-score proxies’ bank risk taking founds results in favour of the “competition-fragility” hypothesis. Particularly, they found significant inverse association connecting NPLs and the Lerner Index meaning greater market power hinders bank risk taking behaviour and also harsh regulations, size of bank, bank capital and favourable economic performance lowers bank risk-taking behaviour.

From a research conducted by Boyd *et al.* (2006) employed Generalised Method of Moments (GMM) regression method on US banks, found results in favour of the “competition-stability” hypothesis. Particularly, their results clearly that a greater level of bank rivalry enhanced financial stability. Further, their research provides results signifying that bank rivalry enhances willingness to lend. However, on another note their research used (HHI) that ignores firm behaviour in examines profitability. Using bank-level cross-sectional data from 45 countries, Schaeck *et al.* (2009) cited results in support of the “Competition-stability” hypothesis.

A research by Soerdarmono *et al.* (2013) analyse the role that financial crises in influencing bank competition and therefore bank risk taking behaviour. Employ data from 11 Asian countries with Lerner Index as proxy of market power, standard deviations of return on equity and assets as proxy of risk taking and Z-scores proxies' bank insolvency. Employed the OLS regression method the evidence shows that market power has positive influence on banks' volatility. They found that even a higher Lerner index lowers bank ratios it did not affect financial stability in the period 1997 to 1999 of Asian financial crisis. Particularly, increased monopoly in banking has an inverse relation on risk taking and positive influence on bank solvency. Hence, in their conclusion states that greater level of market power positively influence financial instability although it's opposite during a financial crisis.

A study carried by Fiordelisi and Mare (2014) employed the OLS regression method, among European cooperative banks to assess the nexus of banking competition-soundness between 1998 and 2009. They provided results that support the "competition-stability" hypothesis alluded by Boyd and De Nicolò (2005). Secondly, they also found that this relationship did not affected by the 2007–2009 global financial crises which affect operation in the financial markets worldwide. Thirdly, results shows that improved homogeneity in the cooperative banks also positive influence bank soundness. These results have important policy consequences for crafting and implementing regulations that supports the overall soundness.

A study by Berger *et al.* (2009) employed Generalised Method of Moments (GMM) regression method to analyse the connection amongst credit risk (NPL ratio) and bank stability and also the capital ratio and numerous proxy of market power. Analysing bank's degree data of 23 developed countries, their results are in evidence both the "competition-fragility" and the "competition–stability" hypothesis. Particularly, they found that banks with greater market power result in more loan risk portfolio in favour of the "concentration-fragility" hypothesis. Banks with greater market power are in a position to benefit from less risk spotlight that is in favour of "concentration-stability" hypothesis. Further to that, they found that big banks carry considerably less non-performing loans while foreign owned banks are more fragile.

Tabak *et al.* (2012) cited results in favour of "Competition-Stability" and "Competition-fragility"

hypothesis. They also test the role that played by bank size and capitalization in this association using data from 10 Latin American countries. Applying a Boone Index as a proxy of competition, they found that banks operating where a competition level is greater and little are less fragile than those on average competition. Furthermore, results states that greater loan loss provision enhances bank stability while bank capitalization has the inverse results. In conclusion they advocate non-linearity effect of competition on risk taking behaviour.

Beck *et al.* (2013) employed OLS regression method to investigate the role that nation's explicit factor play in examining the "competition-stability" nexus. Findings shows significant positive blow among the concentration and bank soundness, using US banks. That is higher bank rivalry led banks' risk taking behaviour and as a result reduces stability. The results were similar to Berger *et al.* (2009), they found that credit risk and non-interest income increase bank stability. More importantly, they found that greater bank competition is more damaging to stability especially in economies where, information sharing systems are useful, stock market are liquid, deposit insurance is more liberal and hash financial regulations. Hence, they concluded that country level factors may help to explain the contradicting effects of competition-financial stability nexus.

2.3 Conclusion

Through this well articulated literature provided a resonance basis on the existence of neutral, inverse and positive association between the banks competition and financial system stability. Even if different studies on this phenomenon were done in several developed countries across the globe as reviewed in this chapter, very little has been carried out on developing economies. Thereafter, from this articulated literature a model has been adapted so as to cover this gap that exists and also further provide explanation to the financial system instability problem of Zimbabwe.

CHAPTER THREE

RESEARCH METHODOLOGY

3.0 Introduction

Throughout a well articulated assessment of the pragmatic literature the researcher came up with a methodology that will help to expound the impact of banking competition on financial stability in Zimbabwe. The control variables (bank-specific and macro-specific) are premeditated as well.

3.1 Model specification

The major intend of the model adapted is, to establish the impact of competition on financial stability. The model to be used was adapted from Fiordelisi and Mare (2014) who investigated the nature of competition in European cooperative banks (1998-2009). The study engaged the OLS regression technique of assessment and the model is revealed below.

$$Stability_t = a_0 + \beta Competition Measure_t + \sum_{K=1}^N \gamma_{kt} X_{kt} + e_{kt} \text{ -----}3.1$$

α = is a constant

k = cross-sectional index

t = time index annuals

Stability = quantified through the Z-score

Competition= proxies through Lerner index

X = bank and macro variables.

β and γ = coefficients reflects the impact of independent variables to the dependent variable.

e = white noise term captures the influence of other variables outside the model

However, for the purpose of the current research, the control variables included so as to avoid spurious results. The adaptation will be explained in the variables justification section

3.2 Justification of Variables

3.2.1 Bank stability

Maintaining soundness in the banking sector is the mandate of the central bank (RBZ), because insolvency of one bank hinders the performance of the economy. The MFSC's (Multidisciplinary Financial Stability Committee) mandate is periodically scrutinize the state of financial stability in the country RBZ (2014) Stability policy in the world rose to fame due to the GFC of 2007-2009 since authorities had only focused on monetary policy issues whilst liberalising the financial sector and this led in many banks and non-bank institutions concentrate in offering inventive commodities. This exogenous variable is proxies using the Z-Score index (measure bank's risk of failure) developed by Roy (1952), that is, it is going to give an indication of how far the banks is from bankruptcy or from assets falling below liabilities (distance to distress). Jeon *et al.* (2013) defined Z-score as the total of the ROAs and Capital Ratios in proportion to the standard deviation of the ROAs and computed as:

$$Zscore = \frac{ROA_{it} + E/TA_{it}}{\delta(ROA)_{it}} \text{-----} 3.2$$

Where ROA represent return on assets, E/TA represents the equity to total asset ratio, and δ (ROA) represent the standard deviation of the return on assets. A higher Z-score represent a lesser chance of insolvency and vice-versa, thus providing a more direct measure of safety and soundness in comparison to erstwhile measures.

3.2.2 Banking Competition

Competitive banking environment entails a sound economy means proficient in the allocation products and services to the debtors and savers (Fiordelisi and Mare, 2014). In contrast Keeley (1990) cited that competition hinders the earnings precincts and encourages bank to embark on risky product offering resulting to distress. Competition as the main independent variables in this study measure the extent to which banking institutions in Zimbabwe operate in the market. The operations of banks in the market have impact on the financial stability. An assortment of Lerner as a proxy for competition will be utilised to determine the degree of competition in Zimbabwean banks following Fiordelisi and Mare (2014). The index of 0 implies perfect competition while 1 representing a monopoly sector with superior market power ranged between 0 and 1 and is computed as:

$$Lerner\ index = \frac{P_{it} - MC_{it}}{P_{it}} \text{-----} 3.3$$

Where P_{it} represent price of the banks' output and MC_{it} represent $bank_{it}^{IS}$ total assets' marginal cost for period t. MC_{it} computed by divide the difference in total liabilities by the difference in total assets between 2 years.

3.2.3 Control variables

The inclusion control variables will eliminate the prevalence of spurious regressions in estimating the individual models (beck *et al.*, 2013). These control variables grouped in two ways that is the "Bank-specific" and "Macro-specific" variables.

3.2.3.1 Bank-specific control variables:

3.2.3.1.1 Capital Adequacy

A total cost to total income used as proxies to represent Capital adequacy (Chileshe, 2017). Though, a greater capital adequacy ratio may failed to indicate better performance because a higher capital adequacy ratio may mean that the bank is risk averse with regard to lending thus deteriorate of interest income. Therefore, the direction of connection to stability cannot be determined with certainty. However, for the purposes of the current research the proportion of total cost to total income proxies' of capital adequacy and the negative sign is expected.

3.2.3.1.2 Credit risk

There is a mismatch on the credit market especially between the tenure of available credit and the product cycle of most firms. Such mismatches coupled with greater interest rates have potential to destabilize corporate balance sheets resulting in an increase in nonperforming loans (NPLs). Berger *et al.* (2009) and Beck *et al.* (2013) found results that internal factors for example interest, credit risk and capital ratio have significant impact on the stability of banks. Banks get most of their income through advances and loans made to clients. Banks benefit especially from reduction of cost that is related with higher loan volumes, thus realising an improvement in profitability. Liquidity ratios can be utilised as a measure of the bank's desire to extend loans. However, for the purpose of the current study utilisation of loan to assets and

positive coefficient is accepted since the greater the magnitude of assets employed in the bank's lending activities, the greater the bank's stability.

3.2.3.2 Macro specific variables:

3.2.3.2.1 The Real GDP Growth Rate (GDPG)

GDP is defined as the total output produced within the borders of a nation. Insolvency occurs when assets are less than liabilities so when the economy's GDP increases the banks are in a position to acquire more deposits, that is, assets became more than liabilities in-turn have a positive impact on the stability. Increased growth in national output, as calculated by GDP is in favour with improved economic activities, which enhance bank to underwrite more loans with less risk of default, hence profitability. These outcomes received many of backing from authors such as Beck *et al.* (2013) and Schaeck *et al.* (2009) who allude that during booms the demand for credit is improved as compared to periods of those period of economic recessions. The researchers advanced the following explanation to favour their idea: in times of downturns, borrowers' credit rating deteriorates and banks will charge more interest rates on loans, thus encouraging their performance.

3.2.3.2.2 Corruption

Polner (2008) cited that, corruption the misuse of public power for private gain. It also states that corruption hinders the financial performance as some of the banks are used for money laundering and financial terrorism result in freezes of funds for which banks are recorded as deposits. Corruption as major source of leakages of public revenues and imposes higher costs to various productive activities. Lizal and Kocenda, (2001) cited that, corruption in the banking sector is also in line with the view that some banks make provision for loans to non existing individuals or companies, as a result banks are left with nonperforming loans. The accumulation of nonperforming loans in the long run affects banking sector performance and sometimes the collapse of these institutions. The Corruption Perceptions index (CPI) with score of one being more corrupt and one hundred less corrupt is going to be used as proxy to measure the level of corruption.

3.3 Data Type and Source

The Banking Association of Zimbabwe (2018) states that, there are 15 registered commercial

banks in Zimbabwe in 2018. Therefore, considering the period under observation 2009 to 2018 whose most predilection is expounded on in Chapter one. The preliminary filtration of these banks resulted in the existing 15 banks being filtered to 5 banks listed on the ZSE since the era under observation was influenced by the accessibility and uniformity of data. These banks are presented in table 3.1

Table 3.1: Names of Sampled Banks, Year Founded and Year Listed

Bank	Year founded	Year listed
Barclays Bank of Zimbabwe Limited	1912	1991
ZB Financial Holdings Limited	1957	1967
CBZ Holdings Limited	1980	1998
NMBZ Holdings Limited	1993	1997
FBC Holdings Limited	1997	2001

Source: Zimbabwe Stock Exchange Website

This study uses panel data published by Banks through audited financial statements, World Bank (WB), Zimbabwe Statistics Agency (ZimStat), Transparency International, Reserve Bank of Zimbabwe (RBZ).

3.4 Diagnostic Tests

To be assured whether a model is strong enough for data fitting, the researcher performed diagnostics checks to analyze variable significance so as to get reliable results and convincing conclusions.

3.4.1 Panel Unit Root test

Before estimation curb, researcher determine stationarity status of all variables which forms the model. Gujarati *et al.* (2004) cited that unit root testing is important since it avoid the dilemma of dubious regression. Unit root conducted after assuming cross section dependency or cross-sectional independence. For this research, the researcher assumes cross sectional independence since $N < T$ and then the results are based on the p-values of the Levin, Lin and Chu test. The hypothesis was tested as:

H_0 : panel is non-stationary at level

H_1 : panel is stationary at level

Decision Rule: Non rejection of H_0 if the likelihood value of the tests is larger than 5% and concludes that the panel is non-stationary.

3.4.2 Panel Cointegration Test

Cointegration tested out to articulate that the long-run nexus exists on variables under study in a regression. In this study, Westerlund Test method is used for Cointegration Test since Baltagi (2005) alluded that the test allows for cross section heterogeneity. The hypothesis tested as:

H_0 : There is no cointegration

H_1 : There is cointegration

Decision Rule: Non rejection of H_0 if the possibility value is larger than 5%, otherwise reject and conclude that the panel is cointegrated.

3.4.3 Hausman Test

Wooldridge (2002) cited that in panel regression two effects need to be checked that is, “random effect” and a “fixed effect”, where “random effect” means no correlation between regressors and the unnoticed effect; whereas the later means connection between the unobserved descriptive variables and the observed effect is non zero. The researcher apply Hausman test to compares the fixed to the random effects models to examine the most suitable model to use in a panel regression. Under this test, a random effect signifies greater efficiency. Hausman Test assists in analysing exogenous regressors (Greene, 2008). The hypothesis stated as:

H_0 : Random Effects Model is most appropriate

H_1 : The Fixed Effects model is most appropriate

Non-rejection of H_0 if the p value is larger than 5%, and concludes that random effect is suitable.

3.4.4 Breusch-Pagan Lagrange Multiplier (LM) test

In order to analyse both the presence of individual and time series effects, LM test will be

utilised to examine the existence of both cross sectional and time effects so as to select the most appropriate model between the OLS model and REM. joint error components disturbances are considered as: $\mu_{it} = \mu_i + \lambda_t + v_{it}$

Where: μ_i shows unobservable individual effects, λ_t denotes unobservable time effects and v_{it} is the residue white noise term. In the BPLM test it stem from the sovereignty of the unobserved cross-sectional and time effects, as well as the white noise, that is $N(0, \delta\mu^2)$, $(0, \delta\lambda^2)$ and $N(0, \delta v^2)$ respectively. The hypotheses are tested as:

$H_0\mu:\delta\mu^2= 0$ absent individual effects

$H_0\lambda:\delta\lambda^2= 0$ absent time effects

$H_0\mu\lambda:\delta\mu^2= \delta\lambda^2= 0$ absent individual and time effects

Non rejection of these null hypotheses means pooled model will be selected as specification and Random Effect Model will be dropped (Gujarati, 2004)

3.4.5 Heteroscedastisity

Presence of heteroscedastisity means error variances are non stable resulted in violation of classical regression assumptions that is, the efficiency property (Gujarati, 2009). Incompetent estimators (small and large samples) usually result if the model is misery from heteroscedastisity. To see whether there is present of heteroscedastisity in the model, Hall-Pagan Test utilised. The hypothesis tested as:

H_0 : homoscedastic.

H_1 : heteroscedastic.

Non rejection of the null hypothesis if the p-value is larger than 5%, the conclusion is the panel is homoscedastic.

3.4.6 Autocorrelation

Gujarati (2009) highlight that association among members of a series of annotations well-organized in time means present of autocorrelation of error terms. When autocorrelation is presence it violates the OLS mean variance property thus, subsequently hinders the accuracy of

the findings. The researcher employed Wooldridge Test to test whether there is presence of autocorrelation. The hypothesis tested as:

H₀: No autocorrelation present

H₁: Autocorrelation is present

Non rejection of the H₀ if the p-value is greater than 0.05, otherwise reject the null hypothesis

3.4.7 Multicollinearity Analysis

When multicollinearity is the presence it is an evidence of linear correlation between exogenous variables under study and the specific effects of that will be greater variation and covariance being pragmatic and it hinders accurate estimation. Existence of coefficient of 0.8 or superior shall be a blow-up of CLRM and the model affliction from severe multicollinearity (Gujarati, 2009). A correlation matrix was utilised in this research.

3.5 Conclusion

To suit the Zimbabwean case, the researcher specified the adapted model and all the change that have been made have been outlined in this chapter. Also all sources as well as the features of information were alluded and the methods of assessment were browed in the chapter also alluded on the diagnostic tests investigated. Next chapter analyse and interpret the findings.

CHAPTER FOUR
PRESENTATION AND INTERPRETATION OF RESULTS

4.0 Introduction

The inclusion of econometric modelling in the research is to validate an economic phenomenon by articulating the nexus between two or more economic variables. To validate theory the empirical findings must be obtained so that it adds up a relevant picture of reality. Inclusion of econometric modelling allows the researcher to practically observe the banking competition-financial stability nexus. This research therefore employs OLS technique in examine connection. The estimations computed using a computerised statistical package, Stata 15 Software.

4.1 Bank stability Results

A bank’s capability to produce both satisfactory and sustainable productivity improves its survival chances in market. In this view, the study found that as return on assets increases banks tend to invest more in liquid assets in turn higher profits are earned. Large sized banks tend to have greater economies of scales by having admission to markets while undersized banks struggled to afford that. Demirguc-Kunt and Detragiache (2002) cited, banking distress as systematic when non-performing assets fall below 10% of the total assets at the peak of the calamity. Table 4.1 shows the results of the Z-score, measure the distance to distress over a 10 year period.

Table 4.1 Z-score Results

YEAR	2009-2018	2009-2018	2009-2018	2009-2018	2009-2018
BANK	BARCLAYS	CBZ	FBC	NMB	ZB BANK
Ave-score	4.246887	6.101921	11.35548	6.727708	5.313578

Source: Author’s Calculations, See appendix 1 for full results

The average Z-score of Barclays is 4.246887 which is close to zero mean that there is higher probability of insolvency. FBC has a higher average Z-score of 11.35548 than any other bank reflecting lower probability of falling to bankrupt. NMB, ZB and CBZ have averages between 5 and 7 which are less than 10 also close to zero. Average Z-scores in Table 4.1 implies that many banks were operating close to bankruptcy, that is, assets falling below liabilities. These results support those by Berger.*et al.* (2009) cited that, the overall risks of bankruptcy supported by a

bank declines with the increase in market power. Their results show support that banks' having a greater contribution of capital improves their ability to mitigate losses.

4.2 Banking Competition (BCO) Results

The operations of banks in the market have impact on the financial stability. An assortment of Lerner index was utilised to determine the degree and type of competition among banks in Zimbabwe. The Lerner proxies the bank's market power on a scale ranging from 0 to 1 allude on the bank's possibility to charge prices higher the marginal cost. Table 4.2 shows the results of the Lerner Index, measures the market power over a 10 year period.

Table 4.2 Lerner Index Results

YEAR	2009-2018	2009-2018	2009-2018	2009-2018	2009-2018
BANK	BARCLAYS	CBZ	FBC	NMB	ZB BANK
Ave-score	0.438197	0.574931	0.71226	0.565891	0.612259

Source: Author's Calculations, appendix 1 for full results

In the Table 4.2, all banks have the average Lerner Index between 0.4 and 0.7 over a ten year period, the findings evidence that the Zimbabwean banking sector is growing towards monopolistic competition. This increased competition mainly through promotions, marketing of banking products (mobile banking, internet banking, current accounts, etc). These results support those by Sanderson and Pierre (2016). Using a Panzar-Rosse Approach to assess banking competition in Zimbabwe, they found that monopolistic competition prevailed in the banking sector

4.3 Descriptive Statistics Results

The statistics articulate the key important characteristics of the data utilised for the calculation and the features that it portrays (Gujarati, 2009). These findings are significance mostly in understating measure of central tendency, the distribution and outline the variation of the data used for the assessment as cited by Gujarati (2004). Table 4.3 highlight the results of the descriptive statistics.

Table 4.3 Summary Results

VARIABLES	Ob	Means	Std. Dev.	Min	Max
STB	50	6.749117	4.824761	0.2762363	19.12023
BCO	50	0.5807074	0.2199065	0.064634	0.8633187
CA	50	0.8040475	0.1061183	0.5159991	0.9599404
CR	50	0.629155	0.2901748	0.0216442	1.48782
GDPG	50	7.16	5.606338	0.6	15.4
COR	50	21.7	1.015191	20	24

Source: Author's Calculations using Stata 15 Software, See appendix 2 for full results

The dependent variable, Financial Stability (STB) has a mean of 6.749117. Its minimum value which is 0.2762363 signifies banks which are close to insolvency (bankrupt) with a maximum of 19.12023 signifying banks that are financially stable. Bank competition (BCO) on the other hand has a mean of 0.5807074 implying monopolistic competition condition for Zimbabwean banks (2009-2018). It has minimum value of 0.064634 and maximum value of 0.8633187. The maximum value of 0.8633187 implies bank with higher market power. Capital Adequacy (CA) also has mean of 0.8040475, minimum value of 0.5159991 and maximum value of 0.9599404 which allows bank to undertake more business and thus profitability. Credit Risk (CR) has a slightly lower mean of 0.629155 with a maximum of 1.48782 and a minimum of 0.0216442 shows the loan loss provision to the interest income margin and assets composition calculated as the ratio of loans to total assets. The mean amount of gross domestic product growth rate (GDPG) was 7.16 with a maximum of 15.4 and a minimum of 0.6 associated with economic activities which result in banks underwriting loan facilities. Corruption (COR) is high with a maximum index of 24 and minimum index of 20 with a standard deviation of 1.015191.

4.4 Diagnostic Test Results

Preliminary diagnostic tests were carried out to increase the precision of the estimated parameters. Furthermore, ensures that the observed results are accurate and reliable for policy recommendations.

4.4.1 Panel Unit Root Test Results

The hypothesis statement was stated in Chapter 3 as rejection of null hypothesis only when p-values are less than 5% and conclude that the panel is stationary. Table 4.4 shows the unit root of

the results of all variables under consideration and showing the order of integration. The reason behind performing unit root test is to improve the precision of all the included variables.

Table 4.4 Panel Unit Root Test Results

Variables	LLC-Statistics	p-Statistics	Order of Integration
STB	-5.4340**	0.0004	<i>I</i> (0)
BCO	-6.9960**	0.0000	<i>I</i> (0)
GDPG	-3.7950**	0.0039	<i>I</i> (1)
CR	-5.5539**	0.0029	<i>I</i> (0)
CA	-5.8142**	0.0000	<i>I</i> (0)
COR	-4.9225**	0.0010	<i>I</i> (0)

*See appendix 3 for full results and the (**) show that variables that are stationary at 5% level of significance*

Table 4.4 affirms that five variables are stationary at level except for GDPG which is stationary after first difference. Therefore these variables are strong enough to estimate the model, shown by p-values less than 0.05.

4.4.2 Panel Cointegration Test Results

Since the model consists of variables which are not stationary at the same level, the model variables are checked to see if the long run relation holds applying Westerlund test to prevent spurious regression, since one of the variables was non-stationary at order of integration *I*(0). The existence of cointegration reveals the presence of a long run association of variables included in model. Table 4.5 present the results.

Table 4.5 Westerlund Cointegration Test Results

Static	P-value
3.9794	0.0000

See appendix 4 for full results

The findings presented in Table 4.5 highlight that the p-values of Panel W-Static is zero (0.0000) less than 0.05 led to rejection of the null hypothesis and concluded that long run relation exist between variables included in the model.

4.4.3 Hausman Test Results

In order to utilise the correct model to use, the Hausman test done to choose among fixed and random effects model (REM). The P-value of greater than 5% implies non rejection of the null hypothesis and results in favour of REM. Thus, the chosen REM model becomes the correct model.

Table 4.6: Hausman Specification Results

Chi2 (5)	Prob>chi2
1.76	0.8807

See appendix 5 for full results

In Table 4.6 the probability is greater than 0.05 providing the basis for acceptance of the null hypothesis and conclude that the random effects model was most appropriate. Also this result shows that co-efficiencies differences were not systematic.

4.4.4 Breusch Pagan Lagrangian Multiplier (BPLM) Test Results

In this research the BPLM test was used to underpin whether the pooled OLS was suitable at the expense of the random effects model. The results are presented in Table 4.7.

Table 4.7 BPLM Test Results

Chibar²	Prob>chibar²
0.85	0.1776

See appendix 6 for full results

The findings presented in Table 4.7, present that the p-value is more than 0.05 proving the non rejection of the null hypothesis and one concludes that the pooled OLS is most suitable for the data.

4.4.5 Heteroscedastisity Results

If the model is suffering from heteroscedastisity an inefficient estimator normally happens for both (small and large) samples. The Hall-Pagan test utilised to see the existence of heteroscedastic in the pooled OLS regression. The findings are shown in Table 4.8

Table 4.8 Hall-Pagan Test Results

E2=LYh2	Prob >Chibar²
1.5643	0.2110

See appendix 7 for full results

The results indicate p-value of more than 0.05, therefore one accept the null hypothesis and conclude that there is homoscedasticity.

4.4.6 Autocorrelation Results

The Wooldridge Test was utilised to see if there is connection that exists among the white noise terms and the nature of it. The findings s are shown in Table 4.9

Table 4.9 Wooldridge Test Results

LM-Test	Prob > Chi²
5.1199	0.0237

See appendix 8 for the full results

From Table 4.9 the results show that the probability of the Wooldridge LM test of 0.0237 is much less compared to 0.05 leads to the rejection of the null hypothesis and conclude that there is autocorrelation. To correct for the autocorrelation the following fit generalised least square (FGLS) regression test was utilised.

4.4.7 FGLS regression Test Results

The FGLS regression indicates that a panel was homoscedastic and no autocorrelations among the panels. Table 4.10 presents findings obtained from the FGLS.

Table 4.10: FGLS regression Test Results

Estimated coefficients	Estimated autocorrelations
6	0

See appendix 9 for full results

After regression the results indicated that there is no autocorrelation, basing on the decision one concludes that no autocorrelation within and across the panels since estimated autocorrelation is zero.

4.4.8 Multicollinearity Test Results

The study employed the correlation matrix in detect the presence of multi-correlation within the model. A correlation of 0.8 and above shows the presence of high multicollinearity between the independent variables, whereas a correlation below 0.8 is deemed acceptable for regression analysis (Gujarati, 2009). The results showed in Table 4.11.

Table 4.11: Correlation Matrix Results

e(V)	BCO	CA	CR	GDPG	COR
BCO	1.000				
CA	0.4977	1.0000			
CR	0.0232	0.0523	1.0000		
GDPG	-0.2062	-0.4198	-0.1475	1.0000	
COR	0.0570	-0.1280	0.3598	-0.1062	1.0000

See appendix 10 for full results

Existence of correlation coefficient of 0.8 or more shall be a blow-up of the CLRM and the model suffering from severe multicollinearity (Gujarati, 2009). Basing on the results found in Table 4.11, all the correlation coefficients presented are less than 0.8; hence one concludes that there is no severe multicollinearity.

4.5 Presentation of Regression Results

After all the diagnostic tests have been utilised that are necessary as well as addressing the suitable data irregularities, then the researcher proceeded to carry out the regression. Results and

findings that were obtained are presented hereafter. Table 4.12 present the pooled panel regression results.

Table 4.12 Presentation of Regression Results

Variables	Coefficients	Std. Errors	t-statistics	P-values
Constant	9.967028	10.25922	0.97	0.331
BCO	13.1493	2.163994	6.08	0.000
CA	-12.71234	4.844509	2.62	0.009
CR	1.514432	1.67713	0.90	0.367
GDPG	.1675852	.0753349	2.22	0.026
COR	-.1283503	.4228578	0.30	0.761

See appendix 11 for the full results.

$$R^2 = 0.6908$$

$$\text{Durbin-Watson statistic} = 1.792706$$

$$\text{Adjusted } R^2 = 0.6714$$

$$\text{F- Statistic} = 20.8805$$

$$\text{Probability (F-statistical)} = 0.0000$$

The results presented in Table 12 can also be presented in the form of an equation as follows:

$$STB_t = 9.967028 + 13.1493BCO_t - 12.71234CA_{kt} + 0.167852GDPG_{kt} + e_{kt}$$

4.4 Results Interpretation

The fitness of the adapted regressors in modelling the relationship between financial stability and banking competition is shown by R^2 which present the goodness of fit of the fitted model. R^2 of 69.08 shows that 69% of the variations in financial stability are articulated by the model and 31% are articulated by factors not involved, captured by the error term. Adjusted R^2 of 67.14 depict that 67% of the deviations of financial stability are strong-cartered by the research model when taking into consideration the degrees of freedom, while 33% is capturing other aspects outside the model.

The F-statistic of the model is 20.8805 whilst the Durbin-Watson of 1.792706 is approximately closer to 2 thus eliminating the possibility of serial correlation. The results show that the model was strongly specified thus the results may be considered for policy recommendations.

4.4.1 Banking competition (BCO)

The BCO was found to be statistical significant at 1% level of significance and the p value is 0.000. The coefficient of 13.1493 which shows a positive relationship between BCO and STB was found as expected. The findings indicate that improve in market power improves overall bank soundness. In general, findings in this research show that increasing bank competition hinders financial system stability in line with the ‘concentration-stability’ hypothesis. The results in table 4.12 also show that there is significant positive connection between the market power and the measures of bank distress (Z-Score). Additionally, an increase in the bank competition erodes a banks’ ability to increase price above marginal cost, raises banks’ risk taking activities resulting in more “bank-fragility” and hence detrimental to financial stability. These findings confirm the results from other studies that support the ‘competition-fragility’ hypothesis (Keeley, 1990; Broecker, 1990; Agoraki *et al.*, 2011; Hope *et al.*, 2013; Chileshe, 2017).

4.4.2 Capital Adequacy (CA)

At 1% level of significance results show that CA is significant with the probability value of 0.0009 and has a coefficient of -12.1234 which means that there is an inverse relationship between STB and CA, the negative sign of the coefficient was expected. This means that one unit improvement in the CA ratio is associated with a decrease in the level of bank stability of approximately 12.1234 units. If the capital level is decrease the profitability will also decrease, that is, the greater the capital the greater the profitability, this confirm the study results of Tabak *et al.* (2012) and Chileshe (2017). r.

4.4.3 Gross Domestic Product Growth Rate (GDPG)

GDPG found to be significant in the research with a probability value of 0.026 which is less than 5% level of significance. There is positive relation between GDPG and STB represented by the coefficient value of 0.1675852 states that a unit increase in level of GDPG will cause an increase of 0.1675852 percent increase in banks stability. The results came out as expected since the GDPG reflects the condition of the economy and it is expected to affect the demand for bank loans positively. If GDPG is expanding at a good rate, well managed banks would make profit

from lending loans and the sale of securities. GDPG can enhance stability of banks by increasing the demand of finance. Beck *et al.* (2013) cited in their study that GDPG was significant in explaining the stability of banks in US and the conclusion was that GDPG was an important factor in determining the stability of banks. Also Schaeck *et al.* (2009) found that GDPG has a positive influence on stability of banks.

4.5 Conclusion

In this chapter the findings of the study were analyzed. The methodology that was also outlined in chapter three was employed to process data. The findings that were obtained were in line with the hypothesis that was stated in chapter three. All the variables that were involved in the model were expected to have a significant influence in influencing the stability of banks, however CR and COR were found to be statistical insignificant as their p-values were much more than 0.05. Chapter Five will therefore give insights on policy recommendations based on competitive environment.

CHAPTER FIVE

CONCLUSION, SUMMARY AND POLICY RECOMMENDATIONS

5.0 Introduction.

This chapter gives a synopsis of the banking competition-stability nexus of the Zimbabwean banking sector. In this way the conclusion and policy to the government are then broved in. Nevertheless, such areas concerning studies of the future are brought forward.

5.1 Summary of the Study

While tracing the competitive tract of the Zimbabwean banking sector and eliciting the consequence of competition on stability for the five banks listed in the ZSE for the duration of 2009-2018, the research has found a case for monopolistic competition in Zimbabwean banking sector under a condition of “competition- fragility.” Capital adequacy and GDPG were also found to be statistical significant in influencing stability although Credit risk and corruption were insignificant in model.

These findings are aligned with preceding studies of a same nature. This research has juxtaposed the competition and stability discourse by telling the competitive environment for Zimbabwean commercial banks. Estimated competition indices, placed Zimbabwe’s predilection in the theory of banking competition and posited a “competition-fragility” hypothesis. Competition indices were calculated using the Learner Index and the Z-score proxies’ of financial stability.

5.2 Conclusions

Main thrust in this study was to examine whether bank competition reduces or increases bank stability using Zimbabwean commercial banks’ data covering the period 2009 to 2018. In addition, the study scrutinizes the impact of control variables on bank soundness. To achieve the objectives of this research, the average Lerner Index calculated over the era is 0.5807074 similar to estimates by Sanderson and Pierre (2016). Using measures of bank stability the findings indicate that higher market power implies greater bank soundness. Broadly, findings in this research point out that higher bank competition hinders financial stability in line with “competition-fragility” hypothesis. Further, findings alluded that capital adequacy and GDPG

have significant influence on bank soundness. The favourable influence of bank capital on bank stability is in with the dispute that banks which rely extra on shareholder capital to finance their activities are more risk averse in comparison to those who depend on liabilities. On the contrary GDPG increases have a positive impact on bank soundness as banks can be able to acquire deposits from other sectors. Finally, results showed that corruption and credit risk are insignificant on bank stability. Findings in common alluded that economic performance has a positive influence on overall bank stability. These findings are as accepted and in line with literature, which advocate that increased economic performance improves the revenue accumulation of commercial banks via greater demand for loans while at the same time it improves the ability of borrowers to service their loans. However, the findings means that larger and well-capitalized banks with strong market power are more stable as compared to smaller undercapitalized ones.

5.3 Policy Recommendations

The study findings outlined in Chapter 4 and are beneficial to both the bankers and the RBZ which is the custodian of the Zimbabwean banking sector. The study supported the competition fragility hypothesis this means that concentrated markets earn larger profits margin, thus creating bumper from crises and decreasing their capital to invest in risk assets, hence financial system stability. Measures intended to increase financial stability in the economy are likely to pose both optimistic and inverse effects on the banking sector hence a cost benefit analysis should be considered before implementation of a policy

Firstly, the favourable influence of market power on bank stability means that there is need for supervisory authorities in Zimbabwe to get rid of the increased competition in the sector through implementation of stringent capital regulations especially under the Basel III accord and regulation such as risk-adjusted deposit insurance can eliminate fragility by preventing bank runs. This is especially, critical for further enhancing financial stability and reduces risk taking among the banks.

Secondly, it would be important for supervisory authorities in Zimbabwe to initiate income diversification thresholds for commercial banks that meant to uphold banks against unfavourable shocks on the various income sources. Also allow banks to develop a product that suit the

unbanked and underserved segments of the population, this will enable the capacity of the financial sector to muster long-term funding.

Finally, it would be important for policy makers to enhance designing institutions and generate proficient financial markets that apportion society's savings to their greatest use as well as prop up real markets. In addition, it seems important to focus on financial safety nets to enhance competitive and efficient markets rather than limiting or hindering competition. This is important as competition among banking institutions improves efficiency through acquiring new technology that results in high quality services and products offering as they try to outclass one another.

5.4 Suggestions for Future Studies

The literature surveyed and conclusions point to further much needed research. The researcher recommends that it would be of much pleasure for further studies on a same topic in Zimbabwean banks while considering different measures of banking competition (Boone indicator, Panzar rose and Conjectural variation). Also, it's better measuring competition on the product considering inputs markets and access to network services, such as payment systems, rather than institutional level.

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APPENDICES

Appendix 1: Data Set

YEARS	STB	BCO	CA	CR	GDPG	COR	BANKS
2009	.584365	.064634	.918082	.953668	12	22	BARCLAYS
2010	2.22227	.445425	.906365	.235513	12.6	24	BARCLAYS
2011	2.65021	.485651	.88903	.277398	15.4	22	BARCLAYS
2012	3.46104	.134156	.942329	.409494	14.8	20	BARCLAYS
2013	.781628	.107511	.923908	.465209	5.5	21	BARCLAYS
2014	4.683	.630321	.854726	.589351	2.1	21	BARCLAYS
2015	1.44569	.368268	.515999	.587769	1.7	21	BARCLAYS
2016	4.85605	.620308	.813452	.44012	.6	22	BARCLAYS
2017	12.2489	.765084	.721814	.495516	3.4	22	BARCLAYS
2018	9.53572	.760611	.702272	.357082	3.5	22	BARCLAYS
2009	5.20582	.634349	.782483	.678862	12	22	CBZ
2010	7.12918	.680482	.769801	.767687	12.6	24	CBZ
2011	9.9366	.691382	.753489	.952336	15.4	22	CBZ
2012	13.0679	.764039	.687617	.827906	14.8	20	CBZ
2013	5.21909	.630904	.756535	.771534	5.5	21	CBZ
2014	3.63625	.564456	.7863	.794632	2.1	21	CBZ
2015	2.9486	.514015	.608715	.606176	1.7	21	CBZ
2016	1.14473	.241763	.850392	.566733	.6	22	CBZ
2017	4.43267	.32362	.840951	.50786	3.4	22	CBZ
2018	8.29837	.704298	.638149	.234228	3.5	22	CBZ

2009	8.9015	.776511	.830728	.225628	12	22	FBC
2010	.366239	.128812	.95603	.694844	12.6	24	FBC
2011	19.1202	.82085	.780252	.971405	15.4	22	FBC
2012	15.2256	.792146	.789303	1.48782	14.8	20	FBC
2013	11.6751	.773787	.795969	1.16085	5.5	21	FBC
2014	7.98164	.720566	.819892	1.07513	2.1	21	FBC
2015	12.8238	.786755	.579168	.984536	1.7	21	FBC
2016	12.2003	.778133	.764177	.747154	.6	22	FBC
2017	9.98786	.755588	.779206	.59039	3.4	22	FBC
2018	15.2726	.789447	.695491	.527475	3.5	22	FBC
2009	11.6822	.863319	.848171	.452787	12	22	NMB
2010	.329822	.213555	.95994	.755365	12.6	24	NMB
2011	6.98118	.682897	.821183	.878144	15.4	22	NMB
2012	10.7117	.74164	.783735	.765847	14.8	20	NMB
2013	1.50257	.302001	.912415	.922178	5.5	21	NMB
2014	.276236	.549392	.953226	.92395	2.1	21	NMB
2015	12.5304	.455019	.676077	.87744	1.7	21	NMB
2016	2.28759	.444195	.874938	.790091	.6	22	NMB
2017	5.25428	.625043	.7764	.604676	3.4	22	NMB
2018	15.7211	.781847	.67786	.603127	3.5	22	NMB
2009	7.85281	.795332	.887749	.021644	12	22	ZB BANK
2010	1.17857	.36386	.954664	.028939	12.6	24	ZB BANK
2011	6.23009	.689711	.916106	.696645	15.4	22	ZB BANK
2012	5.12923	.663951	.909929	.628418	14.8	20	ZB BANK

2013	.810265	.208341	.947102	.612056	5.5	21	ZB BANK
2014	4.75326	.634654	.849614	.599443	2.1	21	ZB BANK
2015	4.00705	.622923	.642414	.368395	1.7	21	ZB BANK
2016	6.24126	.693936	.824329	.360347	.6	22	ZB BANK
2017	6.73494	.699004	.794763	.302416	3.4	22	ZB BANK
2018	10.1983	.750879	.739134	.281537	3.5	22	ZB BANK

Sources: Banks' Published Financial Statements; World Bank Website, Transparency International.

Appendix 2: Descriptive Statistics Results

```
. xtsum bank years stb bco ca cr gdpg cor
```

Variable		Mean	Std. Dev.	Min	Max	Observations
bank	overall	3	1.428571	1	5	N = 50
	between		1.581139	1	5	n = 5
	within		0	3	3	T = 10
years	overall	2013.5	2.901442	2009	2018	N = 50
	between		0	2013.5	2013.5	n = 5
	within		2.901442	2009	2018	T = 10
stb	overall	6.749117	4.824761	.2762363	19.12023	N = 50
	between		2.736786	4.246882	11.3555	n = 5
	within		4.14295	-4.24014	15.7425	T = 10
bco	overall	.5807074	.2199065	.064634	.8633187	N = 50
	between		.0985693	.438197	.7122596	n = 5
	within		.201066	-.0027403	.9075949	T = 10
ca	overall	.8040475	.1061183	.5159991	.9599404	N = 50
	between		.040155	.7474434	.8465803	n = 5
	within		.0997237	.501249	.9810555	T = 10
cr	overall	.629155	.2901748	.0216442	1.48782	N = 50
	between		.1900915	.3899841	.8465235	n = 5
	within		.2338881	.0082593	1.270452	T = 10
gdpg	overall	7.16	5.606338	.6	15.4	N = 50
	between		0	7.16	7.16	n = 5
	within		5.606338	.6	15.4	T = 10
cor	overall	21.7	1.015191	20	24	N = 50
	between		0	21.7	21.7	n = 5
	within		1.015191	20	24	T = 10

Appendix 3: Unit Root Test Results

```
. xtunitroot llc stb ,lag(0)
```

Levin-Lin-Chu unit-root test for stb

Ho: Panels contain unit roots	Number of panels =	5
Ha: Panels are stationary	Number of periods =	10

AR parameter: Common	Asymptotics: N/T -> 0
Panel means: Included	
Time trend: Not included	

ADF regressions: 0 lags

LR variance: Bartlett kernel, 6.00 lags average (chosen by LLC)

	Statistic	p-value
Unadjusted t	-5.4340	
Adjusted t*	-3.3512	0.0004

```
. xtunitroot llc bco ,lag(0)
```

Levin-Lin-Chu unit-root test for bco

Ho: Panels contain unit roots	Number of panels =	5
Ha: Panels are stationary	Number of periods =	10

AR parameter: Common	Asymptotics: N/T -> 0
Panel means: Included	
Time trend: Not included	

ADF regressions: 0 lags

LR variance: Bartlett kernel, 6.00 lags average (chosen by LLC)

	Statistic	p-value
Unadjusted t	-6.9960	
Adjusted t*	-5.1361	0.0000

. xtunitroot llc ca ,lag(0)

Levin-Lin-Chu unit-root test for ca

Ho: Panels contain unit roots Number of panels = 5
Ha: Panels are stationary Number of periods = 10

AR parameter: Common Asymptotics: N/T -> 0
Panel means: Included
Time trend: Not included

ADF regressions: 0 lags
LR variance: Bartlett kernel, 6.00 lags average (chosen by LLC)

	Statistic	p-value
Unadjusted t	-5.8142	
Adjusted t*	-4.2716	0.0000

. xtunitroot llc cr , lag(0)

Levin-Lin-Chu unit-root test for cr

Ho: Panels contain unit roots Number of panels = 5
Ha: Panels are stationary Number of periods = 10

AR parameter: Common Asymptotics: N/T -> 0
Panel means: Included
Time trend: Not included

ADF regressions: 0 lags
LR variance: Bartlett kernel, 6.00 lags average (chosen by LLC)

	Statistic	p-value
Unadjusted t	-5.5539	
Adjusted t*	-2.7546	0.0029

```
. xtunitroot llc gdp
```

```
Levin-Lin-Chu unit-root test for gdp
```

```
Ho: Panels contain unit roots      Number of panels =      5  
Ha: Panels are stationary          Number of periods =    10
```

```
AR parameter: Common                Asymptotics: N/T -> 0  
Panel means:  Included  
Time trend:   Not included
```

```
ADF regressions: 1 lag  
LR variance:    Bartlett kernel, 6.00 lags average (chosen by LLC)
```

	Statistic	p-value
Unadjusted t	-3.7950	
Adjusted t*	-2.6614	0.0039

```
. xtunitroot llc cor ,lag(0)
```

```
Levin-Lin-Chu unit-root test for cor
```

```
Ho: Panels contain unit roots      Number of panels =      5  
Ha: Panels are stationary          Number of periods =    10
```

```
AR parameter: Common                Asymptotics: N/T -> 0  
Panel means:  Included  
Time trend:   Not included
```

```
ADF regressions: 0 lags  
LR variance:    Bartlett kernel, 6.00 lags average (chosen by LLC)
```

	Statistic	p-value
Unadjusted t	-4.9225	
Adjusted t*	-3.0893	0.0010

Appendix 4: Cointegration Test Results

```
. xtointtest westerlund stb bco ca cr gdpg cor
```

```
Westerlund test for cointegration
```

```
-----
Ho: No cointegration                Number of panels      =      5
Ha: Some panels are cointegrated    Number of periods     =     10
```

```
Cointegrating vector: Panel specific
Panel means:          Included
Time trend:           Not included
AR parameter:         Panel specific
```

	Statistic	p-value
Variance ratio	3.9794	0.0000

Appendix 5: Hausman Test Results

```
. hausman fixed random
```

	Coefficients		(b-B) Difference	sqrt(diag(V_b-V_B)) S.E.
	(b) fixed	(B) random		
bco	12.47572	13.1493	-.673581	.6959821
ca	-13.15718	-12.71234	-.4448434	1.40048
cr	.5699203	1.514432	-.9445116	.7855312
gdpg	.1769456	.1675852	.0093603	.0140127
cor	-.2433398	-.1283503	-.1149894	.1151805

b = consistent under Ho and Ha; obtained from xtreg
 B = inconsistent under Ha, efficient under Ho; obtained from xtreg

```
Test: Ho: difference in coefficients not systematic
```

```
chi2(5) = (b-B)'[(V_b-V_B)^(-1)](b-B)
          = 1.76
Prob>chi2 = 0.8807
```

Appendix 6: BPLM Test Results

```
. xttest0

Breusch and Pagan Lagrangian multiplier test for random effects

stb[bank,t] = Xb + u[bank] + e[bank,t]

Estimated results:

```

	Var	sd = sqrt(Var)
stb	23.27832	4.824761
e	6.862076	2.619556
u	2.149177	1.466007

```

Test:   Var(u) = 0
        chibar2(01) = 0.85
        Prob > chibar2 = 0.1776

```

Appendix 7: Heteroscedastisity

```
. lmhhpxt stb bco ca cr gdpg cor ,id(bank) it(years)
```

* Ordinary Least Squares (OLS) Regression

```
stb = bco + ca + cr + gdpg + cor
```

Sample Size	=	50		Cross Sections Number	=	5
Wald Test	=	102.0824		P-Value > Chi2(5)	=	0.0000
F-Test	=	20.4165		P-Value > F(5 , 44)	=	0.0000
(Buse 1973) R2	=	0.6988		Raw Moments R2	=	0.8995
(Buse 1973) R2 Adj	=	0.6646		Raw Moments R2 Adj	=	0.8881
Root MSE (Sigma)	=	2.7943		Log Likelihood Function	=	-119.1304

```

- R2h= 0.6988   R2h Adj= 0.6646   F-Test = 20.42 P-Value > F(5 , 44) 0.0000
- R2v= 0.6988   R2v Adj= 0.6646   F-Test = 20.42 P-Value > F(5 , 44) 0.0000

```

stb	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]	
bco	14.42057	2.118146	6.81	0.000	10.15173	18.68942
ca	-11.33058	4.825947	-2.35	0.023	-21.05664	-1.604523
cr	3.090135	1.490048	2.07	0.044	.0871404	6.093129
gdpg	.1475893	.0799958	1.84	0.072	-.0136317	.3088103
cor	.0552363	.4360676	0.13	0.900	-.8236002	.9340729
_cons	3.285767	10.36853	0.32	0.753	-17.61062	24.18216

*** Panel Data Heteroscedasticity Hall-Pagan Test

Ho: Panel Homoscedasticity - Ha: Panel Heteroscedasticity

```

- Hall-Pagan LM Test:   E2 = Yh           = 0.8618   P-Value > Chi2(1) 0.3532
- Hall-Pagan LM Test:   E2 = Yh2         = 0.8939   P-Value > Chi2(1) 0.3444
- Hall-Pagan LM Test:   E2 = LYh2       = 1.5643   P-Value > Chi2(1) 0.2110

```

Appendix 8: Autocorrelation

```
. lmawxt stb bco ca cr gdp cor ,id(bank) it(years)
```

* Ordinary Least Squares (OLS) Regression

stb = bco + ca + cr + gdp + cor

Sample Size	=	50		Cross Sections Number	=	5
Wald Test	=	104.4024		P-Value > Chi2(5)	=	0.0000
F-Test	=	20.8805		P-Value > F(5 , 45)	=	0.0000
R2 (R-Squared)	=	0.6988		Raw Moments R2	=	0.8995
R2a (Adjusted R2)	=	0.6720		Raw Moments R2 Adj	=	0.8906
Root MSE (Sigma)	=	2.7631		Log Likelihood Function	=	-119.1304

- R2h= 0.6988 R2h Adj= 0.6720 F-Test = 20.42 P-Value > F(5 , 45) 0.0000
 - R2v= 0.6988 R2v Adj= 0.6720 F-Test = 20.42 P-Value > F(5 , 45) 0.0000

stb	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]	
bco	14.42057	2.094479	6.89	0.000	10.20208	18.63907
ca	-11.33058	4.772024	-2.37	0.022	-20.94193	-1.71923
cr	3.090135	1.473399	2.10	0.042	.1225571	6.057712
gdp	.1475893	.079102	1.87	0.069	-.0117303	.3069089
cor	.0552363	.4311952	0.13	0.899	-.8132354	.9237081
_cons	3.285767	10.25267	0.32	0.750	-17.36417	23.93571

*** Panel Data Autocorrelation Wooldridge Test

Ho: No AR(1) Panel AutoCorrelation - Ha: AR(1) Panel AutoCorrelation

- Panel Rho Value = 0.0828

- Wooldridge F Test = 10.4272 P-Value > F(1, 4) 0.0320
 - Wooldridge LM Test = 5.1199 P-Value > Chi2(1) 0.0237

.

Appendix 9: Cross-sectional time-series FGLS regression Test Results

```
. xtgls stb bco ca cr gdpg cor
```

Cross-sectional time-series FGLS regression

Coefficients: generalized least squares

Panels: homoskedastic

Correlation: no autocorrelation

Estimated covariances	=	1	Number of obs	=	50
Estimated autocorrelations	=	0	Number of groups	=	5
Estimated coefficients	=	6	Time periods	=	10
			Wald chi2(5)	=	116.00
Log likelihood	=	-119.1304	Prob > chi2	=	0.0000

stb	Coef.	Std. Err.	z	P> z	[95% Conf. Interval]	
bco	14.42057	1.986997	7.26	0.000	10.52613	18.31502
ca	-11.33058	4.52714	-2.50	0.012	-20.20361	-2.45755
cr	3.090135	1.397789	2.21	0.027	.3505189	5.82975
gdpg	.1475893	.0750427	1.97	0.049	.0005082	.2946704
cor	.0552363	.4090677	0.14	0.893	-.7465216	.8569943
_cons	3.285767	9.726539	0.34	0.736	-15.7779	22.34943

Appendix 10: Correlation Matrix

```
. estat vce ,correlation
```

Correlation matrix of coefficients of xtreg model

e(V)	bco	ca	cr	gdpg	cor
bco	1.0000				
ca	0.5260	1.0000			
cr	0.1122	-0.0012	1.0000		
gdpg	-0.2461	-0.4402	-0.1495	1.0000	
cor	0.0943	-0.1466	0.4465	-0.1096	1.0000

Appendix 11: Regression Results

```
. xtreg stb bco ca cr gdpg cor
```

```
Random-effects GLS regression      Number of obs   =       50
Group variable: bank              Number of groups =        5
```

```
R-sq:                               Obs per group:
  within = 0.6714                    min =          10
  between = 0.8160                   avg =         10.0
  overall = 0.6908                   max =          10
```

```
corr(u_i, X) = 0 (assumed)          Wald chi2(5)    =       92.00
                                          Prob > chi2     =       0.0000
```

stb	Coef.	Std. Err.	z	P> z	[95% Conf. Interval]	
bco	13.1493	2.163994	6.08	0.000	8.907946	17.39065
ca	-12.71234	4.844509	-2.62	0.009	-22.2074	-3.217277
cr	1.514432	1.67713	0.90	0.367	-1.772683	4.801547
gdpg	.1675852	.0753349	2.22	0.026	.0199315	.3152389
cor	-.1283503	.4228578	-0.30	0.761	-.9571365	.7004358
_cons	9.967028	10.25922	0.97	0.331	-10.14067	30.07473
sigma_u	1.4660072					
sigma_e	2.6195564					
rho	.23849925	(fraction of variance due to u_i)				

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