NEAR EAST UNIVERSITY
GRADUATE SCHOOL OF SOCIAL SCIENCES
DEPARTMENT OF BANKING AND FINANCE
BANKING AND ACCOUNTING PROGRAM

EFFECTS OF 2008 FINANCIAL CRISIS ON BANK PERFORMANCE: EVIDENCE FROM USA COMMERCIAL BANKS INSURED BY FDIC

BESAR IBRAHIM MOHAMMED MOHAMMED

MASTER'S THESIS

NICOSIA
2018

EFFECTS OF 2008 FINANCIAL CRISIS ON BANK PERFORMANCE: EVIDENCE FROM USA COMMERCIAL BANKS INSURED BY FDIC

BESAR IBRAHIM MOHAMMED MOHAMMED
20174952

NEAR EAST UNIVERSITY GRADUATE SCHOOL OF SOCIAL SCIENCES
DEPARTMENT OF BANKING AND FINANCE
BANKING AND ACCOUNTING PROGRAM

MASTER'S THESIS

THESIS SUPERVISOR
ASSOC. PROF. DR. TURGUT TÜRSOY

NICOSIA
2018

ACCEPTANCE

We as the jury members certify "Effects of 2008 financial crisis on bank performance: evidence from USA commercial banks insured by FDIC" prepared by Besar Ibrahim Mohammed Mohammed defended on 28/11/ 2018 has been found satisfactory for the award of degree of Master.

JURY MEMBERS

.....

Assoc. Prof. Dr. TURGUT TÜRSOY (Supervisor)
Near East University/ Department of Banking and Accounting

.....

Assist. Prof. Dr. Behiye Tüzel ÇAVUŞOĞLU (Head of Jury)
Near East University/ Department of Economics

.....

Assist. Prof. Dr. Nil GÜNSEL REŞATOĞLU
Near East University/ Department of Banking and Finance

.....

Prof. Dr. Mustafa SAĞSAN
Graduate School of Social Sciences
Director

DECLARATION

I Besar Ibrahim Mohammed Mohammed, hereby declare that this dissertation entitled "Effects of 2008 financial crisis on bank performance: Evidence from USA commercial banks insured by FDIC" has been prepared myself under the guidance and supervision of “Assoc. Prof. Dr Turgut Türsoy.” in partial fulfilment of The Near East University, Graduate School of Social Sciences regulations and does not to the best of my knowledge breach any Law of Copyrights and has been tested for plagiarism and a copy of the result can be found in the Thesis.

- The full extent of my Thesis can be accesible from anywhere.
- My Thesis can only be accesible from Near East University.
- My Thesis cannot be accesible for two (2) years. If I do not apply for extention at the end of this period, the full extent of my Thesis will be accesible from anywhere.

Date: 28 Nov 2018

Signature

Name, Surname: **Besar Ibrahim Mohammed Mohammed**

DEDICATION

This study is dedicated to my husband. I am truly thankful for having you in my life. This work is also dedicated to my parents and all my family members who have offered me with essential support and encouragement to see me through towards the accomplishment of this study.

ACKNOWLEGEMENTS

I would like to express my sincere gratitude to my advisor Assoc.Prof. Dr. Turgut Türsoy for the continuous support of my master study and related research, for his endurance, inspiration, and immense knowledge. His supervision helped me in all the time of research and writing of this thesis. I could not have imagined having a better mentor for me. Also, I am very thankful my dearest husband Peshwaz and I would like to special thanks to my mother and all my family members for their help during my studies and their constant encouragement made me reach where I am today. Lastly, I would like to thank all my friends and who supported me during my study time.

ABSTRACT

THE EFFECT OF THE 2008 FINANCIAL CRISIS: EVIDENCE FROM USA COMMERCIAL BANKS INSURED BY FDIC

The study examines the effect of the 2008 financial crisis with respect to a total of 1 372 banks insured by the Federal Deposit Insurance Commission of United States of America. The study was inspired by observations made which showed that placing banks under deposit insurance does not always guarantee improved bank performance and survival. This was followed by further observations which showed that some of the small and large banks placed under the supervision of the deposit insurance went on to experience instability and failures. As a result, time series data from the period 1984 to 2018 was used to estimate a financial crisis-bank performance ARDL model. The results from the study showed that in the long run, loss provisions and a financial crisis have adverse effects on bank performance. Asset yield was not noted to be positively related with bank performance. Implications of the study therefore point out that banks are vulnerable to any type of a financial crisis. Also, setting up provisions to guard against losses does not always cushion banks from losses but rather can deter a bank from making more profits. Recommendations were thus made that bank managers must come up with sound risk management policies that can cushion the bank from the effects of the financial crisis.

Keywords: Bank performance, financial crisis, loss provisions.

ŐZ

FDIC TARAFINDAN SİGORTALI ABD TICARI BANKALARDAN KANIT: 2008 MALİ KRİZİN ETKİSİ

Bu Çalışma 2008 Amerika Birleşik Devletleri Federal Mevduat Sigortaları Komisyonu tarafından sigorta edilen toplam 1 372 banka ile olan mali krizinin etkisini incelemektedir. Çalışmada, bankaların mevduat sigortasına yerleştirilmesinin banka performansını ve hayatta kalma oranını iyileştirmediğini gösterilmektedir. Bunu takip eden başka mevduat sigortasının gözetimi altında yer alan küçük ve büyük bankaların bazılarının dengesizlik ve başarısızlıklara maruz kaldığını gösteren başka gözlemler oldu. Dolayısıyla, finansal kriz-banka performansı ARDL modelini tahmin etmek için 1984 ile 2018 arasındaki zaman serileri verileri kullanılmıştır. Sonuçta, uzun vadede, zarar karşılıkları ve finansal krizin banka performansı üzerinde olumsuz etkilerinin olduğunu göstermiştir.

Varlık verimi Banka performansı ile pozitif olarak ilişkili olmadığı görülmüştür. Dolayısıyla, bankaların herhangi bir finansal krize karşı savunmasız olduklarına işaret etmektedir. Ayrıca, kayıpları korunmak için hükümler oluşturmak, bankaları her zaman kayıplardan korumaz, aksine bir bankayı daha fazla kar elde etmekten alıkoyamaz. Böylece, Banka yöneticilerinin bankayı mali krizin etkilerini hafifletebilecek sağlam risk yönetimi politikaları izlemesi gerektiğini önerilerde bulunmuştur.

Anahtar Kelimeler: Banka performansı, Mali kriz, Kredi kayıp karşılığı

TABLE OF CONTENTS

LIST OF FIGURES

LIST OF TABLES

ABBREVIATIONS

ADF: Augmented Dickey Fuller

ARDL: Auto regressive Distributed Lag Models

AY: Asset Yield

ECT: Error Correction Term

FC: Financial Crisis

FDIC: Federal Deposit Insurance Corporation

LPV: Loss Provision

PP: Phillips Perron

ROA: Return on Asset

INTRODUCTION

The 2008 financial crisis is one of the most ravaging economic events ever recorded in the history of banking and finance and economics. This follows its disastrous effects on the financial sector and economy as whole. One can contend that the effects of the 2008 financial crisis were not only evident in United States of America, but also spread to other countries.

In respect of the perspective that may be taken to examine the effects of the 2008 financial crisis, one can postulate that the crisis has severe and undesired outcomes. One of the notable areas that was not spared by the crisis is the banking sector. With a lot of banks succumbing to failure, insolvency and liquidity challenges during and after the crisis, it remained important that the effects of the 2008 financial crisis be examined. Efforts to examine how the financial crisis impacted banking institutions are mainly based on the idea that banks play an import role in disbursing funds to economic agents be it for consumption or productive purposes.

One of the countries that suffered a lot from the 2008 financial crisis is the United States of America. Not only did the 2008 financial crisis affected the US economy, it also emanated in USA and later spread to other countries. But there have been mixed reactions and ideas about how the 2008 financial crisis affected the banking sector. This follows insights which pointed out that the banking sector always remain a victim of the financial crisis because it is one of the transmission mechanisms of a financial crisis. However, other arguments also contrasted with this idea and established that the presence of deposit insurance can cushion banks from the effects of the financial crisis. As a result, there is no common agreement as to how the 2008 financial crisis impacted bank performance. Most ideas have also established that placing banks under deposit insurance such as the Federal Deposit Insurance Commission will not yield effective results. This can be supported by a series of observations which pointed out that some banks both small and large went on to collapse despite being placed under the supervision of the FDIC. With these contrasting ideas in mind, it is therefore important to examine the effects of the 2008 financial crisis and determine possible measures that can be used to curb the effects of the 2008 financial crisis. This studyt

therefore seeks to examine the impact of the 2008 financial crisis with specific regards to banks placed under the supervision of the FDIC in USA.

Finance is generally considered as the backbone of the business. However, it is not without vulnerabilities. Any quakes in it would probably shake the business and possibly bring it down to its knees. Countries and the world in general have had to sink, weather and ride over storms of financial distress and crises ranging from scandals, hyperinflation to depreciation of currencies among others. Such was the situation evoked by the global financial crisis of 2008, a crisis which rocked the foundation not of one business but of entire nations in the world. According to Thakor (2015) this crisis marked the worst ever to be experienced since the Great Depression of the 1930s.

Most nations rely on the banking sector for the fluid business transactions, savings, accessing loans and many other things that are needed to boost economies. Therefore because of the banking sector's importance in the financial system, many central banks are interested in anything that may affect it and are forever evaluating the internal and external environment for threats and implementing measures to counter negative effects. There are various reasons financial crises occur and more often than not they stem as a result of a series of events rather than just one thing. Some of these are failure of banking systems, deregulation, uncertainty and disturbances with regards to financial markets, loss of confidence in financial markets by investors, debt crises and so on.

According to Williams (2010) the crisis originated from one of the top investment companies in the Unites States of America, the Lehman Brothers and spread all over the country. Given that the USA's currencies is relied on by countries across the world, the situation soon became a global crisis. The effects were tremendous and still felt years on. The crisis resulted in the collapse of big companies, Lehman Brothers included, high interest rates, stunted growth for growing economies among others.

However, some countries were not directly affected because of their underdeveloped financial systems for example African countries (ADF Report, 2009) but suffered because of the ripple effects. Others like the Czech Republic whose deposits where

vast escaped from problems associated with liquidity during this time but were affected because it exports most of its products to the western countries (Babicky 2010). This made it vulnerable as changes in external environment affected elements like its GDP and unemployment rates among others. This is reiterated by Bahiti et al (2011) who stated that the crisis especially wreaked havoc on European financial markets.

The study is of paramount importance as it highlights some of the key strategies that are needed in order to be able to effectively predict a financial crisis and set up measures to combat it before it talks effect. Also, it offers suggestions on what can be done by banks to guard against a financial crisis and improve bank performance. The study is also part of an ongoing procedure to predict and guard against a financial crisis. Hence, it plays an essential role as it contributes towards enhancing existing literature sources of financial and economic crises, and bank performance.

The study is thus a quantitative approach that relies on the use of secondary data from the period 1984 to 2018 for a total of 1 372 banks insured by the FDIC. An ARDL model was used to estimate a financial crisis-bank performance model. The study is further structured into five chapters which respectively deal with introductory insights, literature review, overview of the banking situation and financial crisis events in the USA, research methodology, data analysis and presentation, conclusions, recommendations and suggestions for future studies.

CHAPTER 1

LITERATURE REVIEW

1.1 Introduction

This chapter looks at the theoretical and empirical mainframes that can be used to explain the occurrence and effects of a financial crisis. As such will look at the types of financial crises, Robert Shiller's theoretical insights of a bubble, transmission mechanisms, and impact on the economy and performance of banks. These aspects are further discussed in detail

1.2 Description insights of a financial crisis

According to the business dictionary, a financial crisis refers to a situation whereby demand for money far outweighs its supply leading to the inability to meet financial obligations. In such a situation withdrawal of money from the banks increases and banks end up selling investments to make up for this or simply collapse. Eichengreen and Portes (1987) defined a financial crisis as a disruption to financial markets that is connected to fall in asset prices, failure of debtors to meet their obligations ultimately leading to the market's failure to allocate capital within the economy.

Eichengreen and Portes (1987) also explained that it may be difficult to fully define a financial crisis but pointed out that a financial crisis on a global scale causes disturbance internationally and means capital allocation failure in international markets. Reinhart and Rogoff (2009) explained that despite the similarities in some of the crises, they still have a disastrous effect because stakeholders assume that things may turn out differently and are therefore caught unprepared when things go downhill.

Stijn et al (2014) explained that the increased global financial networks pose a risk to the spreading of crisis. Bartmann (2017) noted that these linkages between companies, investors and banks have increased. The scholar explained that European banking companies and subsidiaries closed and those in Germany had to be bailed out by the government.

The term financial crisis is not restricted to a single crisis that is surrounded by downward financial changes or circumstances but is composed of many elements. It is apparent to note that there are several types of financial crisis and each of these crises is composed of different causes and effects. But the most common feature is that all these crises will be characterised by a change in one or all of the following aspects: recapitalisation and liquidity support (government support); balance sheet challenges; use of external funding to support economic sectors; disruptions in financial intermediation; and huge changes in asset prices and credit volume (Calvo et al., 2006).

Meanwhile, each financial crisis has its own associated factors that drive its occurrences and impacts. Though these factors can be identified using empirical insights, it is worthy to note that deeper causes of these crises are sometimes difficult to establish. However, external and internal shocks, and macroeconomic imbalances are the major key drivers of financial crises (Frankel & Saravelos, 2012). Minsky (1975), argues that this does however does not exclude the aspect of irrationality. Factors attributed to irrationality include credit crunches, asset bursts, limits on arbitrage during periods of stress, spill overs and contagion effects on other financial markets.

1.3 Types of financial crises

The differences between financial crises can be classified using standard classification measures established by Reinhart and Rogoff (2009). Reinhart and Rogoff established that financial crisis can be categorised based on judgemental, qualitative analysis, and quantitative methods. The first instance is usually associated with banking and debt crises while the second aspects focuses on sudden stop and currency crises.

1.3.1 Currency crisis and generation models

This is a type of a financial crisis that is associated with speculative attacks on currency which results in a severe depreciation or devaluation of the currency, or forces monetary authorities to impose capital controls, raise interest rates high and expend a lot of international reserves to curb the fall of the currency (Laeven, 2001). A description of a currency crisis can be best given by looking at three generational models;

- **First generation models:** Otherwise known as KFG models which formulated by Krugman (1979) and Flood and Garber (1984). These models were mainly concerned with the fall in gold prices. KFG models assume that investors are rational and can make rational attacks on a currency. The ability to make such informed attacks is on a currency requires that excessive debt and deficit be financed with central bank. A currency crisis will not take place so long as the investors are certain that the value of the currency will remain stable over a long period of time (Haber 2005). In the event that the peg is about to stop or when the exchange rate regime begins to fall. This is often accompanied by 'dumping' behaviour as investors switch to other stable currencies. Continued use of central bank credit to support a falling exchange rate regime causes the depletion of foreign currency reserves and a loss in liquid assets. In doing so, the value of the currency will begin to fall causing a currency crisis.
- **Second generation models:** These are based on the idea that the existence of doubts over the ability of the government to keep an exchange rate peg can result in multiple equilibria which trigger a crisis (La Porta et al. 2000). Currency attacks by investors are inevitable and they can continue so long as investors expect other investors to attack the currency. What separates first generation models from second generation models is that first generation models contend that bad policies before and after the attack will always trigger some form of a currency attack. But there are cases whereby policy compatibility triggers an attack and this occurs when the policies are in line with macroeconomic principles (Forbes, 2012). The use of second-generation models has been evident in a lot of European countries such as United Kingdom which succumb to devaluation in 1992.

- **Third generation models:** Chang and Velasco (2000) established that third generation models focus on how changes in exchange rates and asset prices result in a currency crisis. Thus, third generation models can be said to be triggered by changes in the corporate and financial sectors as opposed to other models. They assume that exposing corporate and financial sectors to vulnerabilities will trigger a crisis (Calomiris, 2009). Much of the Asian crises that took place in Asian are highly linked to third generation models. In addition, these models also highlight that banks do contribute to the occurrence of a crisis especially when the government is overborrowing to address economic challenges. Under such case, the existence of subsidies forces banks to borrow more money and in the end, banks have to avail bail out packages just to assist troubled banks. The effectiveness of KFG varies with the economical context within which they are being applied to. In most cases, KFG model models have proved to be effective (Frankel & Saravelos, 2012) while in some cases they have (Kaminsky, 2003).

1.3.2 Sudden stops

Sudden stops are mainly related to a balance of payment or capital account crisis through a sudden reversals of total capital flows to a nation or fall in international capital inflows in relation to an increase in credit spreads (Shin, 2009). According to sudden stops models, a sudden stop will work to influence external supply of funds into an economy (Calvo et al., 2006). They also consider that changes or differences in asset maturity which can cause balance sheet mismatches. The most important thing is that they significantly acknowledge the impact of international factors. Hence, changes in variables such as equity through inflows of capital be it FDI inflows can be impacted by sudden stops. That is, investors can suddenly stop capital influx into a country or firm. Sudden stops are thus characterised by het depreciation of the real exchange rate and reversals of the current account. They are also important in explaining part of microeconomic variables such as total factor productivity. There are ideas which argue that sudden stops do not always lead to a decrease in output (Calvo, Izquierdo & Loo-Kung, 2006). This is mainly because sudden stops cause an increase in exports. When a currency depreciates during a sudden stop, the value of exports on the international market will drop causing an increase in the demand for

exports. A lot of foreign currency inflow can be obtained following an increase in export levels and this can offset the high liquidity demand.

The effects of a sudden stop are a decline in output, prices and a decline in lines of credit (Calvo and Reinhart, 2000). This can cause a financial distress and the whole financial sector can crumble is proper measures are not enacted. It is thus important to ensure that monetary authorities have enacted proper measures to guard against sudden stops. In addition, sudden stops can cause a series of bankruptcies among financial and non-financial institutions (Kaminsky, 2003).

All in all, sudden stops can cause external interferences as banks cut on lending as a cautious approach. The act of reducing lending in the midst of a crisis can worsen a bank's financial position. Hence, precautionary measures during a sudden stop are not always advisable to adopt. It is most important for banks to adopt a counter active approach to dealing with sudden stops.

Economic shocks have implications on the sudden stops. According to Calvo, Izquierdo and Mejía (2008), internal shocks such as disruptions in credit lines, fall in output can result in sudden stops. On the other hand, the ability of the government to secure additional funding through working capital and debt can be hard especially when productivity, world interest rate and the price of imported inputs are disturbed. The falling asset value as a result of falling asset prices makes it difficult for the government to borrow amounts exceeding the value of their collateral assets (Shin, 2009)

The challenge of attempting to describe the occurrence of sudden stops with reference to a particular country is that they tend to differ with the level of development in that economy. For instance, Calvo, Izquierdo and Mejía (2008) contend that sudden stops are highly visible in countries with high foreign exchange liabilities and limited number of tradable sectors.

Sudden stops can thus be said to be highly connected or linked with the occurrence of global shocks. Notable example can be traced to Eastern Europe, Asia and Latin America.

1.3.3 Foreign and domestic debt crises

Countries can be caught up in a debt crisis and find themselves stuck and with the need to continue making future payments and such a scenario is termed a debt crisis (Tomz & Wright, 2007). The same applies to any debt that may be owed by the government whether domestic or foreign debt. The other challenge is that a growing debt makes it difficult for countries to secure future funds especially from international markets such as the IMF and World Bank. In most cases, countries with high dents are often cut off and the need to payback so as to secure more funding is often costly (Reinhart, Kirkegaard & Sbrancia, 2011).

Aguiar and Gopinath (2006) contends that the ability of a government to meet its debt obligations is assumed to be determined by incentives to pay (Reinhart & Rogoff, 2009). That is, what the government will get soon after or in the process of meeting its debt obligations. Countries stuck in a debt crisis can default paying when they consider that the opportunity cost of not paying is very low. That is, when chances are slim that they will not be entitled to future loans. This however, is determined by a lot of economic factors. For instrance, Panizza, Sturzenegger and Zettelmeyer (2009) contends that defaulting can be high when a country has a high term of trade and expects it's to continue on an upward trend. This implies that when revenue inflows from exports are expected to be low, then it is worthy that the government honours its debt obligations.

There are incidences when governments have been observed to default on the debt payments so at to help induce domestic consumption (Aguiar & Gopinath, 2006). Much of the literature on debt crisis has sought to establish situations under which governments can default their payments. For instance, Tomz and Wright (2007) outlined that under equilibrium condition, it is impossible for government's top default. This was further supported by Reinhart and Rogoff (2009), who outlined that at equilibrium, the cost of renegotiating new debt is high and this includes dead-weight costs. Panizza, Sturzenegger and Zettelmeyer (2009) also established that debt defaults do not just occur because the country is experiencing bad economic outcomes. This deals with the idea that economic performance does not always determine whether a government will continue honouring its debt payments.

Meanwhile, once stuck in a debt crisis, investors are often reluctant to lend to such nations except under strict conditions. They do not put much emphasis on the extent to which investors will lend money to governments suffering from a debt crisis. This is one of the problems associated with models that explain debt crisis. Also, Panizza, Sturzenegger and Zettelmeyer (2009) hinted that the probability of defaulting is determined by a combination of political and economic factors. These factors are not captured by these models.

Implications of the debt crisis are that the increased need to borrow to finance domestic activities can actually cause a nation to stick in debt payments which it has to pay over and over again. Also, having bad institutional environments, political economy, governance problems, poorly supervised and developed financial system will expose a government to increase debt vulnerabilities. The only situation out of a debt crisis is to default on the condition that the opportunity cost of doing so is very low. Also,

On the other hand, the use of debt crisis to offer explanations about the likely occurrence of a financial crisis is linked to a lot of things such as banking crises and sudden stops or even both. This makes it difficult in most cases to identify the cause of a debt crisis.

Also, there is a problem of omitting variables and such a problem is prevalent is some of the empirical studies (Reinhart, Kirkegaard & Sbrancia, 2011). Moreover, the idea that foreign currency shortages is the prime cause of debt crises has not yet been sufficiently established (Panizza, Sturzenegger & Zettelmeyer, 2009). Debt crises have been prevalent since way back and its deeper causes are difficult to identify.

1.3.4 Banking Crises

The banking sector remains one of the most vulnerable economic sectors especially from the existence of a financial crisis. As it stands, banks have never been safe from bank runs. This is because problem with one bank can escalate to affect other banks (Kletzer & Wright, 2000). Such is triggered by panic behaviour by depositors and in the event of a crisis, panic behaviour can cause a herd effect. Consumers are triggered to withdraw funds from banks when other consumers are also withdrawing funds in the event of a financial crisis. In the event that banks do not have sufficient funds to meet the rising withdrawal levels, then bank runs will persistent and banks can suffer

from liquidity and solvency problems. However, the existence of deposit insurance such as the FDIC serves as a public safety nets to cushion depositors from losses. The challenge with bank runs is that it still remains a challenge to determine their exact timing ((Reinhart, Kirkegaard & Sbrancia, 2011).

1.3.4.1 Bank runs and banking crises

Barth, Caprio and Levine (2006) established that the financial system in its nature is fragile and this gives rise to a series of problems. These problems are not limited in nature but tend to vary. For instance, Frankel and Saravelos (2012) highlighted that coordination of the financial sector has been a difficult thing because of a lot of fragilities. Lack of coordination can pose a lot of negative on banks especially when investors are moving capital funds out of the banking sector thus triggering financial shocks. This leads to a bank run and Gorton (2009) cites that the major problem associated with lack of coordination is a bank run. It is worthy to note that bank runs are part of a banking crisis. The latter is a resultant outcome of a crisis. Shin (2011) highlighted that fragilities in the banking sector are prone to occur because of the fact that most banks have high leveraged balance sheets.

In the event that the banking sector is experiencing instabilities as a result of the banking crisis, enforcing rules, sound supervision together with micro-prudential regulation, must be enacted to restore the sector to a stable position. As noted, the increased role played by deposit insurance such as the FDIC is needed to deal with coordinated consumer behaviour (Barth, Caprio & Levine, 2006). This also helps to deal with financial distress. But when the financial turmoil is high, then dealing with non-performing assets, offering capital support and public guarantees are some of the key public support strategies that can be used to deal systemic risk.

Any element of mismatch of exchange rate and interest rate can cause fragilities and hence it is important for the government to come up with sound regulations that will help deal with bank runs and banking crises.

The use of regulation and public support strategies to deal with bank runs and banking crises will not guarantee effective results in dealing with bank runs and banking crises. This is because some financial institutions can end up taking too much risks on the basis of their size (too big to fail) as a result of the existence of deposit insurance. Laeven (2011) contends that this problem results in too much systemic vulnerabilities.

Barth, Caprio and Levine (2006) also contend that there are always discretionary effects that are associated with public support strategies.

1.3.4.2 History of banks runs

Bank runs have a series of historical occurrences and have in most cases affected a lot of countries around the world. The notable country to suffer from bank runs in the USA and these transpired around the 1800s and 1900s. The impact of bank runs was eased in most cases by the introduction of deposit insurances (Frankel & Saravelos, 2012). Cases of bank runs were also noted in some developing countries and emerging markets in 1997 and this include the likes Indonesia. In the aftermath of the financial crisis, there was a massive withdrawal of funds from the market. This worsened to a large extent that most banks encountered liquidity demand from investors (Shin, 2011). The prevalence of bank runs also went on to affect non-financial institutions. Bank runs have a history of destabilising the financial sector (Gorton, 2009). Investors tend to move capital funds to other countries in the vent that an economy is facing a bank run (Wermers, 2012). The same applies to the USA and capital flight took place which caused most financial institutions to suffer a knock back.

1.3.4.3 Deeper causes of banking crises

Much of the issues that trouble banks are mainly related to bad loans and a decline in the value of bank securities. This can be traced to the European and the Nordic banking crises (Calvo, Izquierdo & Talvi, 2006). These cases have been linked to series of bank runs that troubled the respective countries. However, the fact that bank issued a lot of real estate loans reduced bank's capitalisation levels and banks struggled to meet up daily withdrawals needs. As a result, governmental support was required to support banks facing operational challenges and bank issues. It was evident that asset markets were now facing a lot of problems that were related to the subprime crisis. The major challenge is that some of these problems can actually remain undetected for quite a long period of time.

The source of a bank crisis can be difficult to trace and the same applies with risks that are associated with these crises. However, ideas by Gorton and Wilton (2000) proved that the occurrence banking panics is observable when the business cycle has reached its peak. Once the banking crisis is now evident, consumers on the other hand will begin to hold cash as opposed to assets. It is during this period of time that most

consumers will begin to panic and withdraw funds from banks. At this point, banks will not be able to meet the required demand for deposit and this further lead to distress of the banking sector.

Though ideas can point out that the causes of banking crisis are somehow the same, different causes of banking crisis have been observed in different countries. For instance, Honohan and Laeven (2007) outlined that factors such as changes in commodity prices, global interest rates and significant movements in capital flows are the key external elements that can trigger a banking crisis. This however does not discount the effect of economic policies. That is, policies by the government can actually cause panics as postulated by behavioural finance models (Calomiris, 2009). Failure by the government to respond in a proper manner can actually trigger panic behaviour among consumers.

Also, it is impossible to neglect the impact of structural issues and how they can initiate a banking crisis. Circumstances surrounded by lack of supervision, bad corporate governance practices, limited disclosure, high level of reliance on deposit insurance, moral hazard and market discipline do to a large extent lead to a crisis (Barth, Caprio and Levine, 2006).

Giving a lot of incentives to people to borrow from banks can also lead to irrational borrowing and consumption activities which can cause a high demand for financial instruments. This can result in an increase in systematic risks (Haber, 2005). From this analysis, it can thus be noted that the major causes of banking crisis were mainly attributed to;

- High level of financial integration
- Too much leverage by financial institutions.
- The use of opaque and complex financial securities.
- Unsustainable increases in asset prices.
- Severe debt burdens that were caused by a series of credit booms.
- Systemic risk and build-up of marginal loans.
- Lack of bank supervision and regulation.

1.4 Robert Shiller's theoretical insight of asset price bubbles

Shiller's theoretical insights of price bubbles are based on behavioural finance which seeks to explain how people behave in response to changes in financial markets. Shiller (2012, p.245) defines a speculative bubble as a condition that occurs when a price increase stirs up positive investor attitude which sets up contagion effects on other investors and players to buy more of the asset. With regards to this definition, Shiller thus believed that a bubble follows a development process which considers to be of the following;

- Precipitating factors that cause initial price increases.
- The existence of feedback loops which stimulate further price increases.
- The drawing of attention of the general public and media towards the price increases. The general perception is that the future is characterised by less uncertainty.
- General public and media information considers the price increases as the justifiable.
- Herding effect which cause numerous individuals to buy more of the securities and thus further causing an increase in prices.

Shiller (2012) considers that initial changes in price will cause further increases in price through what are known as price-to-price feedback loops. These loops are driven by investors' expectations and enthusiasm and these can drive up asset prices. The occurrence of a bubble according to Shiller is deterministic which in reality is not. Moreover, bubbles have truning points and such points are also difficult to determine.

It can also be deduced from Shiller's theoretical insights that there is a strong influence of psychological factors on moral anchors. This cause individuals to either hold or sell financial instruments depending on the circumstance. With the prices of securities going up, the moral anchor is to buy more securities and sell them when the bubble bursts and thus triggering a deep crisis. Psychological factors can thus be said to be the main drivers of upward changes in prices and downward force when a bubble burst.

Schiller contends that what triggers a financial crisis is herd behaviour among people which is as a result of the cascading of information. This is based on the idea that

individuals are always in possession of financial information especially the one which involves changes in security prices (Shiller, 2012).

It is assumed that economic agents have only certain information about a situation. Decisions by individuals are taken in sequence, so that the second decision taker can observe the decision of the first one, the third decision taker can observe the decision of the first and the second one, etc. However, they do not know the reasons for those decisions.

As noted by Shleifer (2000), it is also not always possible that prices will follow a particular long-term pattern. This is because of financial securities and other assets may be driven by other prices and hence making it difficult to determine how prices will be in the future. Shleifer also contends that there are still no available theories that can help predict how prices will be in the future and such prices will not always move as predicted.

The major problem with the theoretical insights by Shiller about the financial crisis is that it does not suggest any independent turnaround strategy that can help contain the bubble. Also, in reality, there are certain activities and elements which can work against the manifestation of a bubble. But the challenge is that these activities and elements are limited and sin most cases bubbles cannot be easily determined.

The other problem with Shiller's theoretical insights of a financial crisis is that it is based on ideas developed as part of behavioural finance. Hence, it the idea that individuals will behave as postulated by the neoclassical assumptions might not hold. This is because their ability to determine the price in most cases if often limited. Also, it is not always easy for one to follow specific behavioural traits as postulated by behavioural finance models which are used by Shiller. Moreover, Shiller's ideas can in certain circumstances be considered to be too theoretical as some scholars have criticised Shiller's ideas.

1.5 Transmission mechanisms of a financial crisis

The effects of the 2008 financial crisis were transmitted within and outside the US economy through what are known as transmission mechanisms. Efforts to establish

sound macroeconomic policies to curb the effects of the financial crisis can be fruitful is one understands the relevant transmission mechanisms.

1.5.1 Transmission mechanisms through financial markets

Foremost, it is worthy to note that financial crises in their nature rely on the outcome of financial activities and hence, the name financial crisis. It can also be noted that financial markets play an important role of disbursing liquidity to economic agents (Laeven, 2001). Hence, any disturbances in the financial market can trigger a huge crisis. This is the main reason why it is important for governments to contain the effects of the financial crisis. Studies have shown that transmission mechanisms of the financial crisis through the financial sector are highly prevalent in Africa and other emerging economies (Claessens et al., 2012; Gorton, 2009). This is because they significantly rely on international loans. The impact of the financial crisis on the financial sector are considered to be high in the USA and exceeded 200% followed by a series of financial bankruptcies (La Porta et al. 2000).

It is often difficult for an economy experiencing a financial crisis to secure funds on international financial markets. This is because such funds are made available at stringent costs or terms. Examples can be drawn from Tunisia whose effort to secure funds from Japan following the financial crisis were met by stringent conditions. As a result, it had to resort to the local market (Hasan & Dridi, 2011). Of which the use of local financial markets as a source of funding is usually associated with high tax and interest rates which can further harm the economy.

The impact of the financial crisis on financial markets can be severe especially when considerations are made that financial institutions serve as intermediaries in disbursing economic funds. Hence, the impact on economic activities and output such as GDP can be disastrous. Moreover, disturbances in the financial sector such as bank runs and banking crisis are more likely to cause instabilities in other markets. This has been the case in USA and the housing and real estate sector went on to experience a tumble following the prevalence of the subprime mortgage crisis. Hence, it is always important to cushion backs from the effects of the financial crisis.

1.5.2 Transmission mechanisms through economic growth

Economic performance is also another form of mechanism through which the effects of a financial crisis can be transmitted. Such an observation follows insights which

point out that economic growth revolves around production and consumption activities (Garber, 2000). Hence, a crisis tends to disturbance production and consumption patterns and equilibrium.

Meanwhile, the extent to which economic growth can be used as transmission mechanism is determined by the level of economic performance and reliance or integration with international markets. For instance, poorly developed economies with insignificant economic activities are more posed to suffer from the effects of a financial crisis (Corsetti, Pesenti & Roubini, 1998). This is possibly because of a weaker and less developed financial system, poor governmental response, policy inconsistencies, slow emergency responses etc. These can make the effects of the crisis more severe and in most cases deepen as they can go a long time uncontrolled. Most countries such as the US had to battle a series of domestic economic challenges such as corruption which were characterised by the crisis (Pham, 2010). In the event of economic integration such as the EU and economic affiliation in terms of trade, contagion effects can cause the effects of the crisis to be transmitted between economies. In other words, commercial integration and economic openness determine the prevalence of a financial crisis on both domestic and international scale.

The effects of a financial crisis on economic growth have also been established to be determined by the level of economic development which is a function of economic growth (Chang & Velasco, 2000). This implies that the effects of a financial crisis will vary with the level of eco nomic growth and development. That is, less developed economies will suffer more than highly developed economies from the effects of the financial crisis. But when it comes to the USA, this point can be dismissed on the basis that the USA also suffered severely from the 2008 financial crisis. Unemployment in the USA went above the 4%, banks collapsed and GDP tumbled to a negative mark as the US economy plunged into another depression (Burnside, Eichenbaum & Rebelo, 2001).

Disruptions in economic activities as a result of a crisis will go a long way in affecting other economic variables such as traded, exports, unemployment, inflation, BOP government debt and current account deficit which influence again economic growth. Hence, it can be said that transmission of the effects of a crisis through economic growth, go through a series of economic variables and contributions made by each

indicator towards improving economic performance tend to decline with the occurrence and worsening of a crisis. For instance, it can be said that both traded, and exports will decline while imports, unemployment, inflation, BOP government debt and current account deficit will increase during a financial crisis.

1.5.3 Transmission mechanisms through foreign direct investment

The movement of funds in and outside an economy is often through Foreign Direct Investment (FDI) whether inflow or outflow. FDI inflows are important as they can help contain the effects of a crisis through improved injection of liquidity which ease the demand for funds.

International investors' sentiments and expectations are usually negative during the occurrence of a crisis. This is an undesirable for governments which desire to lure more foreign currency to boost domestic activities. Not only does FDI inflows help to improve financial sector liquidity but also help to stimulate economic activities and promote employment. The manufacturing and textiles industries in the USA were also hardly hit by the 2008 financial crisis as some industrial firms collapsed while other were taken by the state (Kaminsky, 2003).

Changes in FDI inflows can trigger negative changes in other economic indicators such as price, employment, trade, exchange rate and inflation. Hence, it is always important to contain any financial crisis and its effects.

The existence of various transmission mechanisms implies that not a single solution or policy is required to deal with a financial crisis. That is, a combination of economic policies is need to address the effects of a crisis. This can be observed to be true as noted in the USA which came with a series of policies which included monetary easing, fiscal control, new corporate governance measures, improved banking standards etc. Hence, these measures can be said to have helped easing the effects of the 2008 financial crisis.

1.6 Impacts of the financial crisis on an economy

In as much as the effects of a financial crisis have transmission mechanisms, the effects of a financial crisis are also in different forms. It is the magnitude of impact of these forms that affects the economy be it through the transmission mechanisms or not. Such effects can be established to be;

- **Liquidity:** Stijn et al (2015) explained that countries with advanced economies made use of fiscal and monetary policies to help them through the financial crises. However, emerging markets suffered because of lack of external funding to alleviate effects like high inflation, increased interest rates, and depreciation of currencies among other things. Bartmann (2017) contend that investors, investment firms and hedge fund managers suffered huge losses. They added that people defaulted on mortgages and banks and mortgage firms suffered liquidity problems as a result and some firms collapsed as a result. The crisis resulted in firms filing for bankruptcy. Bartmann (2017) explained that banks in fear of default, ceased giving out loans and were in desperate need of money lenders. The lack of liquidity also meant that banks were not able to meet their financial obligations and also lost revenues as a form of opportunity cost from loans that could have been given out. The International Financial Review (2009) purported that it was the crises that resulted in collapse of huge financial institutions.
- **Stock Markets:** According to the World Bank report (2009) on the effect of the global financial crisis on the Sub Saharan African region, stock markets for countries with developed financial systems mirrored those in the developed nations and stock prices fell drastically. Investors leaned towards the US Dollar but growth slowed down. Hussien (2009) also stated that the Egyptian stock market prices fell dismally. The reason for this sharp decline was attributed to foreign investors selling off their stock and this especially affected the local investors. The World Bank report (2009) explained that those especially reliant on foreign accounts like South Africa suffered decreases in gross domestic product and huge current account deficit. The report also explained that this was the same situation in Kenya, Nigeria and Ghana. Kenya also experienced an increase in consumer prices. Credit lines in Nigeria were noted to be under stress with limits and even cancellations in some cases. The World Bank

attributed the differences in the impact on the different banking systems used by the different countries. According to Ali and Afzal (2012) the crisis also negatively affected the stock markets in India and in Pakistan. They added that volatility increased and it was much more in India as compared to Pakistan because of the bigger size of the Indian market. The global financial crisis also saw the share prices decreasing as in the case of Jordanian banks according to Daielen (2016). However, the scholar indicated that in India it was the opposite contradicting the other scholar's findings. However, the African Development Bank report (2009) pointed out that despite the presence of foreign banks in African countries like Mozambique and Swaziland, the effects were not passed down to subsidiaries in countries like Benin and Ghana even though the parent companies in Switzerland and France were hit hard. Instead the African countries actually had increase in capitalization.

- **Lending and interest rates:** Clerides and Stephanou (2009) noted that high interest rates also came to be as a result of the crisis. They also explained that lending and refinancing rates of Central banks across the globe was affected. Those for household deposits however, continued increasing. Similarly, Campello et al. (2009) pointed out that external borrowing was constrained in the US as a result of the crisis and this led to high opportunity costs as some very attractive investments were left out. As a result of the financial crisis, credit lines were recalled. These are provided to the banks so as to increase the foreign exchange transactions. Because of the fall in share prices and lack of access to capital, financial institutions' credit lines were recalled by the banks with immediate effect rather than over time as they used to be (Soludo, 2008). According to Cernohorska (2015), the crisis of 2008 drove the Bank of England and the Czech Republic central bank to make use of unconventional policies. They also both reduced their interest rates to almost zero. The scholars explained that whilst the BOE followed the path of quantitative easing to mitigate the impact, the Czech central bank relied on intervention of foreign exchanges. The Chinese monetary authority increased interest rates by as much as seven times between 2008 and 2009 in an attempt to curb the inflation that was occurring in the country.

  In terms of interest rates Daielen (2016) found that there was little difference in the Jordanian interest rates before and after the crisis indicating that they were

not affected that much in that regard. Similarly, Ghabayen and Ayuba (2012) in their study on effect of the global crisis in Jordan pointed out that it was the country's isolation from international financial markets that initially saved the country from too much negative effects. However, interest on housing loans was set at 10.5% (European Economy, 2009, a move that was sustainable even though it decreased growth. The European Economy, 2009) also pointed out that the government of Jordan had guaranteed all deposits which led to investor confidence and assurance of government support in times of the crisis and this had a positive effect on the banking sector of the country during the crisis.

- **Exchange rates:** Kohler (2010) explained that financial crises bring about movements in exchange rates and these movements show how risk averse stakeholders are as well as aversion to certain currencies. According to Fratzscher (2009) the global financial crisis resulted in high levels of uncertainty and this in turn affected exchange rate determination. Fluctuations occurred and these also resulted in uncertainty over what kind of exchange rate system to adopt (Keblowski & Welfe, 2011). Kohler (2010) explained that most currencies depreciated and later bounced back as a result of safe haven currencies. Weber and Wyplosz (2009) attributed the depreciation of most currencies to monetary policies which cut down on interest rates.
- **International trade:** According to Clerides and Stephanous (2009), the crisis occurred in the period in which Cyprus was changing currencies from the Cypriotic Pound to the Euro as per the directive of EU countries. The currency had thus been fixed to the euro to facilitate the transition. Before the crisis banks' lending towards real estate and construction was very high. However, the crisis resulted in a sharp decrease in demand for homes especially by foreigners and the banks felt this blow. Clerides and Stephanous (2009) also explained that the country's reliance on the UK tourists also meant a huge blow as the UK was even more affected by the crisis. In addition, the scholars added that in Hungary, Ukraine and other Balkan nations, demand for exports and commodities and lack of financing from foreign owned banks which dominated these countries put the countries under immense pressure.
- **Banking system:** Babicky (2010) explained that even though the global crisis affected the Czech Republic, it wasn't as bad as in other countries. Since their

deposits were quite substantial, their government had no need to subsidize banks or take drastic measures as other countries did. They in fact had a liquidity surplus and it was that which the government had to take care of. This was also supported by Cerhonorska (2015) who explained that the Czech Republic's high levels of capital adequacy enabled them to weather the crisis without hardship. However, they also explained that their banking sector was mainly concerned with foreign exchange intervention to safeguard against deflation. According to Clerides and Stephanou (2009) large stocks of foreign reserves in Russia helped them in times of the crisis.

Similarly, a study conducted by Muhammad (2011) in Malaysia indicated that the country's banking sector was not hit hard by the crisis. This can be attributed to the effects of the prior Asian crisis which saw the Malaysian banking sector restructuring, having new reforms, improving governance among other things. The Malaysian banking system is also well balanced between equity and bond financial instruments which enabled it to withstand shocks. Non- performing loans actually declined and Muhammad (2011) attributed this to the improved credit risk management. Pormeleano (2009) also attributed huge amounts of deposits to East Asia's not being affected too much by the crisis of 2008 at least initially. This kind of business models enable banks to be more financially stable and have more liquidity than wholesale funded banks. Likewise, Austria had the same model as Malaysia and thus was not affected as much. In fact, deposits increased during the crisis. The country had abundant resources to tide them over. However, the scholars also noted that Austria's profitability registered a decline even though the country recorded profits during the crisis.

- **Currencies:** The African Development Bank (2009) also stated that the financial crisis resulted in the fluctuation of currencies especially against the foreign currencies. The report explained that the depreciation of currencies in some cases was as a result of the crisis's effect on prices of goods and the depletion of foreign currency reserves. There was currency volatility and the ADB reported that the Zambian currency fell as much as by 50%. According to Edgardo et al. (2016) the crisis was responsible for the decoupling of the Colombian currency. However, the scholars also pointed out that the Colombian bonds actually performed better during the financial crisis and any negative news acted in the favour of the bonds, increasing their prices.

Ghabayen and Ayuba (2012) explained that in Jordan when the crisis got more widespread and oil prices went up, the US dollar declined sharply as well as the overseas remittances and grants. The lower remittances also meant lower foreign currency reserves in the country.

- **Employment:** The banking sector employs quite a huge number of people. The crisis resulted in people in this sector losing their jobs as banks and investment companies closed and became bankrupt. According to the International Labour Organization report (2009), Ireland's banking sector was hit hard and staff was cut, bonuses reduced, salaries frozen in order to reduce costs. Staff were offered severance packages and some were offered career breaks in Ireland's biggest mortgage lender. The ILO report (2009) also reported massive job losses in Australia's biggest four companies in the financial sector including banks.

1.7 Predicting financial crises

Predicting the occurrence of a crisis has been a huge challenges and most financial analysts and economists still continue to encounter challenges in timing the exact occurrence of a crisis. It is important for monetary authorities, financial analysts and economists to have a capacity to predict the occurrence of a crisis. This is because it will help in enacting measures to counter the crisis before it even occurs. As a result, individuals, firms and governments can come up with strategies to cushions themselves from the crisis (Kose et al., 2010). Also, it is much beneficial to spent a lot of time and resources attempting to predict a crisis rather than dealing with a crisis. Despite the availability of these beneficial insights, it is unfortunate that no sound indicator has been availed to predict the existing types of financial crises.

One of the reasons why it has proven difficult to predict financial crises is that there are endogenous causes that govern the occurrence of crises and these often result in a lot of non-linearities and multiple equilibria. Lane (2012), is of the view that the timing of a crisis cannot be accurately predicted. Existing models such as first-generation models are mainly focused at predicting banking crisis by dwelling at the impact of financial and macroeconomic imbalances. Hence, it is believed that high credit, money growth rates and increases in other financial and macroeconomic variables increase the chances of occurrence a banking crisis (Goldstein, Kaminsky & Reinhart, 2000).

However, a lot of monthly indicators can be used to predict a currency crisis. For example, a real interest rate, recession, exports, equity prices and exchange rate can be used to predict a crisis. Other yearly indicators such as investment and current account balances can also be used to predict a crisis and most models are based on looking at external issues (Frankel & Saravelos, 2012). In most cases, nations which experienced a crisis were noted to be having high money growth, inflation, public debt, fiscal deficit levels (Berg et al., 2004). This also includes revenue inflows and interest rate spreads were also noted to be low in crisis affected countries. Generally, Frankel and Saravelos (2012) consider things like increases in GDP, real exchange rate, stock prices, domestic credit and current account deficits are more evident signs of a crisis.

Alessi and Detken (2011) noted that prior to a crisis, a high current account deficit takes precedent effect before the crisis takes effect. The existence of these indicators does not exclude the interference of global factors. For instance, Taylor (2013) outlined that sudden stops, balance-of-payments, currency and sovereign crises were mainly driven by global factors. Obstfeld (2012) pointed out that a deterioration of commodity prices, world interest rates and terms of trade constitute part of global indicators used to predict a crisis. Jordà, Schularick and Taylor (2011) expressed concern on the need to include interest rates. Such has been based on ideas that financial crises are often associated with the prevalence of low interest rates.

There are however ideas which connect crises together. For instance, Obstfeld and Rogoff (2009), consider that a crisis in one country can trigger another crisis in another country. This is explainable by the concept of contagion especially when two or more countries are significantly linked in either trade of goods and services and some form of reliance. This can be evident by the spreading of the 2008n financial crisis to other economies. Also, Kaminsky and Reinhart (2001) considers this to be evident with the spreading of the East Asian financial crisis.

On the other hand, Elekdag, and Lall (2009) consider that continuous growth in asset prices and credit have been a huge contributor of the causes of financial vulnerabilities and stress. Either way, all these indicators used to predict a financial crisis can be noted to have a boom which can later turn to a bubble. The situation in US was more of sharp increases in house prices and lines of credit. The same applies to asset prices which can initially set on an upward path and later one start to decline. They however

have some level of similarity in the sense that they include an element of deteriorating current account balances, increases in lines of credit and asset prices.

Notable literature points out too much credit growth to be the prime cause and indicator of a financial crisis. However, this alone is not enough and a combination of indicators needs to be used together. This is because different types of financial crises are associated with changes in different types of indicators. Hence, relying on one indicator might fail or possibly give incorrect forecasts.

Dell'Ariccia et al. (2012) discovered that most of the indicators are associated with Type I and Type II errors. This is because their increases resulted in a decline in significance of the predicted variable such as bank leverage, trade balance, asset price etc. this puts an argument against the idea that financial crisis are associated with booms. Moreover, there are certain circumstances in which busts might not occur. But can be characterised by periods of low economic performance. Such periods will see GDP levels falling to levels below par or desired rate.

The idea that booms always lead to a crisis can also be dismissed on the condition that they can result in long term financial deepening. In this case, the boom can be said to be favouring long-term economic growth. Also, the extent to which a boom will cause a crisis is determined by the size of the boom (Shin, 2013). This implies that there is a positive relationship between the size of the boom and a financial crisis. This can be supported by insights which showed that shorter-life span boons of more than 6 years had a net effect of more 25% change in GDP (Dell'Ariccia et al., 2013).

Differences can be observed between old financial crisis predicting model models and modern models of predicting the occurrence of a financial crisis. This is because modern models are now encompassing more of international aspects. That is, they now consider the impact of external factors (contagion effects) and how a crisis can be transmitted to the other economy. This does however not exclude the effects necessitated by household, nonfinancial corporate, financial, public and external, sectors. As noted, financial markets are one of the transmission mechanisms through which a financial crisis can be transmitted. Hence, various types of financial crisis can be observed to be highly linked with different types of vulnerabilities or indicators (IMF-FSB, 2010).

1.8 Bank performance, its determinants and influence on a financial crisis

Bank performance is one of the key issues upon which concerns can be raised about the effects of macroeconomic variables on bank performance. This follows insights which has shown that bank performance determines financial stability, growth and development (Athanasoglou, Sophocles & Matthaios, 2005; Aburime, Alamro & Al-Soub, 2012). This is mainly because banks that are able to reap huge operational profits can easily withstand competitive pressure and any form of economic hardships. This can be supported by ideas established from a study by Aburime (2008), which contends that the availability of huge profits allows banks to easily absorb losses. Not only will banks absorb losses from profits, but also use those profits to invest in other profitable ventures and assets. This further boost the operational capacity of the bank and thus allowing it to expand its operations. Of significant importance is the idea that profits allow the bank to counter competitive pressure from other financial institutions (Guler, Guillen & Macpherson, 2002).

There are also ideas which suggest that improvements in bank performance makes it feasible for banks to engage in research and development (Kabir & Dey, 2012; Matar, Ali & Bilal, 2018). Research and development are part of innovative efforts to improve operations and service provision. Banks that innovate both operations and service provisions are more posed to benefit from increased efficiency, improved service delivery, reduced costs, economies of scale, high profit levels.

Bank performance can also be linked to bank size (Pantea, Gligor & Anis, 2013). This is one of the most reasons why most banks desire to grow big in size or make more profits. In other words, there is a positive relationship that exists between bank size and bank performance. A significant number of studies often consider that an increase in bank size leads to an increase in bank performance (Aburime, 2008; Kabir & Dey, 2012; Shiu, 2004). But arguments can be made that an increase in bank performance allows banks to set aside funds to acquire additional assets. Hence, in this case bank performance can be said to granger cause bank size.

Meanwhile, there are a lot of indicators that can be measured to measure bank performance. The notable measures include return on assets (ROA) which measures the ability of the bank managers to utilise the bank's assets in a profitable manner (Gupta et al., 2012). Thus, a high ROA indicates a high profit-making capability. The

other indicator is return on equity (ROE) which provides an indication of how much the shareholders will get in return for investing their capital into the bank (Davis, 2001). This indicator drives the value of the bank's shares as investors'; sentiments are often reflected in the share price. Investors are persuaded to invest more capital into those banks that can guarantee them high return margins. It is in regard to this idea that bank performance is deemed to be of high concern (Burger et al., 2013). The other indicator pertains to the interest margins between interest expenditure and interest income a bank gets, that is, net interest margin (NIM). A high NIM is an indication that the bank is making more profits from its interest earning assets as compared to interest expenses it is paying. Either way that is used to measure bank performance, the idea is the same that banks must post huge performance levels.

One the other hand, it must be noted that ideas behind changes in bank performance are surrounded by determinants that drive bank performance. One of the determinants of bank performance is bank size which is measured by total assets of the bank (Abebe, 2014). Other determinants often include things such as liquidity, efficiency, asset utilisation, and share capital. The most distinguishing similarity between all these indicators is that they are all positively related to bank performance (Davis, 2001; Gupta et al., 2013). This implies that a positive change in any one of these determinants will result in an increase in bank performance. However, there are case where improvements in these indicators has resulted in a decline in bank performance. For instance, Aburime (2008) discovered that an increase in bank assets can sometimes reduce the amount of funds available for investing in other profitable assets. This also applies to loss provisions which can be said to reduce investment in profitable activities as income remains idle.

With all these ideas in mind, it can therefore be noted that the financial crisis tends to drive down bank performance. The effects of such an action is often transmitted through bank determinants. This therefore suggests that a financial crisis hampers the effectiveness and contribution made by bank specific factors. This will also extend to include economic factors (Burger et al., 2012). With regards to this idea, considerations can thus be made that changes in equity ratio and loss provisions are more likely to cause a decline in bank performance in the event of a financial crisis.

1.9 Empirical frameworks on the effects of a financial crisis

Efforts to examine the effects of the financial crisis in this section will not be restricted to bank performance only, but also to other indicators through which the effects can be transmitted to affect bank performance. Hence, this section looks at literature on the generalised effects of the financial crisis and the effects of the financial crisis on bank performance.

1.9.1 Generalised effects of a financial crisis

Economic phenomena such as the financial crisis are highly characterised by a lot of effects on a wide number of economic indicators. Such effects can also have repercussions on bank performance and hence it is imperative to examine such effects.

Ketenci (2017) placed focus on examining how the global financial crisis affected financial development in 15 Eurasian countries from the period 1990-2014. GMM estimates revealed that foreign direct investment (FDI) inflows were the major determinant of economic growth. As a result, the results implied that the transmission mechanism of the financial crisis were mainly through FDI inflows. This entails that any mechanism through which the financial crisis spreads towards other sectors, will have a significant impact on the economy through that mechanism. But the notable deduction that can be made is that a financial crisis has adverse effects on both economic growth and FDI inflows.

Ksantini and Boujelbène (2014) did a panel examination of the effects of the global financial crisis on investment levels and economic growth from 1998-2009. The results were based on efforts to prove the existence of contagion effects of a financial crisis. This entails that the presence of a crisis in the USA would also trigger a series of financial crises in other countries and vice versa. It is apparent that the 2008 financial crisis led to a series of financial disturbances in other countries. Hence, we can expect spill over effects of the financial crisis on other financial institutions in different countries.

Linyue et al. (2012), also hinted that the effects of a financial crisis are broader and can affect an economic sector and or indicator. Their work was centred on how the Chinese macroeconomy and the financial market in particular would react during a crisis. The results suggested that the effects of a crisis have different macroeconomic

implications. Implying that in some countries, foreign and domestic debt crisis are prevalent while in others, a sudden stop or and a currency crisis may be dominant. This can be supported by observations made that GDP fell in both the USA and China but the fall in GDP witnessed China was much greater than that witnessed in the USA.

Koopman and Székely (2009), suggested that the effects of a financial crisis vary from one country to another though the transmission mechanisms can actually be similar. Hence, it can be said that the financial crisis experienced in the USA had different effects on economic indicators than that experienced in other countries. This idea reinforces the importance and the need to undertake this study. The established ideas also pointed out that the effects of a crisis can be short term or long term. Though both cases must be handled, much attention should be devoted towards addressing long terms effects. This is because long terms effects tend to hamper economic performance.

Panizza, Cerra and Saxena (2009), came up with different ideas about open and closed economies. Their argument was that open economies are more prone to severe effects of a financial crisis that closed economies. This is relatively true to the USA scenario in which the US economy is considered to be open to trade and other economic activities. As a result, the 2008 financial crisis had a series of various transmission mechanisms and affected a lot of economic activities and sectors.

Campello, Graham and Harvey (2010) did a survey of 1050 CEOs in Asia, Europe and USA to determine the constraints of a financial crisis. Their argument was that a financial crisis imposes constraints on economic activities especially credit constraints. Their obtained results also showed strong support that firms tend to restrict their credit support to certain industries with regards to capital, employment and technical spending. This tends to constrict economic activities, growth and expansion. Tech-firms on the other hand, have been noted to switch to other sources of funds with fear that banks will restrict lending.

The effects of a financial crisis are however, not limited to business entities but also extend to include households. Hurd and Rohwedder (2010), also examined the implications of a financial crisis on American households. Evidence gathered suggests that households are in most cases the hardest hit economic group. With misfortunes such as unemployment, soaring debt levels, poor credit rating and inflation. All these

are bound to befall on consumers and they have spoil over effects on banks. This is because households will always turn to banks for withdrawals and this can plunge banks with bank runs. Suggestions can thus be made that the effects of a financial crisis will not only affect business entities but also consumers and that the negative effects will always rebound to affect banks.

With these ideas in mind, it can thus be noted that a financial crisis has negative implications on a quite number of economic sectors and activities. It is thus important for the government and monetary authorities to impose measures that will guard against the effects of a financial crisis. If not, then the effects will revolve around the economy and rebound to further plunge banks into a disastrous position.

1.9.2 Effects of the financial crisis on bank performance

The scope of the study is restricted towards examining the effects of the 2008 financial crisis on the financial performance of commercial banks. There are numerous studies which examines this phenomenon. For instance, Nazir, Safdar and Akram (2012), did a similar analysis with regards to Pakistan using regression analysis before and after the crisis. The findings revealed that there is a significant change in bank performance indicators as well as their determinants. The results further showed that total assets, asset quality and solvency ratios were relatively lower after the crisis. This implies that the contribution made by the banks' assets together with returns generated thereof, are more likely to decline or possibly fall in the era of a financial crisis. Hence, expectations are thus equity returns will decline while provision for losses will increase as banks gear for hedging against possible risks.

Olaniyi and Olabisi (2011) also did a study that based the same scenario but with respect to Nigeria. The findings revealed that the financial crisis had adverse effects on bank performance. In addition, it was noted that efforts by banks to curb the effects of the financial crisis were actually exposing banks to deeper effects of the financial crisis. This implies that setting up provisions to cater for losses will actually hinder bank performance. Possibly because efforts would have been diverted away from profit maximisation to risk minimisation. Hence, in this case provision for losses can be said to be negatively impacting bank performance.

Chan-Lou (2010) applied the same ideas on 51 banks in Chile using the Expected Default Frequency approach. The results are in support of the ideas that a financial

crisis hampers bank performance. The findings also showed that banks' risks exposure is inversely related to the occurrence of a financial crisis. This entails that banks are more prone to suffer losses during a financial crisis. Hence, it is important for bank managers to come up with strategies to curb the effects of the financial crisis.

Abubakar et al. (2014) did a study that analyses the impact of the 2008 financial crisis on firms that are listed on the Nigerian stock exchange using annual data from 2006 to 2010. The results are in confirmation of the idea that bank specific variables will increase in the absence of a crisis and decline during a crisis. The results also confirm the idea that bank withdrawals and other requests will also be high during and after the crisis. The entails that the 2008 financial crisis is more likely to cause bank customers to withdraw more funds from banks (bank runs) while contributions made from banks specific indicators will decline.

Sufian and Habibullah (2010) analysed the effects of a financial crisis on bank performance in relation to Indonesia from 1990 to 2005. The results outlined that most bank indicators have a negative effect on bank performance. This concurs with observations made by Nazir, Safdar and Akram (2012), which showed that increases in overhead costs and banks size will hinder improvements in bank performance. This study does however not suggest any measures apart from improving asset utilisation. Cases of a financial crisis usually require that banks engage in income diversification but this is not mentioned.

Aebi, Sabato and Schmid (2012) were of the idea that a financial crisis is associated with risks which can affect bank performance. Their idea also suggested that corporate governance be used as one of the strategies to deal with a financial crisis. This is of paramount importance because some of the causes of a financial crisis were attributed to corporate misconducts. Hence, corporate governance helps to instil financial discipline in the banking sector. Moreover, the use of corporate governance is more effective when coupled with risk management. This has been an issue which most studies have failed to address.

Berger and Bouwman (2013) also believed that there are financial elements which can influence the effects of a financial crisis on bank performance. The notable element was identified as capital and the findings revealed that banks which have high capital levels tend to perform better that those with low capital levels. The problem with this

idea is that it does not emphasise the idea that too much capital lying idle is not good for the bank. Banks thus, need to balance between their capital levels and investment needs during the effect of a financial crisis.

Shin (2009) highlighted that one of the significant effect of a financial crisis on banks is bank runs. This follows the idea that consumers will withdraw their funds from banks in the event of a crisis. Such a move will trigger panic behaviour among other consumers and forces them also to withdraw more funds from banks. The situation continues until the rate at which consumers will be withdrawing funds from banks is greater than the level at which banks are able to meet withdrawal demand.

Hasan and Dridi (2011) demonstrated that all banks are prone to suffer from the effects of a financial crisis. The study compares how Islamic and conventional banks react to the effects of a financial crisis. The findings revealed that all banks will be exposed to the same effects but what causes other banks to suffer more is lack of strategies. As a result, it was revealed that Islamic banks are more poised to withstand the effects because of sound banking strategies and regulations. Conventional banks were however, established to suffer more consequences of a financial crisis. This suggests that sound banking strategies are required to deal with the effects of a financial crisis.

1.10 Chapter summary

From the given literature, it can thus be noted that the 2008 financial crisis poses a lot of effects and on a wider number of economic indicators. However, much of the effects of the financial crisis are highly evident in the banking sector. Though much of the effects of the financial crisis are restricted to business entities, they also extend to affect households. Both way, banks and other financial institutions are bound to suffer from the effects of a financial crisis. The occurrence of a financial crisis poses negative implications on the contributions of bank specific variables on performance. Hence, improvements in loss provisions are more likely to lead to a decline in bank performance. As noted, all banks are bound to experience the same effects of posed by a financial crisis but what sets the difference is how banks react to the financial crisis. In most cases, Islamic banks are less exposed to financial crises than conventional banks. This is mainly because of sound banking strategies and tight regulations. The notable effect of a financial crisis on banks is bank runs and bank

runs can cause banks to collapse. It is therefore important for bank managers and monetary authorities to enact measures that will prevent the occurrence of bank runs. Lastly, the well-functioning and improved performance of banks is desirable towards promoting financial stability, growth and development. Hence, it is important to devise sound strategies to curb the effects of a financial crisis. It can be established that predicting the occurrence of a crisis has been a huge challenge and it is not easy to predict a financial crisis. But it is important for monetary authorities, financial analysts and economists to have a capacity to predict the occurrence of a crisis. This is because such an ability will help ease the effects of a crisis and in most prevent it occurrence. If not then minimise its impacts on the financial system.

Table 1.1: Summary of empirical studies and expected signs

Study	**Methodology and variables**	**Findings**
Ketenci (2017)	15 Eurasian countries from the period 1990-2014. GMM estimates, FDI, bank performance,	A positive increase in FDI results in an improvement in bank performance
Ksantini and Boujelbène (2014)	OLS panel examination, bank performance, global financial crisis, investment levels and economic growth from 1998-2009	A global financial crisis causes contagion effects on bank performance and economic growth. This also has a negative effect on investment.
Chan-Lou (2010)	51 banks in Chile using the Expected Default Frequency approach.	A financial crisis hampers bank performance
Abubakar et al. (2014)	Annual data from 2006 to 2010	Bank specific variables will increase in the absence of a crisis and decline during a crisis
Sufian and Habibullah (2010)	Indonesia, 1990-2005, overhead costs, banks size, bank performance and asset utilisation.	most bank indicators have a negative effect on bank performance

Study	Methodology and variables	Findings
Campello, Graham and Harvey (2010)	A survey of 1050 CEOs in Asia, Europe and USA	A financial crisis imposes constraints on economic activities especially credit constraints
Nazir, Safdar and Akram (2012),	Pre and post crisis OLS, Pakistan, total assets, asset quality and solvency ratios were relatively lower after the crisis.	Total assets, asset quality and solvency ratios are high before the crisis and relatively lower after the crisis.
Koopman and Székely (2009),	Qualitative analysis, EU	Avoid the policy mistakes of past crises which damage financial development, employment and productivity
Panizza, Cerra and Saxena (2009),	*Cointegration, USA, Economic growth, recession, foreign aid, exchange rate.*	*Although negative shocks have persistent effects on output on average, macroeconomic policies can influence the speed of recovery and mitigate the persistence of the shock*
Hurd and Rohwedder (2010),	Qualitative analysis, USA.	The effects of a recession are widespread but caused a huge increase in unemployment and had a negative effect on household equity.
Aebi, Sabato and Schmid (2012)	OLS approach, USA, buy-and-hold returns, ROE, CEO ownership, board size, and board independence.	Less negative stock returns and ROE during the crisis. In contrast, standard corporate governance variables are mostly insignificantly or even negatively related to the banks' performance during the crisis

CHAPTER 2

OVERVIEW OF THE BANKING SITUATION AND FINANCIAL CRISIS EVENTS IN THE USA

2.1 Economic overview of the US economy

The USA has been one of the fastest growing economies in the world and Focus Economies (n.d) ranks the USA as the number one economy in the world followed by China and Japan. The economic dominance of USA is evident in GDP growth and nominal GDP as depicted in figure 2.1.

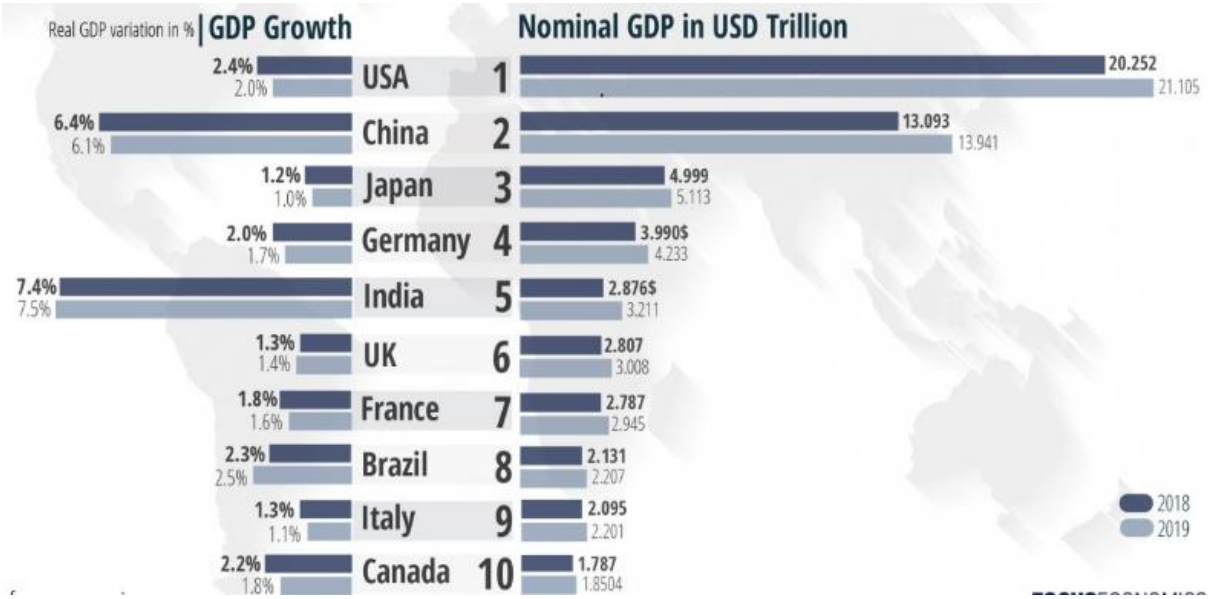

Figure 2.1: The world's biggest economies for 2018 and 2019

Source: Focus Economies (2018)

It can be that the USA posted a nominal GDP of US$20 252 trillion in the third quarter of 2018 which is relatively higher than other economies. Expectations are that nominal GDP will vary by 2.0% in 2019 and result in an estimated increase in nominal GDP to US$21 105 trillion from a variation rate of 2.4%. Thus, the expected variation of the USA's nominal GDP is higher than that of other economies. This reinforces the idea that the US economy has and is a strong economy. This can also be supported by projections made on other economic indicators such as unemployment, inflation and GDP growth and manufacturing as depicted in figure 2.2.

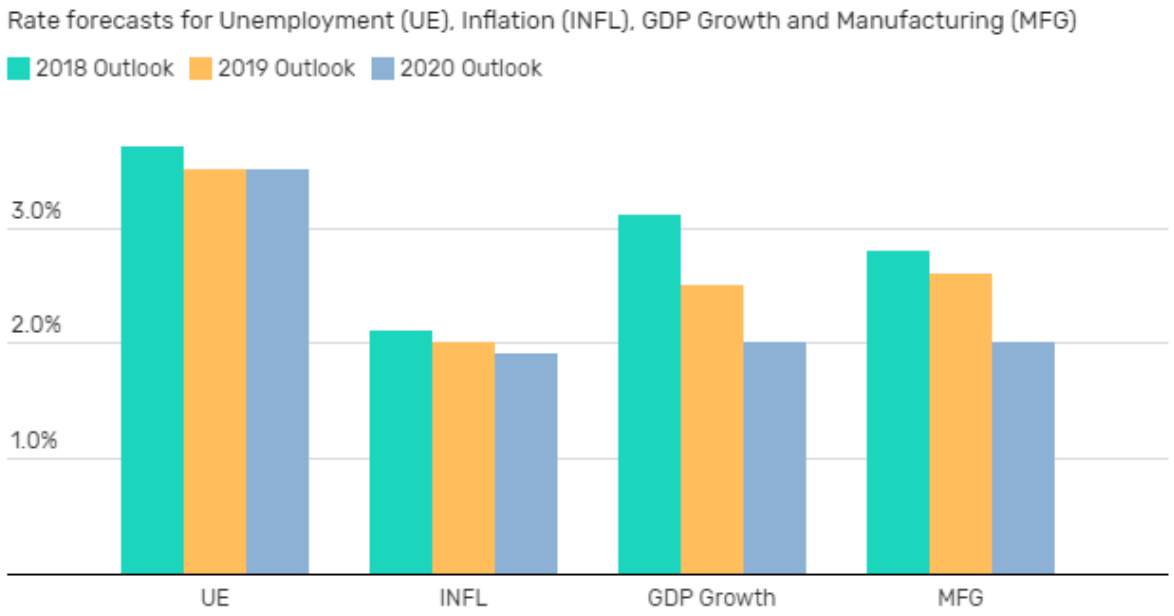

Figure 2.2: Economic outlook of the US economy

Source: Amadeo (2018).

Economic forecasts for the US economy project that the US unemployment rate will fall from 3.8% in 2018 to 3.5% in 2019 and 2020. This accompanied by projected fall in the inflation rate from 2.2% in 2018 to 1.9% in 2019 and 1.8% in 2020. Meanwhile, GDP growth and manufacturing are expected to follow a downward path from 2.7% in 2018 to 2% in 2020.

These forecasts have been accompanied by a steady rise in the US population from 317 million in 2013 to 326 million in 2017. This has against the background of an increase in GDP per capita from US$52 737 to US$59 501 in the same period as depicted in table 2.1. Though economic growth has been on an upward path from 2013

to 2015, a decline in economic growth to 1.5% in 2016 from 2.9% in 2015 was inevitable. This follows a fall in the industrial index by 1.9% in 2016 which is relatively higher than the 2015 variation of 1%. The unemployment has been on a downward path and closed at 4% in 2017. Other economic indicators are shown in table 2.1.

Table 2.1: Economic indicators of the US economy

	2013	2014	2015	2016	2017
Population	317	319	321	324	326
GDP per capita (USD)	52 737	54 657	56 411	57 559	59 501
GDP (USD bn)	16 692	17 428	18 121	18 624	19 391
Economic growth	1.7	2.6	2.9	1.5	2.3
Domestic demand	1.3	2.7	3.5	1.7	2.4
Consumption	1.5	2.9	3.6	2.7	2.8
Investment	5.0	6.2	3.9	0.7	4.0
Exports	3.5	4.3	0.4	-0.3	3.4
Imports	1.1	4.5	5.0	1.3	4.0
Industrial production	2.0	3.1	-1.0	-1.9	1.6
Retail sales	3.6	4.3	2.6	3.1	4.3
Unemployment	7.4	6.2	5.3	4.9	4.4

Source: https://www.focus-economics.com/countries/united-states

2.2 Banking sector trends and financial crisis events in the USA

The US financial sector is one of the most developed and innovated financial system in the world. With a total of 4 805 commercial banks, a total of 15 banks account for US$13.2 trillion of the total bank assets (Treasury Department Report, 2010). JP Morgan tops the list with total assets with US$2.53 trillion followed by Bank of America Corp which holds assets worth US$2.28 trillion (Bank Rate, 2018). A combination of legal procedures enacted by the Federal Reserve Bank managed to restore stability and sanity to the US financial sector (BBC, 2009).

The sector continues to enjoy from efforts to further promote financial growth, development and innovation. With an increased role being played by the Federal Deposit Insurance Corporation (FDIC), the US banking sector has managed to shown strong signs of resilience. As a it stands the number of banks insured by the FDIC declined from 7 870 in 2002 to 4 909 in 2017 (Statista, 2018).

Despite all the developments that took place in the US economy, the US banking sector experienced a series of changes. Among such challenges is the 2008 financial crisis. The occurrence of the 2008 financial crisis can be explained by the subprime mortgage and banking crises.

2.2.1 Subprime mortgage bubble

It can be noted that the 2008 financial crisis that ensued in the USA was as a result of the subprime mortgage crisis. The mortgage crisis was necessitated by a severe rise in mortgage backed instruments which were also used as collateral to secure funds and for other transaction purposes (Amadeo, 2018). The prices of houses went up and the bubble only came to busts following high incidences of default by home owners (Stiglitz, 2010). It is considered that the 2008 financial crisis was as a result of the following factors;

- Increased mortgage lending as a result of low interest rates,
- The use of mortgages to form new financial instruments which were termed mortgage-backed securities (securitization). The problem with these securities is that they were undervalued in terms of risks weighting and could be traded to other market participants (Langley, 2015). This further increased the risks associated with the holding of mortgage-backed securities.
- The improper regulatory frameworks which encouraged unnecessary and irrational lending (anti-predatory lending)
- Policy inconsistencies which contributed towards enhancing the riskiness of holding mortgage-backed securities by giving loans to high risky individuals. This was mainly driven by the Community Reinvestment Act which was meant to assist low income groups (Elliot, 2010).
- Increased risky lending as a result of a moral hazard which was triggered by a high level of mortgage guarantees.

With all these factors in mind, it remained unavoidable that the subprime mortgage was going to lead into a financial crisis that would affect the world economy starting with the USA.

2.2.2 Banking crisis

The rising levels and accessibility of mortgages resulted in an increase in the number of people in need of houses. As a result, demand for house went up and this also included the prices of houses. Such a rise in value of house caused home owners to also use their homes as collateral so as to gain further access to addition al funds (Cho, 2010). The mortgages were considered to be associated with a high delinquency rate which caused the value of mortgage-backed securities to fall (Treasury Department Report, 2010). Banks on the other hand, were left with illiquid instruments who value was declining against what they can get in return. This plunged banks into liquidity and solvency problems and most bank customers began to withdraw funds from banks. But the problem is that most banks did not have the required funds to meet the rising demand for withdrawals. As a result, bank runs ensued and some banks collapsed leading to a banking crisis.

2.2.3 Background causes

All in all, the 2008 financial crisis that ensued in the USA can be said to be as a result of improper risk weighting procedures. Also, some of the financial instruments that were securitised such as mortgage-backed securities were so complex for the banking sector to handle properly (BBC, 2009). Moreover, insights from the study by Langley (2015), showed that inconsistent policies by the government resulted in conflicts of interest between banks and the government. Such conflicts were against banks ‘operational performance and needed to be contained but this could not be made possible. Regulators on the other hand, can be said to have failed in regulating the financial sector, notably the banking sector. Prevailing regulations that were used prior to the financial crisis were not in line with the required banking standards, laws and regulations (Cho, 2010). This created a platform upon which malpractices and irrational back transactions were carried out. Financial institutions on the other hand, were engaging in malpractices and lacked transparency in their activities. All these, issues were further creating a high demand for mortgage securities which was higher than the available supplies. Also, blames can also be put against credit rating agencies which failed to come up with proper and reliable risk ratings or weights for mortgage-

backed securities. Investors on the other hand, were incapable of pricing risk of mortgage sold on the market. The resultant effect was volatility and securities began to lose their value resulting in what is known as a bubble burst (Elliot, 2010). This burst is was initiated the 2008 financial crisis as other forms of financial crisis such as bank and currency crisis began to take effect.

2.3 Enacted measures to curb the effects of the financial crisis

The prevalence of the 2008 financial crisis in USA was followed by a series of measures which were meant in restoring financial sanity and stability. These measures were composed of short term, long term and congress responses. These responses will be examined to determine their effectiveness in dealing with the crisis.

2.3.1 Long term responses and regulatory proposals

Due to the fact that the 2008 financial crisis in US was triggered by the subprime mortgage crisis, regulatory authorities were mainly concerned about established sound regulatory reforms. This saw the financial regulatory reform being introduced in 2009. The regulatory reforms were primarily targeted at the following aspects;

- Systematic winding of key institutions,
- Improved central bank role and intermediation capacity,
- Controlling shadow banking activities,
- Setting better capital standards,
- Placing financial cushions and,
- Protecting bank customers (Stiglitz, 2010).

Much of the long-term responses were based on propositions made by Paul Volcker and came to be known as the Volcker rule (Uchitelle, 2010). The Volcker rule is a rule that restricts banks from engaging in proprietary trading. Other responses included Basel III which resulted in new liquidity measures. Basel III was also centred on addressing counterpart risks, reducing leverage and increasing capital ratios (Langley, 2015). The major problem with Basel is that it didn't address how risk was to be weighted (Elliot, 2010). This follows observations made which pointed out that AAA rated banks made losses as a result of financial engineering (Cho, 2010). This was different from AA-rated whose risk weight was presumed to be zero (Uchitelle, 2010).

Though long-term responses played a huge role in enhancing financial stability, they have shortfalls. For instance, Basel III promoted an increase in lending to risky governments. In most cases, short term and long-term responses must be combined together in dealing with a financial crisis.

2.3.2 Short term and emergency responses

Emergency responses to contain the effects of the crisis were mainly targeted at dealing with a deflationary spiral. This is a situation which occurs when global consumption declines as a result of increased unemployment and a decline in wages (Stiglitz, 2010). Most of the emergency responses undertaken by monetary authorities involve the control of money supply. In this case, the US central had to increase money supply so as to boost consumption which normally declines in the midst of a crisis. Such efforts were supported by fiscal stimulus which saw government expenditure rising. Problems of a rising private sector demand can be offset by increasing government expenditure. In addition, one of the effects of the 2008 financial crisis is shortages of liquidity and the US central bank had to enact measure to improve bank liquidity. This was necessitated by the lack of access and flexible liquidity channels (Elliot, 2010). More financial institutions were succumbing to the effects of the financial crisis because of the existence of inflexible liquidity channels.

Increases in the availability of market credit were also a key element that needed to be addressed so as to curtail the effects of the crisis. This was accomplished by credit freezes by the central banks. The major breakthrough came when the central bank acquired troubled banks and related assets (Treasury Department Report, 2010). In addition, additional liquidity was injected by the central bank after it settled the government debt of the tune US$2.5 trillion (BBC, 2009). Bail out packages and more stimulus packages were also established for troubled firms. These managed to bring in the required stability as positive results were through improved financial performance of major financial institutions. Banks also started channelling the injected liquidity to profitable ventures and this resulted in a major improvement in some bank indicators.

2.3.3 Congress response

Congress responses were mainly focused on establishing legal mechanisms or instruments that either protect individuals, state interests or prohibit malpractices. In

2011, efforts to contain the crisis were initiated by the introduction of the Financial Crisis Inquiry Commission report. As a result, many individuals include the prime minister Geir Haarde was convicted of misconducts (Cho, 2010). Efforts by the US congress can be applauded for restoring financial integrity in the US financial sector. The US bank sector began to grow and achieve sound stability follow improved transparency. All in all, responses set by the US government to deal with the financial crisis can thus be said to have yielded the desired outcomes though much was and is still needed to be done.

2.4 Chapter summary

It can be noted that the US economy is one of the fastest growing economies in the world and continues to dominate other large economies such as China. Such level, of advancement also extend to include a high level of financial development and innovation. Having the best developed financial system in the world, the US economy has managed to harness the available financial resources and distribute them to the necessary consumers and productive agencies. However, the effects of the 2008 financial crisis can be said to have had negative effects on both the US financial sector, notably the banking sector and the economy as whole. As a result, not all banks insured by the FDIC managed to survive the effect of the crisis. Some were on to collapse while others made profits. The 2008 financial crisis can be said to have been triggered by and composed of the subprime mortgage and banking crises. These crises are what destabilised the US financial systems and economy. But a combination of short term, long term and congress response managed to restore sanity and confidence in the US financial sector and economy as a whole.

CHAPTER 3

RESEARCH METHODOLOGY

3.1 Research approach

The study is a quantitative approach and relies on the use of secondary data and econometric techniques to estimate a financial crisis-bank performance model. This was further achieved by using Eviews 9.5 to estimate an ARDL model which was later tested for heteroscedasticity, serial correlation and stability.

3.2 Research model

In this study, an Auto regressive Distributed Lag Models (ARDL) will be used to estimate the effects of the 2008 financial crisis on the performance of banks in the USA. An ARDL model can be said to be a model that is used to estimate the distributive effects of a set of independent variables on a dependent variable over future periods (Pesaran & Shin, 1998). The ARDL model also incorporates the use of an error correction term (ECT) to determine the speed of adjustment as well as the existence of a long run relationship using the bounds test.

The use of the ARDL in this study is based on its ability to yield consistent estimators even when used with a small sample size (Bahmani-Oskooee, 2002). This can be supported by observations made by Pesaran and Shin (2001), who cited that the use of the ARDL also helps to deal with estimation problems such as collinearity by including the lags of the dependent variable in the model. Also, when using an ARDL model, one does not require the need to determine the number of lags needed to run

the ARDL model as it automatically specifies the required lag length (Baharumshah, Mohd & Masih, 2009).

The estimation of ARDL is done under a given set of assumptions and these assumptions must be adhered to if the model is to wield sound explanatory power and policy making capabilities. Pesaran and Shin (2001), further states that the estimation of an ARDL model must confine to the following assumptions;

a) No heteroscedasticity
b) No serial correlation
c) Normal distribution
d) Variables can either be I (0) or I(1) or on both but must not be I(2).

Given long run coefficients (α_i's), short run coefficients (β_i's) and an error term ε_t, a standard ARDL model function is expressed as follows;

$$y_t = \beta_0 + \beta_1 y_{t-1} + \ldots\ldots + \beta_p y^{t-m} + \alpha_0 x_t + \alpha_1 x_{t-1} + \alpha_2 x_{t-2} + \ldots\ldots + \alpha_q x_{t-n} + \varepsilon_t \ldots\ldots\ldots\ldots (1)$$

In this study, it has been established that changes in bank performance (measured by return on asset (ROA)) in the USA as a result of the 2008 financial crisis (FC) were also a function of banks' ability to have loss provision funds (LPV), growth of their equity ratios (EQR), and asset yield (AY). Prior to the estimation process, all variables were changed into logarithms and the standard OLS equation for all these variables can be listed as follows;

$$LROA = \beta_0 + \beta_1 LEQR + \beta_2 LAY + \beta_3 LLPV + \beta_4 FC + \varepsilon t \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots (2)$$

These variables can be incorporated into equation (1) and thus giving equation (3) which can be expressed as follows;

$$\Delta\mathbf{LROA}_t = \delta_0 + \sum_{i=0}\Phi_i\Delta\mathbf{LEQR}_{t-1} + \sum_{i=0}\varphi_i\Delta\mathbf{LAY}_{t-1} + \sum_{i=0}\Psi_i\Delta\mathbf{LLPV}_{t-1} + \sum_{i=0}\omega_i\Delta\mathbf{FC}_{t-1} + \lambda_1 LROA_{t-1} + \lambda_2\mathbf{LEQR}_{t-1} + \lambda_3\mathbf{LAY}_{t-1} + \lambda_4\mathbf{LLPV}_{t-1} + \lambda_5\mathbf{LFC}_{t-1} \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots (3)$$

Equation 3 thus forms an ARDL model with an error correction function. It is from equation 3 that the effects of the 2008 financial crisis were estimated using secondary data and with the aid of EViews 9.5.

In order to determine whether there is a long run relationship between the variables, the F-statistics provided by the bounds tests was used and the decision is to consider that there is a long run relationship between the variables when the obtained F-statistics is high above both lower and upper bounds values.

3.3 Stationarity tests

Stationarity tests are one of the most important tests in econometrics and their use lies in their ability to determine which econometric model is suitable for application (Davison & Mackinnon, 2004). But the most important use of stationarity test is to determine whether the variables are stationary or non-stationary. If not stationary, then there is always a challenge that the obtained results will be spurious (Dickey & Pantuala, 1987). The testing of hypothesis of the coefficients requires that the asymptotic standards or assumptions be valid otherwise it will be impossible to test for the hypotheses.

In most cases, stationarity has been established to pose effects on the properties and behaviour of a series (Davison & Mackinnon, 2004). The other problem of non-stationarity is that a model can have a high R^2 which indicates a high level of relatedness and yet in actual fact they are not (Dickey & Fuller, 1979). Non-stationarity can be noted to be in two different forms;

- The random walk model with drift: ($y_t = \mu + y_{t-1} + u_t$)
- The deterministic trend process: ($y_t = \alpha + \beta_t + u_t$).

Phillips and Perron (1988) established that both the ADF and the Phillips Perron (PP) are based on the need to test the order of integration which is most cases assumed to be 1. The advantage of using the PP is that it considers the issue of autocorrelation as opposed to the ADF which neglects such a feature. Hence, the PP is sometimes preferred as opposed to the ADF but in most cases, it is advisable to use both tests.

According to Dickey and Fuller (1979), the ADF seeks to test the idea that the data has a unit root. The alternative hypothesis however changes with the circumstance surrounding the type of test that is used (trend-stationarity or stationarity). The decision to reject the presence of non-stationarity lies in the magnitude of the obtained ADF statistic. This value is always in a negative number and the greater the number, the greater the probability of rejecting the hypothesis that there is a unit root. The ADF test follows the following model;

$$\Delta y_t = \alpha + \beta t + \gamma y_{t-1} + \delta_1 \Delta y_{t-1} + \cdots + \delta_{p-1} \Delta y_{t-p+1} + \varepsilon_t,$$

A random walk can be modelled by the constraints α =0 and β=0, constant (**α)**, coefficient (**β**) corresponds to modelling a random walk (β=0), (Dickey & Fuller, 1979). Consequently, there are three main versions of the test, analogous to the ones discussed on Dickey–Fuller test. The ADF statistic is computed using a series of tests which test for higher-order autoregressive processes and these include Hannan–Quinn information, Bayesian information and the Akaike information criterion using the following expression;

$$DF_\tau = \frac{\hat{\gamma}}{SE(\hat{\gamma})}$$

The obtained value is weighed against existing critical values of the DF test. If the obtained probability value is above the 0.05 mark, then conclusions can be made that the data has a unit root. If not, then conclusions will be that the data is stationary.

3.4 Model diagnostics tests

Model diagnostics tests were carried out to determine whether the estimated model does not have misspecifications that can affect its reliability and validity. This was done in respect of normality test which assumes that all the variables are normally distributed (Ghasemi & Zahediasi, 2012). Though normality tests are so important, they do not usually interfere with the model stability as well as collinearity standards.

The other aspect of diagnostic tests pertains to heteroscedasticity. Heteroscedasticity implies that the variance of the error terms is not constant (Engle, 1982. In other words, the OLS assumes that the variance of the error terms is constant. This is important

because if this assumption does not hold, then the obtained standard errors are more likely to be untrue. Also, the statistical significance of the variables becomes questionable as insignificant variables can be treated as significant and yet in actual fact they are not (Stevenson, 2004). Problems of heteroscedasticity can be dealt with by using weights which are assigned to the variables. The variables can also be transformed (Gujarat, 2009). Heteroscedasticity test was conducted using the Breusch-Pagan-Godfrey and the ARCH heteroscedasticity tests.

Serial correlation is also one of the major challenges that can undermine the use of an estimated model. Serial correlation occurs when the error terms are correlated with each other (Druker, 2003). One of the tests that can be used to determine the presence of serial correlation is the Durbin Watson test statistic which is computed as follows;

$$DW = \frac{\sum_{t=2}^{T}(\hat{\varepsilon}_t - \hat{\varepsilon}_{t-1})^2}{\sum_{t=1}^{T}\hat{\varepsilon}_t^2}$$

The DW values often range from 0 to 4 and values close to 2 indicate that there is no serial correlation while values below 2 indicate that there is a problem of positive serial correlation and those above 2 indicate that there is a problem of negative serial correlation. In this study, the serial correlation LM test was used to test the model for serial correlation.

3.5 Model variables

3.5.1 Bank performance (dependent variable)

It is important to note that there are several ways that can be used to measure performance and this also extends to include ways that are used to define performance. In this study performance can be defined as the ability of the bank to make excess returns that are above the incurred costs (Kosmidou & Zopoundis, 2008).

In banking circumstances, ROE, ROA and NIM are the widely used indicators of banks performance. Both indicators can be used at the same time to measure bank performance but there are several cases were one can opt to use of these indicators to estimate bank performance (Bonin, Hasan & Watchel, 2005; Grigorian & Manole, 2002).

In this study, ROA was used as an indicator of bank performance. Bank performance as noted from the given literature, forms a strong pillar upon which all economic policies are formulated. This is because of their vital role which they play in providing firms and individuals with the necessary funds to finance consumption and production respectively.

3.5.2 Financial crisis (FC)

The financial crisis of 2008, also known as the global financial crisis is considered by many economists to have been the worst financial crisis since the Great Depression of the 1930s (Fahlenbrach, Prilmeier & Stulz, 2012). Its effects have always been considered to be negative but there are cases where other financial institutions have benefited a lot from the financial crisis (Crotty, 2009; Reinhart & Rogoff, 2008). In this study, financial crisis will be taken to mean as a categorical variable with values of 1 and 0 denoting the presence and absence of a crisis respectively. The financial crisis was more common in 2008 and this will be represented by 1 while other periods will be represented by 0 meaning that no financial crisis was observed. An assumption was made that the effects of the financial crisis were mainly experienced in 2008 and ended in the same year. Basically, a financial crisis is considered to be having negative effects on bank performance (Fahlenbrach, Prilmeier & Stulz, 2012). Hence, in this study expectations were made in line with the findings made by Aebi, Sabato and Schmid (2012) and thus we can expect that the 2008 financial crisis be negatively related with bank performance.

3.5.3 Loss provision for (LPV)

Banks can set aside provisions that will cater for losses incurred as a result of unpaid loan payments and such provisions are termed loss provisions (Anandarajan, Hasan & Lozano, 2005). Provision for loan losses also includes losses that will be incurred by the bank as a result of renegotiated loan terms, customer defaults and bad loans. High levels of LPVs require that adjustments be made to loan loss reserves and this can affect bank performance in a quite number of ways. For instance, Anandarajan, Hasan and Lozano (2005) noted that a high level of LPV can often cause a fall in bank performance. Hence, it is important for banks to maintain sound levels of LPVs. However, there are cases whereby LPVs can result in improved bank performance (Laeven, 2011).

3.5.4 Asset yield (AY)

This provides a measures or indication of how much the banks' assets will generate in terms of returns over the course of their use usually over a year. Asset yield contributes towards improving the performance of the bank and the higher the level of asset yield, the higher the profit margin (Kosmidou & Zopounidis (2008). Hence, can be said that there is a positive relationship between asset yield and bank performance. As a result, a positive relationship between asset yield and bank performance is expected.

3.6 Data sources

The data was retrieved from the FDIC website and is aggregate data of 1 372 banks insured by the FDIC and range from the period 1984 to 2018. This gives a total of 35 observations and this number is adequate enough to estimate an ARDL model (Pesaran & Pesaran, 2010).

Table 3.1: Expected relationships

Author	Variable	Expected sign
Fahlenbrach, Prilmeier and Stulz, (2012)	Financial crisis	**-**
Anandarajan, Hasan and Lozano (2005)	Loss provisions	**- / +**
Kosmidou and Zopounidis (2008).	Asset yield	**+**

CHAPTER 4

DATA ANALYSIS AND PRESENTATION

4.1 Introduction

The study draws attention to commercial banks that are insured by the FDIC and have total assets that are below US$100 million. Aggregate data of 1 372 banks insured by the FDIC ranging from the period 1984 to 2018 was used to estimate an ARDL model. Efforts to restrict the scope of the effects to the 2008 financial crisis on bank performance were supported by observations made which showed that the banking sector was the hardest sector by the 2008 financial crisis. Hence, data analysis and presentation are based on an ARDL model estimated to determine the effects of the 2008 financial crisis on the performance of banks insured by the FDIC.

4.2 Stationarity tests

In this study, stationarity tests were done with the emphasis of trying to determine if the model variables do not result in spurious results (Hlouskova & Wagner, 2006). Stationarity tests were also conducted so as to determine if the variables make it possible to estimate an ARDL model. It is in this regard that Phillips Perron and the Augmented Dickey Fuller tests were used to test the variables for a unit root.

Table 4.1: PP test at 0.05 significance level

	PP test at 0.05 sig. level (Intercept and trend)			
Variable	***At level***		***At first difference***	
	T-stat	***Prob.***	***T-stat***	***Prob.***
LLPV	-2.01977	0.0000	-3.548095	0.0468
LAY	-1.950897	0.6062	-3.436911	0.0437
LROA	-2.264996	0.4406	-6.856126	0.0000

Table 4.2: ADF test at 0.05 significance level

	ADF test at 0.05 sig. level (Intercept and trend)			
Variable	***At level***		***At first difference***	
	T-stat	***Prob.***	***T-stat***	***Prob.***
LLPV	-3.055718	0.1133	-3.601712	0.0451
LAY	-4.369634	0.0077	-3.640656	0.0415
LROA	-2.328103	0.4084	-6.876579	0.0000

Both the PP and the ADF are showing that the variables have mixed stationarity levels. That is, the ADF reveals that LAY is stationary at levels while the others are non-stationary at levels. But when tested using the PP, it can be seen that all the variables are non-stationary at levels. In addition, the variables are all stationary at levels and this makes it easy to run the ARDL model.

4.3 Short run ARDL model estimation

Foremost, it can be noted that the estimated model has a significant error correction term of 0.8610. This therefore means that the speed of adjustment is 86.10% and takes banks the same year to return to an equilibrium position after experiencing a financial crisis.

Meanwhile, in the short run, having more capital or funds set aside as provisions for losses proves to be costly towards the bank. This is because the net effects are negative though an increase in loss provisions by 1% causes an increase in bank performance by 0.5137 at the first period.

Improvements in asset yield momentarily lead to a decline in performance by 0.210%. The magnitude at which bank performance falls later increases to 0.748% in the first year. Thus the net effects of an improvement in asset yield can be said to be posing huge negative effects on bank performance in the short run.

Table 4.3, also reveals that the effects of the financial crisis tends to cause a fall in bank performance by 0.130%. The magnitude at which bank performance falls later increases in the following successive period to 0.856%. This is because bank performance initially decreases on the onset of the crisis by 0.130% as banks get exposed to the initial effects of the crisis. However, as the crisis prolongs and other sectors and consumers begin to respond, and panic behaviour and overreaction take place, bank performance begins to fall in successive periods.

Table 4.3: Short run ARDL model estimation

Dependent Variable: LROA, Selected Model: ARDL (1, 1, 1, 0)

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-0.5680550	0.160423	-3.540974	0.0015
LROA (-1)	-0.5861050	0.126003	-6.833557	0.0000
LAY (-1)	0.748070	0.158135	4.730591	0.0001
FC (-1)	-0.856094	0.169456	-5.052013	0.0000
LLPV	-0.513713	0.106147	-4.839621	0.0000
D (LAY)	-0.210180	0.252822	-0.831133	0.4131
D (FC)	-0.130160	0.099868	-1.303331	0.2035
CointEq(-1)	-0.861050	0.070732	-12.17348	0.0000

Cointeq = LROA - (0.8688*LAY - 0.9942*FC - 0.5966*LLPV- 0.6597)

4.4 Long run ARDL model estimation

Efforts to increase loss provisions by 1% have detrimental effects on bank performance by 0.5966%. Such concurs with results established by Fonseca and Gonzalez (2008), which contend that loss provisions do not imply money that is being used productively but rather idle capital and hence reduce money that should be made

available for investments in other banking opportunities that can yield better returns in the future. The opportunity of having high loss provisions is tied to profitable opportunities that banks miss and lose to other banks.

Changes in asset yield can be noted to be positively related with bank performance by 0.8688 units as noted from a study by Kosmidou and Zopounidis (2008). This entails that an increase in asset yield by 1% will result in an increase in bank 0.87%. This can possibly be as a result of the idea that the banks' assets are generating more annual yields which allows the bank to cover costs and expend resources towards investing in other productive assets and activities.

Table 4.4: Long run ARDL estimation

Dependent Variable: LROA, Selected Model: ARDL (1, 1, 1, 0)

Long Run Coefficients				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
Log (Asset yield)	0.868789	0.090423	9.608089	0.0000
Financial crisis	-0.994244	0.291715	-3.408276	0.0021
Log (Loss provision)	-0.596613	0.058487	-10.20087	0.0000
C	-0.659723	0.131075	-5.033182	0.0000

It can be seen that the financial crisis has a negative effect on the performance of banks insured by the FDIC. This is because an increase in the financial crisis by 1-unit result in a fall in bank performance by 0.99%. This with findings established by other scholars such as Aebi, Sabato and Schmid (2012), which highlighted that banks usually suffer from reduced problems during the occurrence of a financial crisis.

4.5 Bounds test

Bounds tests was used to check if there exist a long cointegration between the model variables. The decision is to accept that the variables are cointegrated in the long run when the obtained F-statistic is greater than both the lower and upper bounds values. Table 4.5, Provides details of the obtained bound test estimates and the results show

that the F-statistic exceeds both the lower and upper bounds values and hence it can be concluded that the variables are cointegrated in the long run.

Table 4.5: Bounds test

Test statistic	Value	Significance	Lower bound I(0)	Upper bound I(1)
F-statistic	25.81439	10%	2.37	3.2
K	3	5%	2.79	3.67
		2.5%	3.15	4.08
		1%	3.65	4.66

4.6 Diagnostic tests

Diagnostics tests were conducted in relation to serial correlation, heteroscedasticity and normality test. The findings are presented as follows;

4.6.1 Serial correlation test

Serial correlation test was done using the Breusch-Godfrey Serial correlation LM test and hypothesis that there is no serial correlation can be accepted at 5%.

Table 4.6: Breusch-Godfrey Serial correlation LM test

Breusch-Godfrey Serial Correlation LM Test:

F-statistic	0.167205	Prob. F(2,13)	0.8740
Obs*R-squared	0.448795	Prob. Chi-Square(2)	0.7990

4.6.2 Heteroscedasticity test

Heteroscedasticity tests were conducted using the Breusch-Pagan-Godfrey and the ARCH heteroscedasticity tests. The obtained results are show in table 4.1 and 4.2 respectively.

Table 4.7: Breusch-Pagan-Godfrey Heteroscedasticity test

Heteroskedasticity Test: Breusch-Pagan-Godfrey

F-statistic	0.604633	Prob. F(15,15)	0.7242
Obs*R-squared	4.027231	Prob. Chi-Square(15)	0.6730
Scaled explained SS	1.331123	Prob. Chi-Square(15)	0.9699

Using both results established in table 4.7 and 4.8, it can be seen that both p-values are greater than 0.05 and thus be concluded there are no heteroscedasticity problems embodied in the estimated model.

Table 4.8: ARCH Heteroscedasticity test

Heteroskedasticity Test: ARCH

F-statistic	1.302554	Prob. F(1,28)	0.2625
Obs*R-squared	1.330678	Prob. Chi-Square(1)	0.2487

4.6.3 Normality test

Jarque-bera estimates were computed with the sole aim of determining if the variables are normally distributed and the decision is to accept the hypothesis that the variables are normally distributed when the p-value exceeds the 0.05 mark. It can be seen in figure 4.1, that the obtained p-value is 0.321168 and hence conclusions were made that the variables are normally distributed.

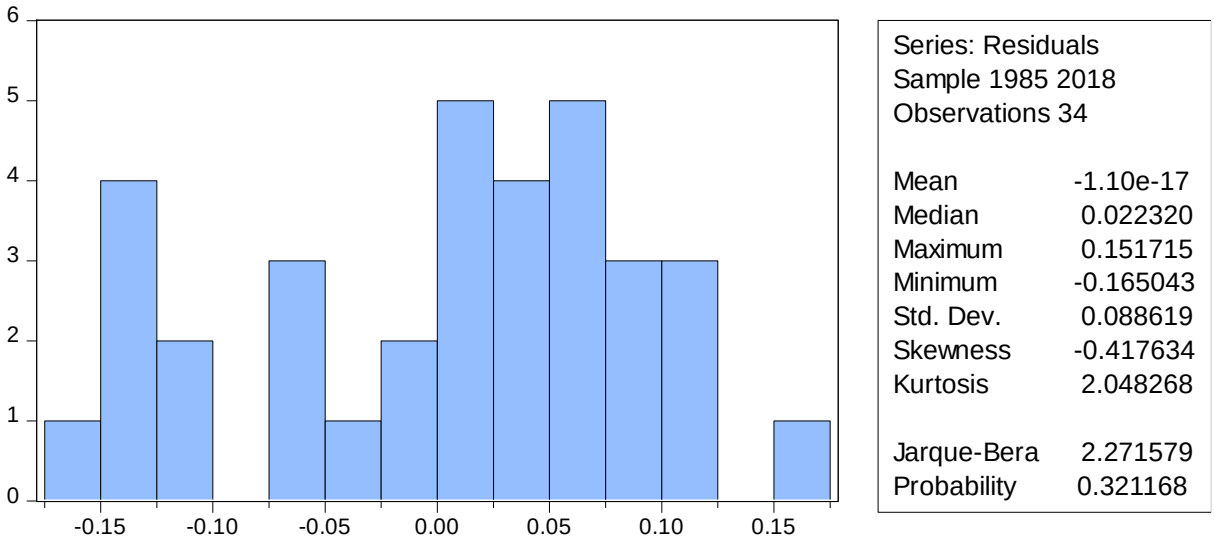

Figure 4.1 Normality test

4.7 Stability tests

In econometrics and economics, it is important to determine if the estimated models are stable because it allows us to determine if the models will be reliable in offering explanations about the concerned research area or economic phenomenon without reasonable doubt (Ploberger & Krämer, 1992). Cusum and recursive residuals were used to determine if the estimated model is stable and, in a position, to offer reliable explanations about the effects of the 2008 financial crisis on the performance of banks insured by the FDIC. Figure 4.2, thus provides strong evidence that the estimated model is in a strong position, to offer reliable explanations about the effects of the 2008 financial crisis on the performance of banks insured by the FDIC.

Figure 4.2: Stability tests

4.8 Discussion of findings

The main focus of the study was to determine the effects of the 2008 financial crisis and the scope of the study was restricted to banks with assets below US$100 million and insured by the FDIC. It can be deduced that the occurrence of the 2008 financial had negative and severe consequences on both the financial and non-financial sectors but the financial sector was the hardest hit of all sectors. Even among financial firms, both small and large banks will be exposed to bank runs and other severe effects of the crisis. In most cases, Islamic banks do manage to strongly withstand the effects of the financial crisis as opposed to conventional banks. This can be traced to sound legal, regulatory and supervisory frameworks that govern Islamic bank's operations. Using the established results, it can be said that predicting the occurrence of a crisis is a huge challenge and it is not easy to predict a financial crisis. But it is important for monetary authorities, financial analysts and economists to have a capacity to predict the occurrence of a crisis. This is because it helps ease the effects of a crisis on the financial system and other sectors or most importantly prevent it occurrence.

With respect to the 2008 financial crisis that took place in USA, the subprime mortgage and banking crisis are the major necessitating factors. Its occurrence is best explained by Shiller's theoretical insights of a financial crisis. Shiller's insights which posits that the occurrence of a crisis is triggered by precipitating factors are extremely true when related to the USA. This is because the subprime mortgage crisis precipitated the 2008 financial crisis. This further led to the herding effect as more consumers went on to secure more house mortgages during the boom while investors disposed off mortgage backed securities (securitised mortgages). All the events are in line with what Shiller prescribed. Hence, the theoretical insights by Shiller can be said to be a true reflection of what transpired in the USA.

From the established results, it therefore implies that having depositors' funds insured by the FDIC is not enough to maintain and boost consumers' confidence towards the bank. This can either be as a result of the idea that the effects of the crisis are so intense to an extent that they are spreading to other sectors of the economy possibly through a contagion. Furthermore, such actions will trigger panic behaviour and overreaction which causes consumers to lose confidence in the banking irrespective

of the fact that it is insured by the FDIC. Moreover, deposit insurance tends to expose banks to systematic risks as there will be too much leverage. This can trigger banks to take up more risks and thus further exposing the sector to a deeper crisis. Banks that can channel funds or assistance provided by the government through bail out packages to profit earning activities, are in a better position to withstand the effects of a crisis.

The results also mean that the more banks make or earn from their assets on an annual basis in the midst of the financial crisis, the more they will make more profits. Hence, in the midst of a financial crisis it is important for banks to devote more resources towards to those assets which have a higher asset yield. This can be accomplished by asset and geographical diversification

Lastly, having high loss provisions does not imply a productive use of banking resources but rather idle capital. It also causes banks to miss out on profitable investments in other banking opportunities that can yield better returns in the future. In such cases, banks will lose opportunities to their rivals which cause them to lose their competitive advantage and a fall in competitive advantage is mostly to be accompanied by a fall in bank performance.

Care must however be placed that the examination of the effects of a financial crisis on bank performance are not restricted to loss provisions and asset yield but also include a number of bank specific and macroeconomic indicators. These variables can include bank size, bank efficiency, asset utlisation, asset quality, deposits, loans economic growth, inflation etc. but the extent to which banks will make profits or perform better is determined by how these variables respond during a financial crisis. This therefore shows that not all bank and economic specific variables will respond positively during a financial crisis. That is, some variables will have a negative effect on bank performance while others will have a positive effect on bank performance. It is therefore important for banks to come up with measures that will effectively work in preventing or minimising the negative effects of a financial crisis on both bank specific and economic variables. Most of the banks that fail during a financial crisis would have failed to reduce the negative effects of a financial crisis on both bank specific and economic variables. Thus, studying the behaviour of both bank specific and economic

variables will help in devising measures to improve bank performance. It is on this ground that bank strategies and economic policies can be formulated.

With all these ideas in mid, it therefore remains imperative that a financial crisis is a phenomenon that negatively affects banks and poses severe effects on both the financial sector and the economy as whole. Hence, it is important to study its occurrence and establish sound regulatory, supervisory and banking strategies.

CHAPTER 5

CONCLUSIONS, RECOMMENDATIONS AND SUGGESTIONS FOR FUTURE STUDIES

5.1 Conclusions

The main focus of this study was to examine the effects of the 2008 financial crisis drawing focus from resultant changes in bank performance. Using ideas established in this study, it can be said that the effects of a financial crisis are widespread but much of the effects are concentrated on bank performance. That is, a financial crisis acts in a way that reduces bank performance and, in most cases, threaten banks out of operations. The extent to which banks will be able to ease the effects of a financial crisis rely on the responsiveness of both specific and economic variables. Banks that are not in a position to devise effective strategies to ease the negative effects of a financial crisis are more likely to suffer from the effects of a financial crisis.

One of the notable ways that can be used to ease the effects of a financial crisis is by insuring bank deposits through deposit insurances. Deposit insurances will help to instil back public confidence in the banking sector and thereby minimising the effects of bank runs. During the effects of a financial crisis, the public's trust and confidence in the banking sector is usually low as some of the consumers might have lost their deposits to similar incidences. In the event that the public' confidence and trust are not stirred up, then banks are more likely to lose a huge market share which will cause them to also lose on returns. In this way, bank insurance will thus help to maintain a steady level of returns through improved public confidence and steady bank customer

service provision levels. However, the existence of deposit insurance does not always mean that it is a guarantee that banks will make more profits or will be able to avert the effects of a crisis. Despite, the fact that bank deposits are insured by the deposit insurance commission, some banks can go to make losses as customer's confidence in the banking sector remains relatively low. It is therefore important for banks to have their own strategies that complement strategies formulated by monetary authorities.

Insights drawn from the study revealed that the effects of the 2008 financial crisis on bank performance were to a large extent determined by the extent to which banks had made provisions for loss, accumulated growth in income through positive changes in asset yield, and how they were using the capital resources as reflected by the equity ratios.

Based on the estimated findings it concluded that setting a lot of funds to cover for potential bank losses has disastrous effects on bank performance. As a result, loss provisions have been increasing to a level whereby they have been reducing the availability of funds that can be used to invest in profitable assets and projects.

Conclusions can be made that improper use of capital funds during the financial crisis has negative effects on bank performance. Banks that are coupled with ineffective and inefficient use of capital resources are have a high tendency to suffer from losses when exposed to a financial crisis.

Potential improvements in the use of bank assets has positive effects on bank performance. Hence, banks that have sound asset management strategies are strongly positioned to take advantage and benefit from the effects of the financial crisis. On the other hand, banks which lack effective approach towards managing their assets are at a great disadvantage and more prone to suffer in the event of a financial crisis.

Lastly, it can mainly be concluded that the 2008 financial crisis has negative effects on bank performance. This is mainly because of panic behaviour among bank customers which causes them to withdraw funds from banks leaving banks with little funds to invest, issue more loans and buy additional assets. Moreover, the financial crisis is also highly characterised by loss of confidence in banks and it is during such periods that banking activities tend to decline forcing banks to incur huge operational expenses which outweigh revenue inflows.

5.2 Recommendations

The obtained results point out that the need to safeguard bank performance is not entirely restricted to bank managers but also extends to include monetary authorities. Hence, recommendations will be made from the perspective of both bank managers and monetary authorities.

- Bank managers are strongly encouraged to have sound risk management policies that can cushion the bank from the effects of the financial crisis.
- Proper asset management strategies are required so as to maximise returns in the form of asset yield by allocating more capital funds to those assets whose yield is higher.
- There is also need to reallocate capital resources since the available capital funds are being spent towards activities which are not generating enough profitable returns (ineffective and inefficiency in the use of capital resources)
- Monetary authorities are also encouraged to devise sound minimum capital requirements ratios that do not only cushion banks from the effects of the financial crisis but also enable them to remain with excess funds to invest in other profitable assets and projects.
- Monetary authorities must also devise sound economic management strategies such as fiscal policy, monetary policy and investment policies to steer the economy towards an expansionary path and deal with potential economic hazards such as financial and economic crisis.

5.3 Suggestions for future studies

In the course of the study, discoveries were made that the effects of the 2008 financial crisis varied from one bank to another and hence some banks especially commercial banks made profits while others made losses. Thus, it is important for future studies to conduct a panel analysis of the effects of the 2008 financial crisis on commercial banks.

REFERENCES

Abebe, T. (2014) Determinants of Financial Performance: An Empirical Study on Ethiopian Commercial Banks, Thesis, Jimma: Jimma University.

Abubakar, A. Y., Jagongo, A., Almadi, O. J., & Muktar, B. S. (2014). Effects of 2008 global liquidity crisis on the performance of banks shares traded in Nigeria stock exchange market. African Journal of Business Management, 8(23), 1094-1100.

Aburime, U. (2008, May 31). Determinants of bank profitability: company level evidence from Nigeria. Retrieved from Social Science Research Network: http://papers.ssrn.com/sol3/papers.cfm?abstract_id=%201106825.

Aebi, V., Sabato, G., & Schmid, M. (2012). Risk management, corporate governance, and bank performance in the financial crisis. Journal of Banking & Finance, 36(12), 3213-3226.

Almajali, A. Y., Alamro, S. A., Al-Soub, Y. Z, (2012). Factors affecting the financial performance of Jordanian insurance companies listed at Amman stock exchange. Journal of Management Research.

Amadeo, K. (2018). US Economic Outlook for 2018 and Beyond. Retrieved from https://www.thebalance.com/us-economic-outlook-3305669 on 13 October 2018.

Anandarajan, A., Hasan, I., & Lozano-Vivas, A. (2005). Loan loss provision decisions: an empirical analysis of the Spanish depository institutions. Journal of International Accounting, Auditing and Taxation, 14(1), 55-77.

Athanasoglou, P. P., Sophocles, N. B., Matthaios, D. D. (2005) Bank-specific, industry-specific and macroeconomic determinants of bank profitability. Working paper, Bank of Greece. 1(1), 3-4. Available:

http://www.iamb.info?pdf/IAMB%2030%202011%20press%20release.pdf

Auguiar, M., & Gopinath, G. (2006). Defaultable Debt, Interest Rates and the Current Account. Journal of International Economics, Vol. 69, pp. 64-83.

Baharumshah, A. Z., Mohd, S. H., & Masih, A. M. M. (2009). The stability of money demand in China: Evidence from the ARDL model. Economic systems, 33(3), 231-244.

Bahmani-Oskooee, M., & Ng, R. C. W. (2002). Long-run demand for money in Hong Kong: an application of the ARDL model. International journal of business and economics, 1(2), 147.

Bank Rate (2018). American's 15 largest banks, 12 February 2018. Retrieved from bankrate.com/banking/Americas-top-10-biggest-banks/ on 17 September 2018.

Barth, J., G. C. & Levine, R. (2006). Rethinking Bank Regulation: Till Angels Govern, Cambridge University Press, New York, NY.

Berger, A. N., & Bouwman, C. H. (2013). How does capital affect bank performance during financial crises?. Journal of Financial Economics, 109(1), 146-176.

Bonin, J. P., Hasan, I., & Wachtel, P. (2005). Bank performance, efficiency and ownership in transition countries. Journal of banking & finance, 29(1), 31-53.

Burger A., Damijan J., Kostevc Č., Rojec M., (2013), 'Determinants of Firm Performance and Growth during Economic Recession: The Case of Central and Eastern European Countries, GRINCOH Working Paper Series, Paper No. 1.09.

Burnside, C., Eichenbaum, M., & Rebelo, S. (2001). Prospective Deficits and the Asian Currency Crisis. Journal of Political Economy, Vol. 109, No. 6, pp. 1155-197.

Calomiris, C. W. (2009). The Subprime Turmoil: What's Old, What's New, and What's Next. Journal of Structured Finance, Spring 2009, Vol. 15, No. 1, pp. 6-52.

Calvo, G. A. (2000). Betting Against the State Socially Costly Financial Engineering. Journal of International Economics, Vol. 51, No. 1, pp. 5-19.

Calvo, G. A., Izquierdo, A. & Talvi, E. (2006). Phoenix Miracles in Emerging Markets: Recovering without Credit from Systemic Financial Crises. NBER Working Papers 12101, National Bureau of Economic Research.

Calvo, G. A., Izquierdo, A., & Loo-Kung, R. (2006). Relative Price Volatility under Sudden Stops: The Relevance of Balance Sheet Effects. Journal of International Economics, Vol. 69, 1, pp. 231-54.

Calvo, G. A., Izquierdo, A., & Mejía, L. (2008). Systemic Sudden Stops: The Relevance of Balance-Sheet Effects and Financial Integration. NBER Working Papers 14026, National Bureau of Economic Research, Inc.

Calvo, G., & Reinhart, C. (2000). When Capital Inflows Come to a Sudden Stop: Consequences and Policy Options," in P. B. Kenen and A. K. Swoboda, eds., Reforming the International Monetary and Financial System, Washington, DC, International Monetary Fund.

Campello, M., Graham, J. R., & Harvey, C. R. (2010). The real effects of financial constraints: Evidence from a financial crisis. Journal of financial Economics, 97(3), 470-487.

Chang, R., & Velasco, A. (2000). Liquidity Crises in Emerging Markets: Theory and Policy. Chapter in: NBER Macroeconomics Annual 1999, Vol. 14, p. 11-78.

Corsetti, G., P., Pesenti, C., & Roubini, C. (1998). Paper Tigers? A Model of the Asian Crises. European Economic Review, Vol. 43, No. 7, pp. 1211-236.

Crotty, J. (2009). Structural causes of the global financial crisis: a critical assessment of the 'new financial architecture'. Cambridge journal of economics, 33(4), 563-580.

Davidson, R., & MacKinnon, J. G. (2004). Econometric theory and methods (Vol. 5). New York: Oxford University Press.

Davis, A. (2001). The Value Relevance of Revenue for Internet Firms: Does Reporting Gross-ed-up or Barter Revenue Make a Difference? Journal of Accounting Research, 40, 1-28.

Dickey, D. A., & Fuller, W. A. (1979). Distribution of the estimators for autoregressive time series with a unit root. Journal of the American statistical association, 74(366a), 427-431.

Dickey, D. A., & Pantula, S. G. (1987). Determining the order of differencing in autoregressive processes. Journal of Business & Economic Statistics, 5(4), 455-461.

Eaton, J., & Fernandez, R. (1995). "Sovereign Debt," in the Handbook of International Economics, G.M. Grossman and K. Rogoff, eds., Vol. 3, Chapter 3, pp. 2031-077.

Engle, R. F. (1982). Autoregressive conditional heteroscedasticity with estimates of the variance of United Kingdom inflation. Econometrica: Journal of the Econometric Society, 987-1007.

Fahlenbrach, R., Prilmeier, R., & Stulz, R. M. (2012). This time is the same: Using bank performance in 1998 to explain bank performance during the recent financial crisis. The Journal of Finance, 67(6), 2139-2185.

Fisher, I. (1933). The Debt Deflation Theory of Great Depressions. Econometrica, Vol 1, pp. 337-57.

Flood, R., & Garber, P., (1984). Collapsing Exchange-Rate Regimes: Some Linear Examples. Journal of International Economics, Vol.17, pp. 1-13

Focus Economics (n.d). Economic forecasts from the world's leading economies. Retrieved from https://www.focus-economics.com/countries/united-states on 13 October 2018.

Fonseca, A. R., & Gonzalez, F. (2008). Cross-country determinants of bank income smoothing by managing loan-loss provisions. Journal of Banking & Finance, 32(2), 217-228.

Forbes, K. J. (2012). "The Big "C": Identifying and Mitigating Contagion," Proceedings 2012 Jackson Hole Symposium, hosted by the Federal Reserve Bank of Kansas City

Frankel, J., & Saravelos, G. (2012). Can Leading Indicators Assess Country Vulnerability? Evidence from the 2008–09 Global Financial Crisis. Journal of International Economics, Vol. 87, pp. 216–31.

Garber, P. M., (2000). Famous First Bubbles: The Fundamentals of Early Manias, Cambridge, MA: MIT Press.

Ghasemi, A., & Zahediasl, S. (2012). Normality tests for statistical analysis: a guide for non-statisticians. International journal of endocrinology and metabolism, 10(2), 486.

Grigorian, D. A., & Manole, V. (2002). Determinants of commercial bank performance in transition: An application of data envelopment analysis. The World Bank.

Gujarati, D. N. (2009). Basic econometrics. Tata McGraw-Hill Education.

Guler, I., Guillen, M., & Macpherson, J. (2002). Global competition, institutions, and the diffusion of organizational practices: The international spread of ISO 9000 quality certificates. Administrative Science Quarterly, 47, 207–232.

Gupta, Priya & Guha, Samapti & Subramanian Krishnaswami, Shiva. (2013). Firm growth and its determinants. Journal of Innovation and Entrepreneurship. 2. 10.1186/2192-5372-2-15.

Haber, S. (2005). Banking and Economic Growth in Mexico. Working Paper, Hoover Institution.

Hasan, M., & Dridi, J. (2011). The effects of the global crisis on Islamic and conventional banks: A comparative study. Journal of International Commerce, Economics and Policy, 2(02), 163-200.

Hlouskova, J., & Wagner, M. (2006). The performance of panel unit root and stationarity tests: results from a large scale simulation study. Econometric Reviews,

Honohan, P. & Laeven, L. (2007 eds.). Systemic Financial Crises, Cambridge Books, Cambridge University Press.

Hurd, M. D., & Rohwedder, S. (2010). Effects of the financial crisis and great recession on American households (No. w16407). National Bureau of Economic Research.

Jorge A. Chan-Lau. (2010), “The Global Financial Crisis and Its Impacts on the Chilean Banking System”, IMF working paper, WP/10/108.

Kabir, A., & Dey, S. (2012). Performance analysis through CAMEL rating: A comparative study of selected private commercial banks in Bangladesh. Journal of Politics & Governance, 1(2/3), 16-25.

Kaminsky, G. (2003). Varieties of Currency Crises. NBER Working Papers, No. 10193, National Bureau of Economic Research, Inc.

Ketenci, N. (2017). The Impact of the Global Financial Crisis on the Economic Development in the Eurasian Region. Available at Online at https://mpra.ub.uni-muenchen.de/83780/.

Kletzer, K. M., & Wright, B. D. (2000). Sovereign Debt as Intertemporal Barter. American Economic Review, Vol. 90, No. 3, pp. 621-39.

Koopman, G. J. & Székely, I., P. (2009). “The financial crisis and potential growth: Policy challenges for Europe,” ECFIN Economic Brief, 3.

Kosmidou, K., & Zopounidis, C. (2008). Measurement of bank performance in Greece. South-Eastern Europe Journal of Economics, 1(1), 79-95.

Krugman, P. (1979). A Model of Balance-of-Payments Crises. Journal of Money, Credit and Banking, Vol. 11, No. 3, pp. 311-25.

Ksantini, M., & Boujelbène, Y. (2014). Impact of Financial Crises on Growth and Investment: An Analysis of Panel Data. Journal of International and Global Economic Studies, 7(1), 32-57.

Laeven, L. (2001). Insider Lending and Bank Ownership: The Case of Russia. Journal of Comparative Economics, Vol. 29, No. 2, pp. 207-29.

Linyue Li, Thomas D. Willett, & Nan Z. (2012). The Effects of the Global Financial Crisis on China's Financial Market and Macroeconomy," Economics Research International, Article ID 961694, 6 pages, 2012. https://doi.org/10.1155/2012/961694

Matar, Ali & Eneizan, Bilal. (2018). Determinants of Financial Performance in the Industrial Firms: Evidence from Jordan. Asian Journal of Agricultural Extension, Economics & Sociology. 22. 1-10. 10.9734/AJAEES/2018/37476.

Mendoza, E. G. (2010). Sudden Stops, Financial Crises, and Leverage. American Economic Review, Vol. 100, No. 5, pp. 1941-966.

Nazir, M. S., Safdar, R., & Akram, M. I. (2012). Impact of Global Financial Crisis on Banks' Financial Performance in Pakistan. American Journal of Scientific Research, (78), pp.101-110

Olaniyi, O., & Olabisi. T. (2011), "Causes and Impacts of Global Financial Crisis on the Performance of Nigerian Banks (A case Study of Selected Banks)", E3 Journal of Bisiness Management and Economics, Vol.2 (4). pp. 164-170.

Panizza, U., F., Sturzenegge & Zettelmeyer, J. (2009). The Economics and Law of Sovereign Debt and Default,"Journal of Economic Literature, Vol. 47, No. 3, pp. 651-98.

Panizza, U., V. Cerra, & Saxena, S., C, (2019). "International Evidence on Recovery from Recessions," Contemporary Economic Policy, 31(2), 424-439.

Pantea, M., D. Gligor, C. Anis (2013), "Economic Determinants of Romanian Firms' Financial Performance", Procedia - Social and Behavioral Sciences, 124: 272-281.

Pesaran, B., & Pesaran, M. H. (2010). Time series econometrics using Microfit 5.0: A user's manual. Oxford University Press, Inc.

Pesaran, M. H., & Shin, Y. (1998). An autoregressive distributed-lag modelling approach to cointegration analysis. Econometric Society Monographs, 31, 371-413.

Pesaran, M. H., Shin, Y., & Smith, R. J. (2001). Bounds testing approaches to the analysis of level relationships. Journal of applied econometrics, 16(3), 289-326.

Phillips, P. C., & Perron, P. (1988). Testing for a unit root in time series regression. Biometrika, 75(2), 335-346.

Ploberger, W., & Krämer, W. (1992). The CUSUM test with OLS residuals. Econometrica: Journal of the Econometric Society, 271-285. 25(1), 85-116.

Reinhart, C. M., & Rogoff, K. S. (2008). Is the 2007 U.S. Subprime Crisis So Different? An International Historical Comparison. American Economic Review, Vol. 98, No. 2, pp.339–44.

Shiller, R. (2005). Irrational Exuberance, Princeton University Press, Princeton, Oxford.

Shiller, R. (2012). Finance and the Good Society, Princeton University Press, Princeton, Oxford.

Shin, H. S. (2009). Reflections on Northern Rock: The bank run that heralded the global financial crisis. Journal of economic perspectives, 23(1), 101-19.

Shiu, Y. (2004). Determinants of United Kingdom General Insurance Company Performance. British Actuarial Journal, 10(5), 1079-1110.

Shleifer, A. (2000). Inefficient Markets. An Introduction to Behavioural Finance, Oxford University Press, Oxford.

Statista (2018). Number of FDIC-insured commercial banks in the United States from 2002 to 2017. Retrieved from http:\statista.com/statistics/184536/number-of-fdic-insured-us-commercial-bank-instution/#0 on 17 September 2018.

Stevenson, S. (2004). New empirical evidence on heteroscedasticity in hedonic housing models. Journal of Housing Economics, 13(2), 136-153.

Stiglitz, J. E. (1969). A re-examination of the Modigliani-Miller theorem. The American Economic Review, 59(5), 784-793.

Stiglitz, J. E., & Greenwald, B. (2003). Towards a New Paradigm in Monetary Economic, Cambridge University Press, Cambridge.

Stiglitz, J. E., Weiss, A. (1981). Credit Rationing in Markets with Imperfect Information, American Economic Review, 71 (3): 333-421.

Sturzenegger, F., & Zettelmeyer, J. (2007). Debt Defaults and Lessons from a Decade of Crises. Cambridge and London: MIT Press.

Tomz, M., & Wright, M. L. J. (2007). Do Countries Default in "Bad Times"?" Journal of the European Economic Association, Vol. 5, No. 2-3, pp. 352-60.

Wermers, R. (2012). Runs on Money Market Mutual Funds. Working Paper, University of Maryland.

LIST OF APPENDICES

Appendix I: Short run and long run ARDL estimation

ARDL Long Run Form and Bounds Test
Dependent Variable: D(LROA)
Selected Model: ARDL(1, 1, 1, 0)
Case 2: Restricted Constant and No Trend
Date: 11/01/18 Time: 19:46
Sample: 1984 2018
Included observations: 34

Conditional Error Correction Regression

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-0.568055	0.160423	-3.540974	0.0015
LROA(-1)*	-0.861050	0.126003	-6.833557	0.0000
LAY(-1)	0.748070	0.158135	4.730591	0.0001
FC(-1)	-0.856094	0.169456	-5.052013	0.0000
LLPV**	-0.513713	0.106147	-4.839621	0.0000
D(LAY)	-0.210180	0.252822	-0.831333	0.4131
D(FC)	-0.130160	0.099868	-1.303331	0.2035

* p-value incompatible with t-Bounds distribution.
** Variable interpreted as Z = Z(-1) + D(Z).

Levels Equation
Case 2: Restricted Constant and No Trend

Variable	Coefficient	Std. Error	t-Statistic	Prob.
LAY	0.868789	0.090423	9.608089	0.0000
FC	-0.994244	0.291715	-3.408276	0.0021
LLPV	-0.596613	0.058487	-10.20087	0.0000
C	-0.659723	0.131075	-5.033182	0.0000

EC = LROA - (0.8688*LAY -0.9942*FC -0.5966*LLPV -0.6597)

F-Bounds Test — Null Hypothesis: No levels relationship

Test Statistic	Value	Signif.	I(0)	I(1)
		Asymptotic: n=1000		
F-statistic	25.81439	10%	2.37	3.2
k	3	5%	2.79	3.67
		2.5%	3.15	4.08
		1%	3.65	4.66
Actual Sample Size	34	Finite Sample: n=35		
		10%	2.618	3.532
		5%	3.164	4.194
		1%	4.428	5.816
		Finite Sample: n=30		
		10%	2.676	3.586
		5%	3.272	4.306
		1%	4.614	5.966

Appendix II: Long run ARDL estimation

ARDL Long Run Form and Bounds Test
Dependent Variable: D(LROA)
Selected Model: ARDL(1, 1, 1, 0)
Case 2: Restricted Constant and No Trend
Date: 11/01/18 Time: 19:41
Sample: 1984 2018
Included observations: 34

Conditional Error Correction Regression

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-0.568055	0.160423	-3.540974	0.0015
LROA(-1)*	-0.861050	0.126003	-6.833557	0.0000
LAY(-1)	0.748070	0.158135	4.730591	0.0001
FC(-1)	-0.856094	0.169456	-5.052013	0.0000
LLPV**	-0.513713	0.106147	-4.839621	0.0000
D(LAY)	-0.210180	0.252822	-0.831333	0.4131
D(FC)	-0.130160	0.099868	-1.303331	0.2035

* p-value incompatible with t-Bounds distribution.
** Variable interpreted as Z = Z(-1) + D(Z).

Levels Equation
Case 2: Restricted Constant and No Trend

Variable	Coefficient	Std. Error	t-Statistic	Prob.
LAY	0.868789	0.090423	9.608089	0.0000
FC	-0.994244	0.291715	-3.408276	0.0021
LLPV	-0.596613	0.058487	-10.20087	0.0000
C	-0.659723	0.131075	-5.033182	0.0000

EC = LROA - (0.8688*LAY -0.9942*FC -0.5966*LLPV -0.6597)

Appendix III: Serial Correlation LM test

Breusch-Godfrey Serial Correlation LM Test:
Null hypothesis: No serial correlation at up to 2 lags

F-statistic	0.167205	Prob. F(2,25)	0.8470
Obs*R-squared	0.448795	Prob. Chi-Square(2)	0.7990

Test Equation:
Dependent Variable: RESID
Method: ARDL
Date: 11/01/18 Time: 19:43
Sample: 1985 2018
Included observations: 34
Presample missing value lagged residuals set to zero.

Variable	Coefficient	Std. Error	t-Statistic	Prob.
LROA(-1)	0.032406	0.141654	0.228769	0.8209
LAY	-0.035861	0.270435	-0.132603	0.8956
LAY(-1)	0.005967	0.321664	0.018549	0.9853
FC	-0.019680	0.108966	-0.180603	0.8581
FC(-1)	-0.021435	0.140190	-0.152903	0.8797
LLPV	0.018374	0.114178	0.160923	0.8734
C	0.026834	0.172051	0.155963	0.8773
RESID(-1)	-0.135788	0.236643	-0.573808	0.5712
RESID(-2)	-0.029484	0.211934	-0.139117	0.8905

R-squared	0.013200	Mean dependent var	-1.10E-17
Adjusted R-squared	-0.302576	S.D. dependent var	0.088619
S.E. of regression	0.101141	Akaike info criterion	-1.522673
Sum squared resid	0.255738	Schwarz criterion	-1.118636
Log likelihood	34.88544	Hannan-Quinn criter.	-1.384885
F-statistic	0.041801	Durbin-Watson stat	2.015216
Prob(F-statistic)	0.999958		

Appendix IV: Heteroscedasticity Test: Breusch-Pagan-Godfrey

Heteroskedasticity Test: Breusch-Pagan-Godfrey

F-statistic	0.522919	Prob. F(15,15)	0.8896
Obs*R-squared	10.64435	Prob. Chi-Square(15)	0.7774
Scaled explained SS	2.636942	Prob. Chi-Square(15)	0.9998

Test Equation:
Dependent Variable: RESID^2
Method: Least Squares
Date: 10/29/18 Time: 15:41
Sample: 1988 2018
Included observations: 31

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-0.031314	0.086524	-0.361917	0.7225
LROA(-1)	0.009377	0.015490	0.605368	0.5540
LLPV	0.003740	0.010503	0.356060	0.7268
LLPV(-1)	0.016754	0.014054	1.192152	0.2517
LLPV(-2)	-0.006728	0.008792	-0.765210	0.4560
LEQR	0.037949	0.051153	0.741878	0.4696
LEQR(-1)	0.002947	0.062667	0.047020	0.9631
LEQR(-2)	-0.026693	0.056487	-0.472550	0.6433
LAY	0.028212	0.022001	1.282331	0.2192
LAY(-1)	-0.039829	0.036382	-1.094740	0.2909
LAY(-2)	0.001642	0.028950	0.056728	0.9555
FC	-0.006880	0.009436	-0.729034	0.4772
FC(-1)	-0.007475	0.011416	-0.654816	0.5225
FC(-2)	-0.008071	0.015546	-0.519157	0.6112
FC(-3)	-0.007081	0.009919	-0.713844	0.4863
FC(-4)	-0.005122	0.008288	-0.617993	0.5458

R-squared	0.343366	Mean dependent var	0.003619
Adjusted R-squared	-0.313268	S.D. dependent var	0.005351
S.E. of regression	0.006132	Akaike info criterion	-7.044189
Sum squared resid	0.000564	Schwarz criterion	-6.304066
Log likelihood	125.1849	Hannan-Quinn criter.	-6.802927
F-statistic	0.522919	Durbin-Watson stat	2.259651
Prob(F-statistic)	0.889593		

Appendix V: ARCH Heteroscedasticity test

Heteroskedasticity Test: ARCH

F-statistic	1.302554	Prob. F(1,31)	0.2625
Obs*R-squared	1.330678	Prob. Chi-Square(1)	0.2487

Test Equation:
Dependent Variable: RESID^2
Method: Least Squares
Date: 11/01/18 Time: 19:45
Sample (adjusted): 1986 2018
Included observations: 33 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.006299	0.001930	3.263338	0.0027
RESID^2(-1)	0.199171	0.174513	1.141295	0.2625

R-squared	0.040324	Mean dependent var	0.007846
Adjusted R-squared	0.009366	S.D. dependent var	0.007934
S.E. of regression	0.007897	Akaike info criterion	-6.785914
Sum squared resid	0.001933	Schwarz criterion	-6.695217
Log likelihood	113.9676	Hannan-Quinn criter.	-6.755397
F-statistic	1.302554	Durbin-Watson stat	2.006428
Prob(F-statistic)	0.262487		

Appendix VI: Error correction term

ARDL Error Correction Regression
Dependent Variable: D(LROA)
Selected Model: ARDL(1, 1, 1, 0)
Case 2: Restricted Constant and No Trend
Date: 11/01/18 Time: 19:54
Sample: 1984 2018
Included observations: 34

ECM Regression
Case 2: Restricted Constant and No Trend

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(LAY)	-0.210180	0.206624	-1.017206	0.3181
D(FC)	-0.130160	0.080449	-1.617927	0.1173
CointEq(-1)*	-0.861050	0.070732	-12.17348	0.0000

R-squared	0.864835	Mean dependent var	0.001100
Adjusted R-squared	0.856115	S.D. dependent var	0.241043
S.E. of regression	0.091433	Akaike info criterion	-1.862326
Sum squared resid	0.259159	Schwarz criterion	-1.727648
Log likelihood	34.65955	Hannan-Quinn criter.	-1.816397
Durbin-Watson stat	2.176428		

* p-value incompatible with t-Bounds distribution.

F-Bounds Test — Null Hypothesis: No levels relationship

Test Statistic	Value	Signif.	I(0)	I(1)
F-statistic	25.81439	10%	2.37	3.2
k	3	5%	2.79	3.67
		2.5%	3.15	4.08
		1%	3.65	4.66

PLAGIARISM REPORT

Thesis 1

ORIGINALITY REPORT

6%	4%	3%	2%
SIMILARITY INDEX	INTERNET SOURCES	PUBLICATIONS	STUDENT PAPERS

PRIMARY SOURCES

1	econstor.eu Internet Source	<1%
2	mpra.ub.uni-muenchen.de Internet Source	<1%
3	core.ac.uk Internet Source	<1%
4	ifrnd.org Internet Source	<1%
5	Ferdaous Zouaghi, Mercedes Sánchez, Marian García Martínez. "Did the global financial crisis impact firms' innovation performance? The role of internal and external knowledge capabilities in high and low tech industries", Technological Forecasting and Social Change, 2018 Publication	<1%
6	Submitted to London School of Business and Finance Student Paper	<1%

ETHICS COMMITEE APPROVAL

YAKIN DOĞU ÜNİVERSİTESİ

23.10.2018

Dear Besar Ibrahim Mohammed

Your project **"The effect of the 2008 Financial Crisis: Evidence from USA commercial banks insured by FDIC "** has been evaluated. Since only secondary data will be used the project it does not need to go through the ethics committee. You can start your research on the condition that you will use only secondary data.

Assoc. Prof. Dr. Direnç Kanol

Rapporteur of the Scientific Research Ethics Committee

Direnc Kanol

Note: If you need to provide an official letter to an institution with the signature of the Head of NEU Scientific Research Ethics Committee, please apply to the secretariat of the ethics committee by showing this document.