



**UNIVERSITY of the  
WESTERN CAPE**

**MASTERS THESIS**

Using Efficient Market Theory and Behavioural Finance Theory to Investigate the Impact of  
Investor Confidence: Lessons from Global Financial Crises

*by*

**Ruguru Mungai**

*Supervisor*

**Dr Rene Winifred Albertus**

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## DECLARATION

I hereby declare that this thesis “Using Efficient Market Theory and Behavioural Finance Theory to Investigate the Impact of Investor Confidence: Lessons from Global Financial Crises” is my own work and all the sources that were used in this paper have been acknowledged.



**Signature:** R. Mungai

**Date:** 8<sup>th</sup> November 2019

## DEDICATION

*I would like to dedicate this thesis to my Rock and my Redeemer for His everlasting love, favour and grace.*

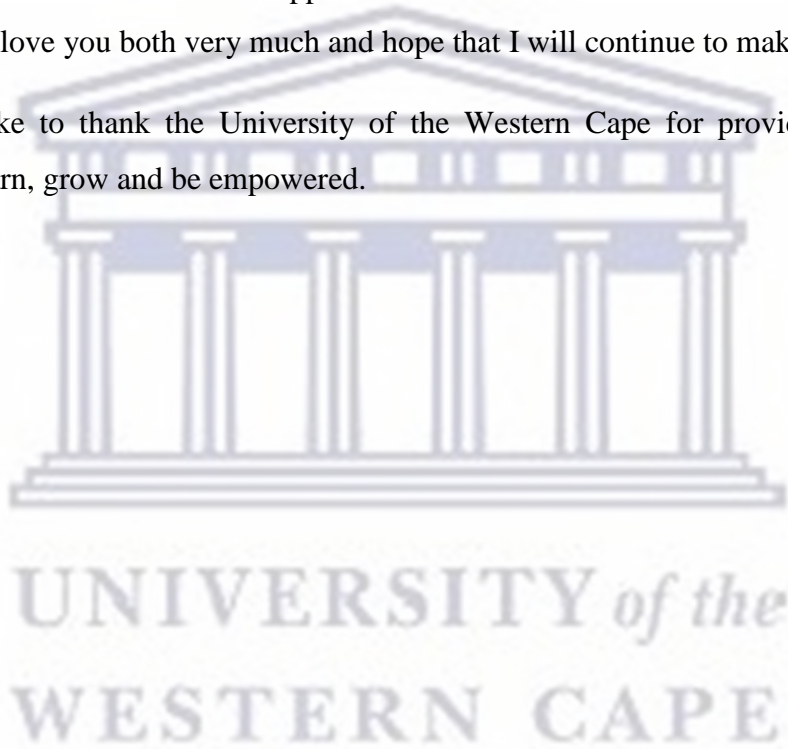


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I would lastly like to thank the University of the Western Cape for providing me with the opportunity to learn, grow and be empowered.



*~ Respice Prospice ~*

## ABSTRACT

The drastic decline in stock prices on the 24<sup>th</sup> October 1929 sent a frantic wave of panic across the US. Merely a century later, on the 29<sup>th</sup> September 2008 another financial crisis hit the globe - this time leaving most countries devastated. The main objective of this study is twofold: 1) to determine whether leading indicators have sufficient predictive capacity to predict global financial crises; and 2) to use the Efficient Market Theory (EMT) and/ or Behavioural Finance Theory (BFT) as a means of developing a theory explaining the potential impact bad public announcements had on the level of investor confidence before the 1929 Great Depression and the 2008 Global Financial Crisis. This study was not only designed to qualitatively conceptualise the notion of the term “investor confidence” whilst drawing special attention to its frailty using the 1929 Great Depression and the 2008 Global Financial Crisis, but also assist governments, reserve banks and key institutions to develop effective strategies of mitigating the effects of the latter financial crisis as well as provide guidance on how another financial crisis can be prevented. This study extracted bad public announcements from 40 books and 60 journal articles using 6 NBER-based leading economic indicators (LEI) and 4 systematic risk-based leading non-economic indicators (LNEI) in order to: 1) qualitatively assess the extent to which leading indicators can be used to predict global financial crises 3 – 8 months in advance; and 2) use the EMT and/ or BFT to provide an explanation concerning the potential impact that bad public announcements had on the level of investor confidence before the 1929 Great Depression and the 2008 Global Financial Crisis. The empirical findings of this study not only suggested that global financial crises cannot be wholly predicted using leading indicators to make qualitative assessments of systematic risk 3 - 8 months in advance, but also implied that the accuracy of bad public announcements does not have a significant impact on the level of investor confidence before global financial crises, particularly if prevailing market conditions are favourable. Thus, this study encourages governments, reserve banks and key institutions to limit the exercise of their governing authority to exclusively regulate good and/ or bad public announcements that are significant enough to cause extreme market inefficiencies.

**Keywords:** Public announcements, Investor confidence, 1929 Great Depression, 2008 Global Financial Crisis, Leading indicators, Efficient Market Theory and Behavioural Finance Theory.

## TABLE OF CONTENTS

1. Introduction .....	12
1.1. Background .....	12
1.2. Problem statement.....	16
1.3. Research question .....	17
1.4. Research objectives.....	17
1.5. Significance of the study.....	17
1.6. Proposed methodology.....	18
1.7. Delimitation of study .....	18
1.8. Definition of terms .....	20
1.9. Outline of the study.....	21
2. Literature review.....	23
2.1. Introduction.....	23
2.2. The state of the U.S. economy before the 1929 Great Depression.....	23
2.2.1. The Industrial Revolution .....	23
2.2.2. World War I.....	24
2.2.3. The Roaring Twenties.....	24
2.2.4. The stock market bubble .....	25
2.3. The state of the U.S. economy during the 1929 Great Depression .....	26
2.4. The state of the U.S. economy before the 2008 Global Financial Crisis .....	28
2.4.1. The Dot-Com bubble .....	28
2.4.2. The 9/11 terrorist attack .....	28
2.4.3. The rapid growth of the Chinese economy .....	29
2.4.4. The sub-prime mortgage bubble .....	30
2.5. The state of the U.S. economy during the 2008 Global Financial Crisis .....	31
2.6. The centrality of investor confidence in proper-functioning economic systems.....	34
2.7. The impact incomprehensible information has on the level of investor confidence .....	36
2.8. Using public announcements to measure the level of investor confidence.....	38
2.9. The impact misleading public announcements have on the level of investor confidence.....	40
2.10. The potential impact bad public announcements have on the level of investor confidence....	42
2.11. The impact regulatory policies have on the level of investor confidence .....	46



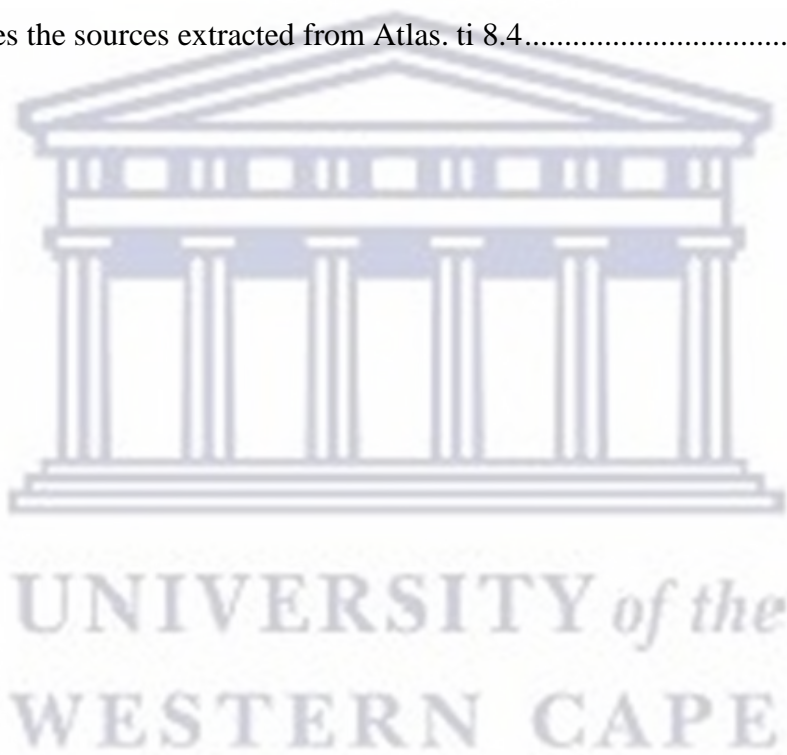
2.12.	Conclusion .....	47
3.	Theoretical framework .....	48
3.1.	Introduction.....	48
3.2.	Market theories .....	48
3.2.1.	Efficient Market Theory.....	50
3.2.2.	Behavioural Finance Theory.....	51
3.3.	Leading indicators.....	52
3.4.	Application.....	53
3.5.	Conclusion .....	56
4.	Research methodology .....	57
4.1.	Introduction.....	57
4.2.	Research philosophy .....	57
4.3.	Research approach .....	61
4.4.	Research tool.....	62
4.5.	Research method.....	63
4.6.	Procedure for data analysis .....	65
4.6.1.	Coding.....	65
4.6.2.	Theoretical sampling.....	65
4.6.3.	Writing.....	67
4.6.4.	Developing theory.....	67
4.7.	Sample data.....	67
4.8.	Conclusion .....	68
5.	Empirical findings .....	69
5.1.	Introduction.....	69
5.2.	Predictive capacity and average predictive capacity.....	69
5.2.1.	Building permits.....	71
5.2.2.	Housing market .....	72
5.2.3.	Manufacturing activity.....	74
5.2.4.	Money supply.....	75
5.2.5.	New business start-ups.....	76
5.2.6.	Stock market .....	77
5.2.7.	International trading relations .....	78

5.2.8.	Climate change.....	79
5.2.9.	Technological innovation.....	80
5.2.10.	Level of crime .....	81
5.3.	Applicable market efficiency and/ or inefficiency theory.....	83
5.3.1.	Total predictive capacity .....	83
5.3.2.	Total average predictive capacity.....	83
5.4.	Conclusion .....	84
6.	Discussion.....	85
6.1.	Introduction.....	85
6.2.	EMT premises.....	85
6.2.1.	All information is swiftly reflected in market prices .....	85
6.2.2.	Changes in market prices follow a random walk .....	87
6.3.	Conclusion .....	89
7.	Conclusion.....	90
7.1.	Summary of findings.....	90
7.2.	Limitations .....	91
7.2.1.	Methodological limitations .....	91
7.2.2.	Research limitations .....	93
7.3.	Recommendations.....	94
7.3.1.	Policy recommendations .....	94
7.3.2.	Recommendations for further research .....	95
8.	References .....	97
9.	Appendices .....	154
9.1.	Building permit source documents .....	154
9.2.	Housing market source documents .....	155
9.3.	Manufacturing activity source documents .....	157
9.4.	Money supply source documents.....	158
9.5.	Stock market source documents.....	159



## LIST OF TABLES

Table 1: Demonstrates how the predictive capacity and the average predictive capacity of the 10 leading indicators will be measured using frequency and average frequency .....	54
Table 2: Provides an interpretation of what would constitute a bad public announcement regarding the performance of each of the 10 leading indicators .....	70
Table 3: Records the predictive capacity and the average predictive capacity of the 10 leading indicators and cites the sources extracted from Atlas. ti 8.4.....	71



## LIST OF APPENDICES

Appendix 1: Building permit source documents... ..	154
Appendix 2: Housing market source documents .....	155
Appendix 3: Manufacturing activity source documents .....	157
Appendix 4: Money supply source documents .....	158
Appendix 5: Stock market source documents.....	159



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## LIST OF ABBREVIATIONS

<b>BFT</b>	Behavioural Finance Theory
<b>CLI</b>	Composite Index of Leading Indicators
<b>EMH</b>	Efficient Market Hypothesis
<b>EMT</b>	Efficient Market Theory
<b>LEI</b>	Leading Economic Indicators
<b>LNEI</b>	Leading Non-Economic Indicators
<b>NBER</b>	National Bureau of Economic Research



# 1. Introduction

## 1.1. Background

What precisely caused a loss in investor confidence in asset markets before and during the 1929 Great Depression and the 2008 Global Financial Crisis is and continues to remain a profound mystery in the field of Finance and Investments. Crotty (2009), attributes the loss of investor confidence before and during global financial crises to the fraudulent actions of financial institutions, while Earle (2009) attributes such losses to investors and the public losing confidence in key markets and financial institutions during global financial crises. Obstfeld and Rogoff (2009), believe that a loss in investor confidence before global financial crises emanate from reserve banks adopting a laissez faire approach to its regulatory and supervisory roles, while Rudd (2009) is convinced that the erosion of investor confidence is a direct product of governments failing to act autonomously before global financial crises.

The 2008 Global Financial Crisis was a stark reminder of the 1929 Great Depression. According to Eichengreen (2014), both the 2008 Global Financial Crisis and the 1929 Great Depression had a devastating impact on the level of investor confidence after scores of investors failed to recover their investments following the announcement of a stock market crash first, on the 24<sup>th</sup> October 1929 and then later on the 29<sup>th</sup> September 2008. Before the 1929 stock market crash, the US economy was experiencing an economic boom during a period commonly known as “the Roaring Twenties” (Dent, 1999). The series of economic, social, political as well as technological advancements after World War 1, not only caused the United States to gain a new-found respect from countries across the globe, but also made the US increasingly attractive to foreign investors (Eichengreen, 1989). According to Idema (1990), the US’ level of economic growth during the 1920s was pioneered by rebellion youngsters who felt the need to break cultural and traditional norms. The drastic increase in job opportunities overtime saw firms and households spending more and saving less, due to the widespread influence celebrities had on indulgent spending behaviours (Moore, 2015). According to Lusted (2014), investing in the stock market became an increasingly popular trend, a means of socialising that was intended at feeding the leisurely lifestyles of most investors.

Obtaining a loan during this time was an easy affair, especially after the government's increased borrowing allowed the US Federal Reserve Bank to lower interest rates and impose less conservative collateral requirements (Garrison, 1993). According to Rappoport and White (1993), many investors used these loans to purchase stocks on margin expecting the prices of these stocks to continue to rise, as was reinforced by several credit rating agencies and a few famous economists. The bullish attitude towards the market that had been fostered by the positive perception people had in relation to the economic, political, social and environmental climate, resulted in the general degree of investor risk tolerance to reach abnormally high levels (Richardson, Park, Komai and Go, 2013).

The United States economy continued to perform well as was expected. According to Erickson (1972), "the prosperity of the U.S. economy can be seen in the total and per capita growth in the Gross National Product (GNP): from 1921 to 1929 the annual total GNP increased from \$ 74 billion to \$ 104.4 billion and the per capita GNP rose from \$ 682 to \$ 857". Richardson, Park, Komai and Go (2013), add that the Dow-Jones index reached its peak at 381 early in September 1929. It was not until the 24<sup>th</sup> October 1929 – a day commonly known as "Black Thursday", when the stock price took a sudden and drastic plunge (Bierman, 1999). Upon inception of the catastrophic news, thousands of investors rushed to Wall Street desperately seeking to sell their shares and recover their money from the New York Stock Exchange (Blumenthal, 2002). According to Salsman (Wall Street Crash of 1929), more than 16.4 million shares were traded by the 29<sup>th</sup> October 1929, on a day commonly known as "Black Tuesday".

A little under a century later, another financial crisis hit the globe – this time leaving most countries devastated (Kose, Prasad, Terrones, 2003). Before the 2008 Global Financial Crisis, the US economy was experiencing an economic boom – proliferated by the subprime mortgage market bubble (Prasad and Reddy, 2009). The US economy was in a dire state after facing a series of obstacles, including: the bursting of the dot-com market bubble (Ljungqvist and Wilhelm, 2003), the 9/11 terrorist attack (Pyszczynski, Solomon and Greenberg, 2003) and the rapid growth of the Chinese economy (Wu, 2001). Before the US economy went into an eternal state of economic despair, the US Federal Reserve Bank decided to opt for a drastic expansionary monetary policy – one that involved lowering interest rates by 550 basis points for a prolonged period of time and relaxing some of its conservative credit access requirements (Avgouleas, 2009). According to

Bianco (2008), the ease with which lower-classed members of society could obtain a loan had the effect of inflating the money that was circulating the US economy. The sudden increase in money supply caused the demand for and prices of houses in the US to soar (Reinhart and Rogoff, 2008). According to Atlas, Dreier and Squires (2008), most households saw these loans as temporary gifts to which many had no serious intention of returning. Thus, few households made genuine attempts to pay back their loan installments and/ or mortgage payments (Danis and Pennington-Cross, 2008).

During this time a global trend from individualised to institutionalised investing started to grow (Della Croce, Stewart and Yermo, 2011). This essentially meant that any investment decision that was taken during this period carried a force that was more pronounced in both magnitude and direction than that which was initially taken by individual investors (Goltz and Schröder, 2011). Consequently, most financial institutions took advantage of the increased clientele by repackaging the mortgages that had been provided to them by banks into pools, which would later be re-issued to foreign investors in form of mortgage-backed securities (Acharya and Richardson, 2009). These financial institutions often demanded little to no down payment from households in exchange for high interest payments which they would use to reward foreign investors for assuming high risk (Prasad and Reddy, 2009).

What further weakened foreign investors' rational responses to excessive risk exposure at the time was the safe illusion that the booming economy, high sub-prime mortgage credit ratings and the growing popularity of derivatives created (Roszkowski and Davey, 2010). Both, the government's insistent policies which vested financial institutions from discriminating against poor US households based on economic status (among other legitimate grounds of fair discrimination) in order to enable all US citizens to have equal access to live their own American Dream; and President Hoover's laissez faire attitude towards regulating the ease with which foreign investors could access the US market, only drove the US economy further into a state of economic despair (Kenn, 1995, Acemoglu, 2009).

Very few people saw clouds coming that would soon turn into a storm bigger than the one that preceded it. The reallocation of short-term and long-term assets into high-yielding Collateralised Debt Obligations (CDOs) and Credit Default Swaps (CDSs), implied that most financial institutions often subjected themselves to high default and liquidity risks (Orlowski, 2008). Edey



(2009), explains that the “structure [of these derivatives] enabled some of these securities to gain high credit ratings even when the average quality of the underlying loans was poor”. The extreme levels of risk-exposure most banks and financial institutions were undertaking became patently apparent after Hongkong and Shanghai Banking Corporation (HSBC) reported losses that it claimed to have stemmed from its subprime mortgage packages on the 7<sup>th</sup> February 2007 Guillén (2009).

According to Gupta and Vidyapeeth (2012), announcements of the same nature intensified after “financial giants such as Bear Stearns, Lehman Brothers, Merrill Lynch, AIG, Fannie Mae [and] Freddie Mac, [had] either disappeared or been rescued [by] large government bailouts”. However, the stock market only crashed on the 29<sup>th</sup> September 2008 after the US House of Representatives rejected President George W. Bush’s bailout plan (Isidore, 2008). Upon inception of this catastrophic news, billions of investors rushed to financial institutions desperately seeking to sell their shares and recover their money (Hsu and Moroz, 2009). Mishkin (2011), explains that “instead of the classic bank run, it was, as described by Gorton and Metrick (2009), a run on a shadow-banking system”. According to Twin (2008), this disheartening news caused the Dow Jones industrial average, S&P 500 and NASDAQ composite to fall by approximately 7%, 8.8% and 9.1%, respectively. Rising levels of sub-prime mortgage defaults were enough to send housing prices on a negative-sloping trajectory (Reinhart and Rogoff, 2008).

On the 3<sup>rd</sup> October 2007, five of the most powerful central banks agreed to loan the US Federal Reserve Bank enough money to reduce interest rates and bailout key US banks and institutions - established through a plan called Troubled Assets Relief Program (TARP) (Labonte, 2008). President Barack Obama also instigated a \$ 825 billion stimulus package plan on the 18<sup>th</sup> February 2009 designed to create 1.1 million jobs and assist 9 million displaced families (Guillén, 2009). According to Dailami and Masson (2009), a component of the stimulus program involved “tax cuts and increased spending on infrastructure and education, among other items”.

A brisk glance at the current state of the global economy can lead one to believe that most countries have yet to recover from the hang-ups of the 2008 Global Financial Crisis. According to Head (2018), South Africa slipped into a technical recession in 2018 after its real GDP first declined by 2.6% in the first quarter and then again by 0.7% in the second. Austria, Belgium, Canada, Denmark, Estonia, Finland, Hungary, Ireland, Italy, Latvia, Lithuania, Mexico, Netherlands, Norway, Romania, Russia, Spain, the US and the UK were also in a recession in the second quarter

of 2018 (The Guardian, n.d.). Long (2019), suspects that the decline in the demand for exports in 2018 was the underlying reason behind the poor rate of economic growth in most of these countries during the first and second quarter of 2018.

Despite the US government and the US Federal Reserve Bank having expended a great deal of effort to restore the level of investor confidence by employing expansionary fiscal and monetary policies, most of these regulatory policies did little to rebuild the loss in confidence both investors and the public have in the US and/ or global economy after the 2008 Global Financial Crisis (Guillén, 2009). In fact, White (2017) warns that such policies make matters worse by inflating one market bubble with a bigger one. This is especially since investor confidence is not merely a product of changes in economic conditions, but a product of changes in market conditions too (Gitman and Zutter, 2012). Thus, unless governments, reserve banks and key institutions understand that not all economic problems can be resolved by implementing economic solutions, one can only anticipate another global financial crisis to occur in the near or distant future.

## 1.2. Problem statement

It is a well-known fact that asset markets are almost exclusively dependent on investor confidence. Stout (2002), states that “Investor trust provides the foundation that American securities market has been built. Without investor trust, our market would be a thin shadow of itself”. While the significance of this notion has been highly appreciated over the years, the impact that public announcements have on the level of investor confidence has often been far removed from its ability to trigger a financial crisis. After the collapse of the global economy during the 1929 Great Depression and the 2008 Global Financial Crisis most economies across the globe have struggled to achieve high levels of economic growth on a consistent basis, due to being tasked with addressing the issue of low levels of economic activity whilst experiencing high levels of indebtedness (Head, 2018, The Guardian, n.d.).

Although a number of studies have used EMT and BFT assumptions as a means of adding theoretical and practical knowledge to the field of Finance and Investments (Modigliani and Miller, 1958, Jensen, 1969, Basu, 1977, Sharpe, 1966, Warren, Stevens and McConkey, 1990), few studies have used EMT and BFT to investigate the potential impact bad public announcements could have had on the level of investor confidence before both the 1929 Great Depression and the

2008 Global Financial Crisis (Ait-Sahalia, Andritzky, Jobst, Nowak and Tamirisa, 2012, Barrell and Davis, 2008, Estrella and Mishkin, 1998). Understanding how security markets inherently operate is a preliminary requirement to finding measures that can be used to predict financial crises (Fama, 1960, Thaler, 1980). Thus, leading indicators as well as EMT and/ or BFT assumptions and implications will be used to explain whether the 1929 Great Depression and the 2008 Global Financial Crisis were either a product of an efficient market restoring overvalued stocks back to equilibrium and/ or the product of investors responding irrationally to negative changes in market conditions (Malkiel and Fama, 1970, Shiller, 2003).

### 1.3. Research question

What potential impact did bad public announcements have on the level of investor confidence before the 1929 Great Depression and the 2008 Global Financial Crisis?

### 1.4. Research objectives

The main objective of this study is twofold:

1. To determine whether leading indicators have sufficient predictive capacity to predict global financial crises; and
2. To use the EMT and/ or BFT as a means of developing a theory explaining the potential impact bad public announcements had on the level of investor confidence before the 1929 Great Depression and the 2008 Global Financial Crisis.

### 1.5. Significance of the study

This study seeks to contribute to existing literature by qualitatively conceptualising the notion of the term “investor confidence” whilst drawing special attention to its frailty using the 1929 Great Depression and the 2008 Global Financial Crisis. This study can be used to assist governments, reserve banks and key institutions develop effective strategies that can be used to prevent and/ or mitigate the effects of global financial crises by limiting the scope of their governing authority to exclusively regulate good and/ or bad public announcements that are significant enough to cause extreme market inefficiencies. This study can also be used by short-term traders to predict when good and/ or bad pre-announcements are most likely to have a significant impact on market prices based on prevailing market conditions, while long-term investors can use this study to determine

the possible extent to which they should adjust their discount rates based on the potential impact good/ and or bad public announcements may have on the returns of their long-term investments.

#### 1.6. Proposed methodology

The research methodology will describe and justify the philosophy, approach, method, procedure and sample data that will be used to produce the findings of this study. An interpretive paradigm based on symbolic interactionism will be employed to facilitate an inductive approach of analysing qualitative data. Grounded theory will be used to guide the procedure for data analysis. The Glaserian grounded theory procedure for data analysis that will be used in this study is divided into four phases: 1) coding, 2) theoretical sampling, 3) writing; and 4) developing theory. The sample data of this study will comprise of bad public announcements that have been extracted from 40 books and 60 journal articles using 6 NBER-based leading economic indicators (LEI) and 4 systematic risk-based leading non-economic indicators (LNEI).

#### 1.7. Delimitation of study

1. The term “global financial crises” was too broad to thoroughly explore and draw logical inferences within the limited scope this paper provides. Nonetheless, some degree of comparative value was preserved by restricting the term to make exclusive reference to the 1929 Great Depression and the 2008 Global Financial Crisis. Comparing two of the most notable and catastrophic global financial crises provided the researcher with the necessary scope upon which logical inferences could be drawn.
2. The predictive capacity of the 10 leading indicators that were used in this study were exclusively observed in the US, particularly due to the fact that the US became one of the most influential countries in the world since the Roaring Twenties (see **Chapter 2**). Nonetheless, this study compensated for the absence of valuable information pertaining to the predictive capacity the various leading indicators had in different countries by providing an in-depth analysis of the extent to which the various leading indicators were able to predict the 1929 Great Depression and the 2008 Global Financial Crisis in the US.



3. Leading indicators were used in place of coinciding and lagging indicators, since the purpose of this study was to predict global financial crises instead of measuring the effect these crises had once they occurred. Nonetheless, this limitation could hardly be avoided as the limited scope of this paper prevented the researcher from thoroughly exploring the extent to which all leading indicators could have been used to predict global financial crises. Elaborated in greater detail in **Chapter 7**.
4. The 6 LEI that were used in this study were extracted from NBER's CLI based on the criteria of data accessibility, while the 4 LNEI that were used in this study were selected based on the main factors that influence systematic risk. Nonetheless, this study ensured that the essence of the empirical findings were preserved by giving all leading indicators relatively encompassing interpretations.
5. Even though this study used qualitative data instead of quantitative data to assess the potential impact that bad public announcements had on the level of investor confidence before the 1929 Great Depression and the 2008 Global Financial Crisis, the impact that the loss in valuable objective information provided by quantitative data had on the empirical findings was mitigated by extracting quantitative data from the various qualitative sources that were used in this study.
6. The qualitative data that was used in this study was extracted from books and journal articles, due to a lack of finances needed to travel to the US to gather pertinent information pertaining to the psychology of US investors. Nonetheless, the study managed to avoid the inherent biases associated with secondary sources of data by using objective qualitative data which is widely accepted as a credible source of information.
7. The poor performances of the various leading indicators were observed from a relatively small sample size comprising of 40 books and 60 journal articles, due to time constraints. Nonetheless, the empirical findings suggest that using a larger sample size to find information pertaining to the narrow specifications given to the various leading indicators in the coding phase would not significantly enhance the outcomes of the findings that this study produced (see **Table 3**).

8. The findings of this study does not have the capacity to approve or disprove the entire EMT and/ or BFT on the sole basis that these market theories fail to meet the criteria established by this study in an attempt to achieve the prescribed outcomes of this study. Nonetheless, the findings of this study still holds the capacity to evaluate the extent to which leading indicators can be used to enhance the process of technical analysis as a popular trading predictive tool.

#### 1.8. Definition of terms

*Building permit LEI:* the building permit leading economic indicator is concerned with how the number of building permits issued by the government per year in a given country can be used to predict changes in business cycles several months in advance.

*Climate Change LNEI:* the climate change leading non-economic indicator is concerned with how the severity and/ or duration of extreme weather conditions or natural disasters in a given country per year can be used to predict changes in business cycles several months in advance.

*Global Financial Crises:* refers to the 1929 Great Depression and the 2008 Global Financial Crisis.

*Housing market LEI:* the housing market leading economic indicator is concerned with how the number of housing starts that have commenced per year in a given country can be used to predict changes in business cycles several months in advance.

*International trading relations LNEI:* the international trading relations leading non-economic indicator is concerned with how the number of trade restrictions passed by a given country per year can be used to predict changes in business cycles several months in advance.

*Investor:* refers to an active investor who was alive before the 1929 and 2008 market crash.

*Investor confidence:* an investor's willingness to act based on his/ her observations.

*Level of crime LNEI:* the level of crime leading non-economic indicator is concerned with how the number of fraud cases reported per year in a given country can be used to predict changes in business cycles several months in advance.



*Manufacturing activity LEI:* the manufacturing leading economic indicator is concerned with how the number of goods sold by manufacturers per year in a given country can be used to predict changes in business cycles several months in advance.

*Money supply LEI:* the money supply leading economic indicator is concerned with how the total value of money circulating the economy per year in a given country can be used to predict changes in business cycles several months in advance.

*New business start-ups LEI:* the new business start-ups leading economic indicator is concerned with how the number of new business start-ups per year in a given country can be used to predict changes in business cycles several months in advance.

*Stock market LEI:* the stock market leading economic indicator is concerned with how stock price volatility in a given country can be used to predict changes in business cycles several months in advance.

*Sufficient predictive capacity:* the ability of a leading indicator to predict changes in the level of economic activity 3 – 8 months prior to actual changes in the level of economic activity.

*Technological innovation LNEI:* the technological innovation leading non-economic indicator is concerned with how the demand for low-skilled workers per year in a given country can be used to predict changes in business cycles several months in advance.

## 1.9. Outline of the study

The rest of the paper will be structured as follows:

**Chapter 2** provides an overview of the literature that will be used in this study.

**Chapter 3** provides a theoretical framework upon which this study is based.

**Chapter 4** describes and justifies the philosophy, approach, method, procedure and sample data that will be used to produce the findings of this study.

**Chapter 5** provides the empirical findings of this study.

**Chapter 6** provides a discussion of the empirical findings of this study.

*Chapter 7* provides a summary of the findings, limitations of the study and recommendations for this study.



## 2. Literature review

### 2.1. Introduction

The literature review will focus on discussing the concept of investor confidence in light of the factors that led to its erosion before the 1929 Great Depression and the 2008 Global Financial Crisis. The discussion will provide an overview of: 1) the state of the US economy before the 1929 Great Depression; 2) the state of the US economy during the 1929 Great Depression; 3) the state of the US economy before the 2008 Global Financial Crisis; 4) the state of the US economy during the 2008 Global Financial Crisis; 5) the centrality of investor confidence in proper-functioning economic systems; 6) the impact incomprehensible information has on the level of investor confidence; 7) the possible reasons why active investors use public announcements to measure investor confidence; 8) the impact misleading public announcements have on the level of investor confidence; 9) the potential impact bad public announcements have on the level of investor confidence; and 10) the impact regulatory policies have on the level of investor confidence.

### 2.2. The state of the U.S. economy before the 1929 Great Depression

#### 2.2.1. The Industrial Revolution

The First Industrial Revolution started in 1733, after John Kay patented the first machine-based weaver (Hills, 1971). According to Dietz (1970), the “First Industrial Revolution brought about changes in many industries including iron and coal, steam, transportation, textiles and agriculture”. New machine-based equipment not only improved the quality of job opportunities in US agricultural and manufacturing sectors, but also made the US a key exporter of cotton, steel, electricity and motor parts overnight (Chandler, 1972). The thriving economy became increasingly attractive to foreign investors who sought to take advantage of promising business opportunities in the US (Deane, 1979). Nonetheless, the First Industrial Revolution ended abruptly after profit margins of US firms started diminishing as a result of the increased levels of competition that were prompted by financial innovation (Haber, 1991).

The Second Industrial Revolution began almost a century and a half later, after a series of technological breakthroughs filtered through the US financial, infrastructural and manufacturing sectors in 1870 (Jevons, 1931). According to Mokyr (1998), the Second Industrial Revolution was markedly greater than the first, due to the crucial role that science played in transforming

theoretical knowledge into practical knowledge. Lamoreaux, Levenstein and Sokoloff (2004), believe that this run for new knowledge created “a growing division of labour between those who invented and those who exploited inventions commercially”. According to Blinder (2006), the disparity in knowledge during the Second Industrial Revolution drastically increased job opportunities in the US’ services sector, whilst disproportionately decreasing those which existed in US agricultural and manufacturing sectors. Nonetheless, the abundant prosperity in the US tertiary sector was soon balanced out with extreme levels of competition within and between various industries – eventually bringing the Second Industrial Revolution to an abrupt end that resembled the first (Jevons, 1931).

### 2.2.2. World War I

Unhindered by the economic recession brought about by the Second Industrial Revolution, the US partook in World War 1 in 1914 (Chowdhury, 2013). According to Fouskas and Gökay (2005), the First World War was believed to have been triggered by the vicious assassination of the successor of the Austro-Hungarian Empire, Archduke Franz Ferdinand and his wife on the 28<sup>th</sup> June 1914 by a Serbian revolutionist. The untimely war outbreak saw the US take up battle against Germany, Bulgaria, Austria-Hungary and the Ottoman Empire whilst standing alongside France, Great Britain, Russia, Italy, Romania and Japan (Herwig, 2014). The increase in demand for US weaponry, military machines as well as basic necessities for militants stimulated production levels and created job opportunities for US agricultural, industrial and manufacturing industries, despite a staggering amount of government spending being allocated exclusively towards the war (Gardner and Kimbrough, 1992, Magdoff, 2011). According to Sutch (2014), the US government generated most of its finances from selling Liberty Bonds to local investors, while only a small portion of government spending came directly from printing money and raising taxes. Both the US’ decision to avoid extreme levels of indebtedness and be the most value-adding exporter of ammunition, not only caused the US to leave the war as champions, but also saw the US exit World War 1 with a booming economy (Irwin, 1996).

### 2.2.3. The Roaring Twenties

The US economy was experiencing an economic boom in the 1920s – a period commonly known as “the Roaring Twenties” (Dent, 1999). The series of economic, social, political as well as technological advancements after coming out of World War 1, not only caused the United States

to gain a new-found respect from countries across the globe, but once again made the US increasingly attractive to foreign investors (Eichengreen, 1989). The US' success during this period was believed to have been pioneered by rebellion youngsters, who felt the need to break cultural and traditional norms (Maloney, 2012). The drastic increase in job opportunities overtime saw firms and households spending more and saving less, due to the widespread influence celebrities had on indulgent spending behaviours (Moore, 2015). According to Lusted (2014), investing in the stock market became an increasingly popular trend – a means of socialising that was intended at feeding the leisurely lifestyles of most investors.

Obtaining a loan during this time was an easy affair, especially after the government's increased borrowing allowed the US Federal Reserve Bank to lower interest rates and impose less conservative collateral requirements (Garrison, 1993). According to Rappoport and White (1993), many investors used these loans to purchase stocks on margin expecting the prices of these stocks to continue to rise, as was reinforced by several credit rating agencies and a few famous economists. The bullish attitude towards the market that had been fostered by the positive perception people had in relation to the economic, political, social and environmental climate, resulted in the general degree of investor risk tolerance to reach abnormally high levels (Richardson, Park, Komai and Go, 2013).

#### 2.2.4. The stock market bubble

The United States economy continued to perform well as was expected. According to Erickson (1972), “the prosperity of the U.S. economy can be seen in the total and per capita growth in the Gross National Product (GNP): from 1921 to 1929 the annual total GNP increased from \$ 74 billion to \$ 104.4 billion and the per capita GNP rose from \$ 682 to \$ 857”. Richardson, Park, Komai and Go (2013), add that the Dow-Jones index reached its peak at 381 early in September 1929. It was not until the 24<sup>th</sup> October 1929 – a day commonly known as “Black Thursday”, when the stock price took a sudden and drastic plunge (Bierman, 1999). Upon inception of the catastrophic news, thousands of investors rushed to Wall Street desperately seeking to sell their shares and recover their money from the New York Stock Exchange (Blumenthal, 2002). According to Klein (2001), approximately 70.8 million shares were traded by the 29<sup>th</sup> October 1929, on a day commonly known as “Black Tuesday”.



### 2.3. The state of the U.S. economy during the 1929 Great Depression

The frantic wave of panic caused stock prices to continue to fall rapidly for a period of four business days (Doak, 2007). Financial institutions being cornered by angry foreign investors issued margin calls forcing households to pay back 80 - 90% of the loans that they had obtained on margin (Rappoport and White, 1993). However, most banks and financial institutions failed to recover these loans after many households and companies defaulted on some if not all their payments, bringing both banks and companies (even the major ones) to file for bankruptcy (Olney, 1999). As heads suddenly turned to the newly elected Republican President Herbert Hoover to intervene, he responded with a hands-off approach reasoning that the market is capable of regulating itself (Houck, 2001). According to Rothbard (1972), President Hoover instead imposed what is commonly known as the Smoot-Hawley Tariff against other countries as well as continually refused to abandon the increasingly unpopular gold exchange standard. While the delayed abolition of the gold standard prevented the US government from devaluing the dollar as a means of stimulating the US' level of economic activity; the implementation of the Smoot-Hawley Tariff discouraged international financing and trading amongst members of the system (Bordo and Schwartz, 2009, Eichengreen, 2002).

Despite all the depressing news, the unemployment rate had only risen to 3.2% and minimum wage laws were enacted to prevent a decline in real wages (MacKenzie, 2010). Nonetheless, the demand for goods and services started declining (O'Brien, 1989). The disproportionate rise in the prices of goods and services in comparison to the rise in wages was the precise combination of tragedies that caused deflation to set in (Atkeson and Kehoe, 2004). Thus, as wage cuts became the least discontenting option for most businesses, households began generating less income and having less purchasing power (Bordo, Erceg and Evans, 2000).

With the manufacturing industry performing poorly due to recurrent trade wars triggered by high levels of US trade protectionism, a sudden drought – commonly known as the Dust Bowl, wreaked havoc in the US agricultural industry (Egan, 2006). According to Cutler, Miller and Norton (2007), farmers were hit the hardest by the drought and were consequently forced to lay-off most of their workers or cut wages. The wide-scale level of job shedding in both agricultural and manufacturing industries caused the US unemployment rate to grow drastically (Temin, 2008, Rothbard, 1972). With the lack of proper intervention measures implemented to address the 1929 global financial



crisis, US citizens became helpless (Houck, 2001). According to Hart and Bowne (1943), suicidal rates rose significantly during this period. However, those who chose life and chose to hold on to hope either protested to have the government intervene or migrated to other countries (Brinkley, 2011, Ross and McKerns, 2004).

Despite President Hoover requesting private banks and leading financial institutions to loan public banks money (in a desperate attempt revive the down-trodden US economy) the delayed strategy had not been implemented effectively, due to most banks and financial institutions being too consumed by their own troubles (Nash, 1959). Hoover's presidential reign was brought to a sudden end after being replaced with President Franklin D. Roosevelt (Reed, 2008). According to Baum and Kernell (2001), the newly elected Democrat implemented new financial laws and policies targeted at restoring investor confidence. President Roosevelt's first strategy was to request that banks take a holiday to provide him with sufficient time to enact new laws (Silber, 2009). Although the four-day bank excursion significantly changed the atmosphere and reduced some of the panic that had been circulating around the US' economic, social, political and environmental climate since the stock market crash, Bush (2001) believes that the most profound difference that President Roosevelt made during the financial crisis was personally communicating the measures and processes that would be involved in restoring the United States to its former state, to the public.

Additionally, President Roosevelt abolished laws that hindered economic growth in major industries, whilst creating a new and secure financial system – known as the Federal Deposit Insurance Corporation (FDIC) in which people could safely deposit their money (Dulles and Ridinger, 1955, Bradley, 2000). The gold exchange standard was also finally abolished, despite the US being the second-last member to leave the show (Elwell, 2011). The US Federal Reserve Bank also loosened some of its tight policies by reducing its reserves as well as promoting gold inflows (Bordo and James, 2010). Additionally, President Roosevelt bridged broken trust between neighbouring countries during WW2 (Goodwin, 2013). The US' willingness to participate in the war (including that against Japan in response to the Pearl Harbour attack) saw production in ammunition increasing the employment rate and the real GDP of the US – finally causing the US to display permanent signs of recovery (Harbour, The Positive Impact of Pearl Harbour on America, Heinrichs, 1988).

## 2.4. The state of the U.S. economy before the 2008 Global Financial Crisis

### 2.4.1. The Dot-Com bubble

The US economy was experiencing an economic boom in 1995 – proliferated and publicised by the “dot-com” catchphrase (Ljungqvist and Wilhelm, 2003). According to Goodnight and Green (2010), the Information Age embraced the convenience technology and the internet brought to the lives of both households and firms. A shift had occurred, from a society that sought to meet its needs to a society that sought to satisfy its wants (Dewey, 2009). This sudden alteration of human desire caused the demand for services to exceed that of goods, driving job opportunities in US tertiary sectors upwards at a faster rate than those provided in US primary and secondary sectors (Csorny, 2013). According to Valliere and Peterson (2004), the high levels of profitability coupled with low levels of risk associated with investing in service-based businesses in the US made the US tertiary sector all the more attractive to local and foreign investors. Some companies took advantage of the abundance of capital acquisition opportunities by extending the names of their companies with the “.com” suffix to signal their profit-generating capacity (Ljungqvist and Wilhelm, 2003).

However, equity started becoming increasingly scarce after increased competition started diminishing profit margins in the US tertiary sector (Goodnight and Green, 2010). The dampened level of economic activity in the US was soon amplified by the negative reaction investors had in response to the news that Japan had entered into another recession (Powell, 2009). According to Wheale and Amin (2003), most companies engaged in fraudulent acts to prop up their share prices as a means of maintaining their ability to acquire finances amongst strong competitors. In spite of this, the perceived risk of companies in the US tertiary sector remained high to the extent that the “.com” suffix became a new code for “risky” and “avoidable” investments (Goodnight and Green, 2010). Soon-after the dot-com bubble-burst, most businesses in the US tertiary sector became liquidated – setting the US economy off into yet another economic recession (Bardhan and Walker, 2010).

### 2.4.2. The 9/11 terrorist attack

The terrorist attack on the 11<sup>th</sup> September 2001 on the US by al-Quaeda saw the death of approximately 2977 people (Pyszczynski, Solomon and Greenberg, 2003). The hijacked planes

crashed into the twin Towers of World Trade Centre as well as the Pentagon on the same day (DiGrande, Neria, Brackbill, Pulliam and Galea, 2010). Unconstrained by the imminent economic recession brought about by the bursting of the dot-com bubble, the US government responded by spending money on insurance costs intended at rebuilding the buildings that had been destroyed and compensating those who were injured or had lost their loved ones during the attack (Blalock, Kadiyali and Simon, 2009). Although the terrorist attack was directed at the US, the spasm significantly increased foreign investors' perceived risk of the US economy (Enders, Sachida and Sandler, 2006). Even though the terrorist attack did not in itself have a significant impact on trading activities, the time needed for renovations and installations of improved security measures caused stock prices and trading volumes to decline (Garvey and Mullins, 2008).

Although President George W. Bush was aware that government spending needed to go towards stimulating the US economy, President Bush instead spent an enormous amount of money on funding the War on Terror military campaign, which was believed to be what had caused the US to wage war, first against Afghanistan and then later against Iraq (Fouskas and Gökay, 2005). The lack of government spending not only caused many businesses to fail to obtain adequate financing, but also caused increased job losses to decrease the purchasing power of most US citizens, as the inflation rate continued to soar without mercy (Thrall and Cramer, 2009). According to Vintrová, (1993), the inconsiderate actions of the US president were believed to be what had driven the US deeper into the recession.

#### 2.4.3. The rapid growth of the Chinese economy

The same year that the US was wallowing in its misery, was the very same year China was celebrating its economic success (Acemoglu, Autor, Dorn, Hanson and Price, 2016). According to Morrison (2009), "China's exports of goods and services as a share of GDP rose from 9.1% in 1985 to 37.8% in 2008". China's efficient use of its abundant human capital resource not only saw an incline in the country's productive capacity, but also made it one of the most competitive exporters in the world (Wu, 2001). The Chinese undoubtedly posed a threat to the US economy as a result of their increased competitive advantage (David, Dorn and Hanson, 2013). The US' ability to compete with China declined markedly during its recession, due to a combination of the US' relatively high inflation rate and China's relatively low wage rates (Auer and Fischer, 2010).

Thus, even though China's quality standards were not on par with that of the rest of the world, it was able to provide importers with a much cheaper alternative (Broda and Romalis, 2008). Despite being guilty of reducing the level of economic activity in most countries, China's sins were often overlooked, due these very same countries praising China for offering them a temporary solution to keep their ever-soaring inflation rates at bay (Cooke, 2009). Thus, most countries found themselves willing to return the favour by providing China with relatively better investment opportunities in their own countries and more foreign investment relative to China's less humble counterparts (Looy, 2006).

#### 2.4.4. The sub-prime mortgage bubble

Before the US economy went into an eternal state of economic despair, the US Federal Reserve Bank decided to opt for a drastic expansionary monetary policy – one that involved lowering interest rates by 550 basis points for a prolonged period of time and relaxing some of its conservative credit access requirements (Avgouleas, 2009). According to Bianco (2008), the ease with which lower-classed members of society could obtain a loan had the effect of inflating the money that was circulating the US economy. The sudden increase in money supply caused the demand for and prices of houses in the US to soar (Reinhart and Rogoff, 2008). According to Atlas, Dreier and Squires (2008), most households saw these loans as temporary gifts to which many had no serious intention of returning. Thus, few households made genuine attempts to pay back their loan installments and/ or mortgage payments (Danis and Pennington-Cross, 2008).

During this time a global trend from individualised to institutionalised investing started to grow (Della Croce, Stewart and Yermo, 2011). This essentially meant that any investment decision that was taken during this period carried a force that was more pronounced in both magnitude and direction than that which was initially taken by individual investors (Goltz and Schröder, 2011). Consequently, most financial institutions took advantage of the increased clientele by repackaging the mortgages that had been provided to them by banks into pools, which would later be re-issued to foreign investors in form of mortgage-backed securities (Acharya and Richardson, 2009). These financial institutions often demanded little to no down payment from households in exchange for high interest payments which they would use to reward foreign investors for assuming high risk (Prasad and Reddy, 2009).



What further weakened foreign investors' rational responses to excessive risk exposure at the time was the safe illusion that the booming economy, high sub-prime mortgage credit ratings and the growing popularity of derivatives created (Roszkowski and Davey, 2010). Both, the government's insistent policies which prevented financial institutions from discriminating against poor US households based on economic status (among other legitimate grounds of fair discrimination) in order to enable all US citizens to have equal access to live their own American Dream; and President Hoover's laissez faire attitude towards regulating the ease with which foreign investors could access the US market, only drove the US economy further into a state of economic despair (Kenn, 1995, Acemoglu, 2009).

## 2.5. The state of the U.S. economy during the 2008 Global Financial Crisis

Very few people saw clouds coming that would soon turn into a storm bigger than the one that preceded it. The reallocation of short-term and long-term assets into high-yielding Collateralised Debt Obligations (CDOs) and Credit Default Swaps (CDSs), implied that most financial institutions often subjected themselves to high default and liquidity risks (Orlowski, 2008). Edey (2009), explains that the "structure [of these derivatives] enabled some of these securities to gain high credit ratings even when the average quality of the underlying loans was poor". The extreme levels of risk-exposure most banks and financial institutions were undertaking became patently apparent after Hongkong and Shanghai Banking Corporation (HSBC) reported losses that it claimed to have stemmed from its subprime mortgage packages on the 7<sup>th</sup> February 2007 Guillén (2009).

According to Gupta and Vidyapeeth (2012), announcements of the same nature intensified after "financial giants such as Bear Stearns, Lehman Brothers, Merrill Lynch, AIG, Fannie Mae [and] Freddie Mac, [had] either disappeared or been rescued [by] large government bailouts". However, the stock market only crashed on the 29<sup>th</sup> September 2008 after the US House of Representatives rejected President George W. Bush's bailout plan (Isidore, 2008). Upon inception of this catastrophic news, billions of investors rushed to financial institutions desperately seeking to sell their shares and recover their money (Hsu and Moroz, 2009). Mishkin (2011), explains that "instead of the classic bank run, it was, as described by Gorton and Metrick (2009), a run on a shadow-banking system". According to Twin (2008), this disheartening news caused the Dow Jones industrial average, S&P 500 and NASDAQ composite to fall by approximately 7%, 8.8%

and 9.1%, respectively. Rising levels of sub-prime mortgage defaults were enough to send housing prices on a negative-sloping trajectory (Reinhart and Rogoff, 2008).

According to Stapledon (2009), the falling prices of houses in the US had an adverse effect on the US housing market. The resounding losses suffered by financial institutions and banks as a direct result of the high level of sub-prime mortgage defaults, left many families homeless (Ryder, 2014). Beder (2009), explains that “if people defaulted on their mortgages the repossession of their homes would cover their debt”. Whiteside (2012), suggests that the act of repossessing houses was mainly aimed at spreading the “costs of crises so that they are absorbed by the whole of society rather than allowing capital alone to assume the burden”. According to Kotz (2009), \$ 8 trillion worth of costs had the effect of sharply decreasing the level of consumer spending and fixed business investments in the US. Bank failures and business foreclosures during the credit crunch caused the US GDP to shrink by 3.1% in 2009 (Cazes, Verick and Hussami, 2013).

Chang, Stuckler, Yip and Gunnell (2013), believe that the downturn in economic activity was closely related to the rising unemployment rate. Guillén (2009), states that “US employers cut 216,000 jobs in August [2008], pushing the unemployment rate up to 9.7%, a 26-year high”. According to Verick and Islam (2010), “three main channels for adjustment to external shocks in labour demand at the firm-level [were]: working time (hours worked), number of workers and wages/non-wage benefits”. Bearing a drastic decline in disposable income caused by the heightened level of joblessness, the level of US consumer spending dropped by only 3.7% in 2008 (Kotz, 2009). According to Guillén (2009), the marginal decline in consumer spending was reflected in the \$ 1.8 trillion trade deficit depicted in the US’ balance of trade account on the 20<sup>th</sup> March 2009 – caused by mass credit purchases of imported goods.

The negative balance of trade had the effect of increasing the demand for gold in the US, due to the low risk associated with it as well as the weakened value of the dollar currency (Baur and McDermott, 2016). While the increase in the demand for US goods and services made the US a “global magnet for capital flows for risky or semi-risky investments”, the increase in capital inflows into the US economy meant that the US “also attracted risk-averse finance on a large scale, specifically the currency reserves of surplus countries” (Priewe, 2008). Despite the US Federal Reserve Bank increasing the LIBOR rate to 6.8% on the 4<sup>th</sup> September 2007 and cutting interest rates from 4.75 % to 4.25% on the 18<sup>th</sup> September 2007 (as an initial attempt to curb the severe



shock wave that was spreading throughout the US financial sector) the adjustment was largely ineffective (Guillén, 2009).

The US Federal Reserve Bank's subsequent attempt at saving the US economy from complete collapse was "to remove bad assets from the balance sheets of affected financial institutions and to purchase longer dated securities in order to support mortgage and private credit markets" (Edey, 2009). According to Reavis (2009), Citigroup received \$ 45 billion bail and AIG received \$ 180 billion bail. Edey (2009), adds that "policy rates were reduced to close to zero and central banks moved to quantitative easing approaches to provide additional stimulus to particular markets and to the economy more generally". This was after five of the most powerful central banks agreed to loan the US Federal Reserve Bank enough money to reduce interest rates and bailout key US banks and institutions - established through a plan called Troubled Assets Relief Program (TARP) on the 3<sup>rd</sup> October 2007 (Labonte, 2008). President Barack Obama also instigated a \$ 825 billion stimulus package plan on the 18<sup>th</sup> February 2009 designed to create 1.1 million jobs and assist 9 million displaced families (Guillén, 2009). According to Dailami and Masson (2009), part of the stimulus program involved "both tax cuts and increased spending on infrastructure and education, among other items".

However, the regulatory policies implemented during the 2008 Global Financial Crisis only partially and temporarily achieved their desired objective of stabilising the global economy. According to Head (2018), South Africa slipped into a technical recession in 2018 after its real GDP first declined by 2.6% in the first quarter and then again by 0.7% in the second. Austria, Belgium, Canada, Denmark, Estonia, Finland, Hungary, Ireland, Italy, Latvia, Lithuania, Mexico, Netherlands, Norway, Romania, Russia, Spain, the US and the UK were also in a recession in the second quarter of 2018 (The Guardian, n.d.). Long (2019), suspects that the decline in the demand for exports in 2018 was the underlying reason behind the poor rate of economic growth in most of these countries during the first and second quarter of 2018.

The following section will explore the centrality of investor confidence in proper-functioning economic systems in an effort to use the phenomenon underlying this study as a basis for theory development concerning the potential impact bad public announcements have on the level of investor confidence before global financial crises.

## 2.6. The centrality of investor confidence in proper-functioning economic systems

Tonkiss (2009), believes that all economic transactions hinge on a well-functioning economic system. An economic system is well-functioning to “the extent [that] negotiations are fair and commitments are upheld” (Anderson and Narus, 1990). Investor confidence enables investors to transact by establishing contracts between contracting parties (Ring, 1996). Default risk is an inherent element of contracts. Crosbie and Bohn (2003), define default risk as the inability to meet an obligation as it becomes due. Longstaff, Mithal and Neis (2005), explain that an increase in default risk will cause a security’s expected return to increase given the fact that default risk increases a security’s risk premium. This implies that an investor’s willingness to enter into a contract is directly linked to his/ her risk preference.

An intermediary is a third party who or that facilitates interaction between two or more persons (Ehrlich and Cash, 1999). This definition of intermediaries infers that financial institutions constitute intermediaries by the nature of their roles. While risk-averse investors are likely to appoint financial institutions to trade on their behalf, due to their predominantly risk-avoidant attitudes; risk-seeking investors are not – due to their predominantly risk-seeking attitudes. According to Gitman and Zutter (2012), most investors are risk-averse. This implies that proper-functioning economic systems are dependent on the confidence risk-averse investors have in financial institutions.

Tonkiss (2009), explains that investor confidence is a moral issue centered on transparency. According to Vishwanath and Kaufmann (2001), shared information is transparent to the extent that the information is accessible, reliable and timely. Turilli and Floridi (2009), believe that the extent to which financial intermediaries are transparent can be measured objectively by assessing whether investors are capable of using the information made accessible to them by gauging “the intentions or behaviours that have been intentionally revealed through a process of disclosure”. This implies that a proper-functioning economic system requires risk-averse investors to be certain of each other’s intentions before regularly committing to conclude contracts with each other.

Although most economic systems are capable of existing independently of financial markets, few economic systems are capable of functioning competitively without financial markets. According to Allen and Santomero (1997), informational asymmetry is the life and bread of financial

intermediaries. Consequently, one can expect well-functioning economic systems to be structured differently from most financial markets (Dell'Ariccia, 2001). This implies that the structural differences between proper-functioning economic systems and profit-making financial intermediaries jointly produce a partly mal-functioning and asymmetrical economic system – the immediate consequence of which decreases the number of contracts concluded, due to risk-averse investors lacking the ability to ascertain each other's intentions with relative certainty.

Uncertainty can draw different reactions from investors who have varying degrees of risk tolerance (Longstaff, Mithal and Neis, 2005). While risk-seeking investors are more likely to invest more during times of uncertainty, risk-averse investors are more likely to invest less (Roszkowski and Davey, 2010, Ang, Chen & Xing, 2006). According to State Street (n.d.), high levels of economic, social, political, technological and/ or environmental uncertainty are likely to cause investors to demand less assets or opt for assets that are less risky. This implies that, due to the presumption that most investors are risk adverse, a decrease in the demand for risky assets will cause the price of risky assets to decrease as supply starts to exceed demand; and cause the market to establish a lower equilibrium (Gitman and Zutter, 2012).

Both households and firms were able to obtain loans with relative ease before the 1929 Great Depression, due to lowered interest rates and relaxed collateral requirements (Garrison, 1993). The risk that these loans carried were much lower in contrast to those of subprime mortgages that were handed out to poor US households before the 2008 Global Financial Crisis (Bianco, 2008). According to Prasad and Reddy (2009), financial institutions often demanded little to no down payment from households in exchange for high interest rates that were used to compensate foreign investors for assuming high risk before the 2008 Global Financial Crisis.

Foreign investors displayed such unwavering faith in the US economic system before the 2008 stock market crash that the risk of default (particularly amongst sub-prime mortgagors) was completely dispelled against all sound logic (Acharya and Richardson, 2009). Roszkowski and Davey (2010), describes this risk-seeking behaviour as risk denial, “the finding that generally people tend to be overly optimistic about risks that they have not experienced and tend to perceive less risk for themselves than for others engaged in the same activities”. However, after the announcement of the 2008 stock market crash was publicised, the US economic system collapsed,

due to both local and foreign investors losing confidence in the US financial market (Hsu and Moroz, 2009).

The following section will explore the impact incomprehensible information has on the level of investor confidence. This will be done to gain insight concerning the extent to which informational-processing barriers influence investor behaviour and decision-making.

## 2.7. The impact incomprehensible information has on the level of investor confidence

The previous section established that economic systems are often hindered from functioning properly as a result of the uncertainty associated with contracts established by financial intermediaries (Turilli and Floridi, 2009). Most risk-averse investors displayed consistent tendencies of circumventing highly vague and/ or ambiguous contracts after the 1929 Great Depression and the 2008 Global Financial Crisis, due to the high levels of risk associated with these contracts (Roszkowski and Davey, 2010, Ang, Chen & Xing, 2006). Although the notion of informational asymmetry was used as simple diagnosis for this complex problem in the preceding section, informational symmetry by no means provides a miraculous cure for partly malfunctioning economic systems (Allen and Santomero, 1997).

One key assumption stated by Eugene Fama in his Theory of Market Efficiency is that “all investors have access to the same information at the same time” (Rani, 2012). According to Mwamba (2013), the skill of an investor is dependent on his/ her ability to select mispriced securities, while an investor’s ability to time security purchases and sales is dependent on his/ her ability to predict price movements before they occur. Jensen’s alpha is a popular performance measure used to quantify the extent to which an active investor’s skills are superior to those of a passive investor, while a diverse range of parametric models are used to quantify the extent to which an active investor’s decision to short or long a security in a timely manner is able to assist him/ her generate abnormal returns on a consistent basis (Sawicki and Ong, 2000, Jagannathan and Korajczyk, 1986).

According to Otamendi, Doncel, Grau and Sainz (2008), a positive alpha implies that an actively managed portfolio has outperformed the market portfolio on a consistent basis, while a negative alpha suggests that an actively managed portfolio has underperformed the market portfolio on a consistent basis. Kuhle, Walther and Wurtzebach (1986), state that in an efficient market, both



actively-managed and passively-managed portfolios are presumed to have an alpha of zero. This presumption implies that neither superior skill associated with finding new information nor superior skill associated with exploiting new information in a timely fashion will guarantee an active investor abnormal profits on a consistent basis (Malkiel, 2003).

Richard Thaler challenges the presumption of informational symmetry proposed by Eugene Fama on the basis of market anomalies (De Bondt, and Thaler, 1995, Barberis and Thaler, 2003). According to Dimson (1988), market anomalies not only provide tangible evidence of documented instances upon which active investors have consistently outperformed the market, but market anomalies also suggest that active investors can employ certain analytical techniques to predict price movements on a consistent basis. Latif, Arshad, Fatima and Farooq (2011), explain that certain forms of technical, fundamental and calendar analyses can be used to predict price movements consistently.

However, List (2003) believes that with the progression of time, market anomalies are bound to disappear as the market matures. According to Barnewell (1988), informational symmetry plays an insignificant role in enhancing the decision-making processes of passive investors who tend to be risk-averse by nature. Thus, incomprehensible information does not have a profound impact on the level of investor confidence of passive investors - the category most investors are presumed to fall.

The contracts that were primarily established before the 2008 Global Financial Crisis were derivatives (Eichengreen, 2008). According to Battiston, Caldarelli, Georg, May and Stiglitz (2013), a derivative is a “financial contract between two parties, in which the value of the payoff is derived from the value of another financial instrument or asset, called the underlying entity”. Financial institutions generated profits from repackaging mortgages into pools which were later issued in the form of mortgage-backed securities to foreign investors (Acharya and Richardson, 2009).

The reallocation of short-term and long-term assets into high-yielding derivatives implied that most financial institutions often subjected themselves to high default and liquidity risks (Orlowski, 2008). While the complex nature of these contracts were not entirely misleading in and of themselves, the extreme incentives offered to entice low-income households (who often lacked a



reasonable level of understanding prior to entering into these agreements) that extended well beyond their financial means, rendered most publicised disclosures made by financial institutions ambiguous and to some extent misleading (Stulz, 2004). The US' level of investor confidence plummeted after symmetrical information regarding wide-scale mortgage defaults and bankruptcies were announced publicly - causing a crash in the US stock market on the 29<sup>th</sup> September 2008 (Isidore, 2008).

The following section will explore the possible reasons why active investors use public announcements to measure the level of investor confidence. This will be done to gain understanding regarding the extent to which public announcements influence the behaviour and decision-making processes of active investors.

## 2.8. Using public announcements to measure the level of investor confidence

It is a well-known fact that investor confidence is central to almost all asset markets (Partnoy, 1999). According to Stout (2002), "Investor trust provides the foundation that American securities market has been built. Without investor trust, our market would be a thin shadow of itself". Jeremy (2017), defines investor confidence as an investor's willingness to act based on his/ her observations. Hence, the term "willingness to act" used within the context of this definition implies that an investor must first be satisfied with his/ her observations before he/ she displays willingness to act.

Upon understanding what the term "willingness to act" entails within the context of this definition of investor confidence, one is prompted to shift one's focus to investigate what the term "observation" means within the same context. Even though most investors are able to observe the level of investor confidence using quantitative and qualitative tools, few active investors have the skill, time or money to interpret or have someone interpret the level of investor confidence of a given economy for them (Jeremy KO, State Street, n.d.). Nonetheless, the perception that most active investors have towards risk will almost always compel them to find alternative means of making observations. Some of these observations involve subjectively evaluating a security's systematic risk using public announcements - which is usually measured objectively using beta.

According to Gitman and Zutter (2012), market risk or systematic risk is considered the only risk that is relevant for two main reasons: 1) it is derived from market related factors, implying that

this risk affects all firms; and 2) it cannot be diversified away, implying that it is impossible to eradicate this risk completely. Thus, without relatively comprehensible tools made readily disposable to the general public, active investors are likely to rely on public announcements as a means of subjectively observing market conditions. This is due to the fact that public announcements pertaining to the economic, social, political, environmental and/ or technological performance of a given country are likely to have a profound impact on the level of investor confidence.

While a study examining how trading volumes and prices react to public announcements found that trading volumes and prices increased as the precision of publicised pre-announcements decreased and increased as the precision of public announcements increased (Kim and Verrecchia, 1991), a study investigating the impact financial crises have on communicable diseases showed that the number of persons prone to contracting communicable diseases increased considerably during financial crises (Suhrccke, Stuckler, et al., 2011). A study conducted by Kabiru, Ochieng, et al. (2015), examining the impact general elections have on stock returns on the Nairobi Stock Exchange revealed that “market reaction to elections is highly negative or positive depending on the election at hand”.

The findings of a study conducted by Mahalingam, Coburn, et al. (2018), pertaining to the impact a vast number of natural catastrophes have on financial markets highlighted the fact that “highly destructive natural catastrophe events certainly have the potential to cause market fluctuations in the domestic as well as international markets”. Likewise, a study conducted by Pástor and Veronesi (2009) investigating the impact technological revolutions have on stock prices concluded that “stock prices of innovative firms initially rise due to good news about this productivity, but they ultimately fall as the risk of the technology changes from idiosyncratic to systematic”. This all goes to show that economic, social, political, technological and environmental public announcements are likely to have a profound impact on the level of investor confidence, whether good or bad.

According to Shomali and Giblin (2010), most investors expressed great eagerness towards generating high returns and shallow keenness towards understanding the risk associated with high returns before the 1929 and 2008 stock market crashes. The increased accessibility to finances fostered by economic, social, political and technological innovation, only heightened the already

astronomical degree of risk tolerance that resided amongst the growing number of active investors at the time (Dent, 1999, Avgouleas, 2009). Speculation was rife, yet so subtle that suspicion regarding the credibility of publicised announcements was often discarded by overconfident investors as a result of the frequent and widespread assurance provided by a large number of reputable experts, investors and institutions (Fisher, 1933, Barberis, 2013).

Roszkowski and Davey (2010), describe this speculative behaviour as risk denial, “the finding that generally people tend to be overly optimistic about risks that they have not experienced and tend to perceive less risk for themselves than for others engaged in the same activities”. Although one could argue that investors who were alive before the 2008 stock market crash could have much easily avoided the 2008 Global Financial Crisis compared to investors who were alive before the 1929 stock market crash, due to having greater access to information as a result of increased technological advancement - greed seemed to always override rationality before both the 1929 Great Depression and the 2008 Global Financial Crisis (Hoover, 2015, Reavis, 2009).

Since, this section highlighted the fact that active investors are likely to rely on public announcements when short of skill, time or money, the next section of this chapter seeks to investigate whether public announcements are reliable measures of the level of investor confidence.

## 2.9. The impact misleading public announcements have on the level of investor confidence

Although the previous section established that active investors are likely to rely on public announcements as a means of making qualitative observations of systematic risk in the absence of comprehensible, affordable and efficient tools of assessment, it would be absurd to assume that active investors who primarily rely on public announcements to make observations are likely to yield comparable returns to their more passive and/ or resourceful counterparts (Tetlock, 2010). According to Chae (2005), variances in returns are particularly apparent when false, inaccurate, incomplete and/ or untimely announcements are publicised. Bris (2005), suggests that such issues are readily resolvable when publicised announcements explicitly or implicitly contravene laws established by governments or other governing bodies - however a challenge is often presented when institutions or corporates publicise misleading announcements whilst remaining within the bounds of the law. Elayan, Maris and Maris (1990), for example explain that credit rating agencies

are capable of sending false market signals to investors for the lack of proper access to accurate and/ or sufficient information pertaining to the financial leverage of the corporates to which they issue ratings.

Nonetheless Kracher and Johnson (1997), believe that insiders are just as likely to exploit loopholes in legislation governing financial markets using false market signals. A rather common false signal insiders use to mislead both active and passive investors involve publicising stock repurchase announcements with the sole intention of inflating stock prices whilst having little to no intention of repurchasing all the stocks that they have announced (Fried, 2005). Shadow banking is another common false signal insiders use to avoid disclosing elements in their financial statements and/ or financial reports that could be perceived negatively by current and/ or prospective investors (Judge, 2017). According Zare, Kiafar, Kanani & Farzanfar (2013), insiders are also capable of increasing dividend pay-outs as a false signal used to mislead investors to believe that a given company is profitable when it is not. Most misleading public announcements remained undetected and unsanctioned before and even after the 1929 and 2008 stock market crashes.

Before the 1929 stock market crash, insiders were not tacitly or explicitly prohibited by law from exploiting inside information. Haddock (2002), states that this is due to the fact that the Securities and Exchanges Commission (SEC) had only propagated a law that prevented insiders from “profiting passively from superior information” in 1934. The fact that the 1929 stock market crash took place before the commencement date of this law, implies that insiders could have sent false signals using stock prices to mislead non-insiders to believe that a given security had performed well or poorly relative to the market, when in fact the rise or fall of the security price was purely a product of insiders trading on inside information prior to its publication.

Although insider trading was also prevalent before the 2008 stock market crash, it was far more advanced as result of the series of developments technology brought to financial markets (Orlowski, 2008). This time, both banks and financial institutions relied on incomprehensible contracts established using complex derivatives as a means of misleading investors (Crotty, 2009). While the dense nature of these contracts were not entirely misleading in and of themselves, the extreme incentives offered to entice low-income households (who often lacked a reasonable level of understanding prior to entering into these agreements) that extended beyond their financial



means, rendered most publicised disclosures made by credit providers ambiguous and to some extent misleading (Stulz, 2004).

The fact that all this evidence illustrates how easily even passive and/ or resourceful investors can be misled by false market signals, probes one to ask whether *not* being misled by misleading public announcements is in fact a possibility? While Efficient Market theorists have not hesitated in giving a negative response to this question, Behavioural Finance theorists share a less gloomy point of view which will be discussed in greater detail in the next chapter (Wen-Chen and Ku-Jun, 2005, Olsen, 1998).

Since the previous section managed to show that economic, social, political, technological and environmental public announcements are likely to have a profound impact on the level of investor confidence whether the public announcements are good or bad, the focus of the next section will be to investigate whether good and bad public announcements have the same impact on the level of investor confidence.

#### 2.10. The potential impact bad public announcements have on the level of investor confidence

Uncertainty can draw different reactions from investors who have varying degrees of risk tolerance (Longstaff, Mithal and Neis, 2005). While risk-seeking investors are more likely to invest more during times of uncertainty, risk-averse investors are more likely to invest less (Roszkowski and Davey, 2010, Ang, Chen & Xing, 2006). According to State Street (n.d.), high levels of economic, social, political, technological and/ or environmental uncertainty are likely to cause investors to demand less assets or opt for assets that are less risky. This implies that, due to the presumption that most investors are risk adverse, a decrease in the demand for risky assets will cause the price of risky assets to decrease as supply starts to exceed demand; and cause the market to establish a lower equilibrium (Gitman and Zutter, 2012). However, excessive market risk is likely to cause even risk-seeking investors to display risk-averse tendencies (Cohn, Lewellen, Lease & Schlarbaum, 1975).

Gitman, Juchau and Flanagan (2015), define risk as the probability of incurring financial losses. A brief examination of this definition of risk suggests that investors are presumed to have a cynical perception of risk even when the probability of earning financial gain remains. According to Cohn,



Lewellen, Lease & Schlarbaum (1975), this narrow interpretation of the term risk is preferred amongst broader interpretations in the field of Finance and Investments, due to the presumption that most investors are risk averse. This implies that most investors are likely to shy away from risk, unless they are compensated with higher returns (Gitman and Zutter, 2012). Ang, Chen & Xing (2006), explain that “disappointment aversion preferences allow agents to place greater weights on losses relative to gains in their utility functions”. This implies that risk-averse investors are more sensitive to downside risk than they are to upside risk (Roy, 1952).

Although Efficient Market theorists have designed models that have been used to quantitatively assess downside risk, most of these models lack qualitative substance (Sortino and Van Der Meer, 1991). Behavioural Finance theorists have since tried to address this gap in knowledge by developing a descriptive choice model that has been used to qualitatively assess downside risk (Abdellaoui, Bleichrodt & Paraschiv, 2007). According to Tversky & Kahneman (1992), the choice model describes how risk-averse investors are expected to behave when forced to make decisions that involve high levels of uncertainty. The Prospect Theory model is a product of the choice model which challenges the Expected Utility Theory model based on the following four grounds (Barberis, 2013):

- 1) *Value is measured against a relative instead of an absolute reference point*: implying that the competitive nature of investors usually causes them to measure their gains and/ or losses against other investors or their regular level of performance (a relative reference point) instead of the market portfolio (an absolute reference point).
- 2) *Investors are more sensitive to losses than they are to gains*: implying that risk-averse investors are likely to avoid investing in risky assets, even if the probability of gains outweigh the probability of losses.
- 3) *The value function of gains and losses is concave and convex respectively*: implying that risk-averse investors are likely to increase their level of risk tolerance only to the extent that their potential for gain is significantly high; and conversely decrease their level of risk tolerance considerably if the potential for loss is marginally increased.

- 4) *Probability weightings are subjective instead of objective*: implying that risk-averse investors are likely to attach more weight to rare outcomes and less weight to frequent or occasional outcomes.

It is profoundly difficult to understand the Prospect Theory model without comparing the differentials in investor behaviour before and after the 1929 and 2008 stock market crashes. Before both the 1929 and 2008 stock market crashes, the US economy was experiencing a series of economic, social, political and technological advancements (Dent, 1999, Lansing, 2011). According to Fisher (1933) and Barberis (2013), the heightened level of investor confidence not only had the effect of inflating the confidence most investors had in key markets and institutions, but also had the effect of reducing most investors' ability to make sound investment decisions. The gradual rise in the level of risk tolerance saw many investors plough personal and borrowed funds in risky assets that promised to yield high returns (Dimand, 1994, Grosse, 2010).

Upon announcement of the 1929 and 2008 stock market crashes, the very same level of investor confidence most investors had in key markets, institutions and their ability to make sound investment decisions abruptly disappeared (Earl, 2009). Despite, the fact that the level of economic activity showed only minor signs of dampening, the frantic wave of panic that took place after the 1929 and 2008 stock market crashes set a series of bad public announcements in motion (Garrison, 1999, Guillén, 2009). When the US was not experiencing low levels of economic activity or the 1930 Dust Bowl - a drought that lasted approximately six years, it was experiencing high levels of homelessness, unemployment, migration, and suicides (Popper and Popper, 1987, Crouse, 1986, Lucas Jr and Rapping, 1972, Gutmann, Brown, Cunningham, et al., 2016, Granados and Roux, 2009).

Announcements of bankruptcy by most banks, financial institutions and businesses were enough to permanently ward off most investors' attempts at recovering their investments (Garrison, 1999, Guillén, 2009). When the government was not prioritising its decision to allow the market to regulate itself after the 1929 stock market crash (Rothbard, 1972), it would instead spend both its time and resources on bailing out key banks and financial institutions after the 2008 stock market crash (Guillén, 2009). According to Swedberg (2012), the US government and the US Federal Reserve Bank did not do enough to restore the level of investor confidence after the 2008 stock

market crash; or ensure that investors who had lost their savings during the stock market crashes received some form of compensation, due to the deficient demand for the newly repossessed assets.

The Prospect Theory model suggests the following regarding the events that took place before and/or after the 1929 and 2008 stock market crashes based on the four grounds of contention discussed above:

- 1) *Value is measured against a relative instead of an absolute reference point:* the stock market crash was a product of investors lacking confidence in key markets, financial institutions and their ability to make sound investment decisions as a result of being discouraged by their inability to generate higher returns compared to their counterparts or usual returns; and not a product of their inability to generate high returns compared to the underperforming market (Earl, 2009).
- 2) *Investors are more sensitive to losses than they are to gains:* each bad announcement publicised after the 1929 and 2008 stock market had a greater impact on the level of investor confidence compared to each bad announcement publicised before the 1929 and 2008 stock market crashes (Garrison, 1999, Guillén, 2009).
- 3) *The value function of gains and losses is concave and convex respectively:* the general level of risk tolerance amongst investors before the 1929 and 2008 stock market crashes was merely high as a result of their increased potential to earn high returns; and low after the 1929 and 2008 stock market crashes as a result of their decreased potential to earn high returns (Dimand, 1994, Grosse, 2010).
- 4) *Probability weightings are subjective instead of objective:* most investors overestimated their potential to generate extreme gains before the 1929 and 2008 stock market crashes and overestimated their potential to incur extreme losses after the 1929 and 2008 stock market crashes; while simultaneously underestimating their potential to incur extreme losses before the 1929 and 2008 stock market crashes and underestimating their potential to generate extreme gains after the 1929 and 2008 stock market crashes (Fisher, 1933, Barberis, 2013).

The last section of this chapter will investigate the impact regulatory policies have on the level of investor confidence after global financial crises. This is done in an effort to decipher whether such policies are effective in mitigating the effects of global financial crises once they have occurred.

### 2.11. The impact regulatory policies have on the level of investor confidence

A controversial debate exists concerning whether or not monetary and fiscal policies should be implemented (Frenkel and Mussa, 1980). According to Mundell (1962), “monetary policy ought to be aimed at external objectives and fiscal policy at internal objectives, and that failure to follow this prescription can make the disequilibrium”. Hanif and Arby (2003), believe that the purpose of monetary and fiscal policies is to achieve consistent economic growth without inflation. The fact that different countries have different macroeconomic and microeconomic goals, implies that governing authorities should refrain from adopting a once-size-fits-all approach to regulation (Dixit and Lambertini, 2001).

Increased regulation has been a popular solution proposed by quite a few researchers pertaining to the scope of government and reserve bank intervention (Tonkiss, 2009, Harrington, 2009, Davidoff and Zaring, 2009). Hanif and Arby (2003), emphasise the need for fiscal policymakers to harmonise their objectives and the implications of their objectives with those of monetary policymakers in a manner that will facilitate the realisation of pre-determined objectives. Nonetheless, this proposition produces several topics of controversy including: which authority should be held responsible for regulating the economic system; can more than one authority be held responsible for regulating the economic system; to what extent does the scope of regulation extend for the regulating authorities; and what impact will joint authorisation have on the autonomy of various authorities?

These considerations are important as both monetary and fiscal policies have been proven to have some level of impact on the stock market in varying forms and degrees (Thorbecke, 1997, Afonso and Sousa, 2012). According to Lee and Chung (1996), regulatory policies are capable of interfering with an efficient market’s ability to restore security mis-pricings back to equilibrium. Rigobon and Sack (2003), explain that regulatory policies usually stimulate or dampen trading activities in stock markets by increasing or decreasing household consumption and business financing, respectively.



On the 3<sup>rd</sup> October 2007, five of the most powerful central banks agreed to loan the US Federal Reserve Bank enough money to reduce interest rates and bailout key US banks and institutions, established through a plan called Troubled Assets Relief Program (TARP) (Labonte, 2008). President Barack Obama also instigated a \$ 825 billion stimulus package plan on the 18<sup>th</sup> February 2009 designed to create 1.1 million jobs and assist 9 million displaced families (Guillén, 2009). According to Dailami and Masson (2009), a component of the stimulus program involved “tax cuts and increased spending on infrastructure and education, among other items”.

Despite the US government and the US Federal Reserve Bank having expended a great deal of effort to restore the level of investor confidence by employing expansionary fiscal and monetary policies, most of these regulatory policies did little to rebuild the loss in confidence both investors and the public have in the US and/ or global economy after the 2008 Global Financial Crisis (Guillén, 2009). In fact, White (2017) warns that such policies make matters worse by inflating one market bubble with a bigger one. This is especially since investor confidence is not merely a product of changes in economic conditions, but a product of changes in market conditions too (Gitman and Zutter, 2012). Thus, unless governments, reserve banks and key institutions understand that not all economic problems can be resolved by implementing economic solutions, one can only anticipate another global financial crisis to occur in the near or distant future.

## 2.12. Conclusion

The literature review focused on discussing the concept of investor confidence in light of the factors that led to its erosion before the 1929 Great Depression and the 2008 Global Financial Crisis. The discussion provided an overview of: 1) the state of the US economy before the 1929 Great Depression; 2) the state of the US economy during the 1929 Great Depression; 3) the state of the US economy before the 2008 Global Financial Crisis; 4) the state of the US economy during the 2008 Global Financial Crisis; 5) the centrality of investor confidence in proper-functioning economic systems; 6) the impact incomprehensible information has on the level of investor confidence; 7) the possible reasons why active investors use public announcements to measure investor confidence; 8) the impact misleading public announcements have on the level of investor confidence; 9) the potential impact bad public announcements have on the level of investor confidence; and 10) the impact regulatory policies have on the level of investor confidence.



### 3. Theoretical framework

#### 3.1. Introduction

The main objective of this study is twofold:

1. To determine whether leading indicators have sufficient predictive capacity to predict global financial crises; and
2. To use the EMT and/ or BFT as a means of developing a theory explaining the potential impact bad public announcements had on the level of investor confidence before the 1929 Great Depression and the 2008 Global Financial Crisis.

EMT and BFT are two theoretical frameworks that will be used in this study as a means of understanding how security markets inherently operate. An extended theoretical framework based on 6 NBER-based leading economic indicators (LEI) and 4 systematic risk-based leading non-economic indicators (LNEI) will be adopted in this study as a means of finding measures that can be used to predict global financial crises (Stock and Watson, 1989, Gitman and Zutter, 2012). The application of the theoretical framework and the extended theoretical framework will be provided before concluding this chapter.

#### 3.2. Market theories

There are two theoretical frameworks that are used in this research: 1) EMT (Fama, 1960, Malkiel and Fama, 1970, Fama, 1995) and; 2) BFT (Thaler, 1980, De Bondt and Thaler, 1995, Barberis and Thaler, 2003). EMT (Fama, 1960, Malkiel and Fama, 1970, Fama, 1995) and BFT (Thaler, 1980, De Bondt and Thaler, 1995, Barberis and Thaler, 2003), are bodies of work that have often been discussed side-by-side in academic texts and journals to show the contrasting viewpoints held by scholars concerning how financial markets are presumed to operate (Gitman and Zutter, 2012, Shleifer, 2000, Shiller, 2003, Daniel and Titman, 1999). Most of the debate surrounding these two theories is centered on the accuracy at which security markets are able to reflect the intrinsic price of a security (Yalçın, 2010). While the EMT suggests that security prices accurately reflect the rational expectations of investors, the BFT suggests that security mis-pricings are a product of irrational investor expectations (Shleifer, 2000).

Assumptions based on these theories have not only been used frequently by scholars to develop and/ or criticise fundamental principles in the field of Finance, but have also been used to construct financing models that help project managers evaluate the trade-off between risk and return of a vast number of proposed projects (Jensen, 1969, Basu, 1977, Sharpe, 1966). For example, Modigliani and Miller (1958) relied on EMT assumptions to develop the Capital Structure Irrelevance Theory which highlights the importance of optimally mixing debt and equity financing in order to minimise the cost of capital and maximise the value of a firm. However, BFT has often been used to criticise the shortcomings of the EMT despite M & M's Capital Structure Irrelevance Theory acquiring increasing recognition and legitimacy in Corporate Finance over the years (Modigliani, 1988). For example, Jensen and Meckling (1976) developed the Agency Cost Theory to explain the psychological reasons behind why some managers (at times) manipulate the optimal financing mix at the expense of shareholders when the objective of maximising shareholder wealth conflicts with their personal interests.

EMT and BFT assumptions have also been applied extensively in the field of Investments to help investors create and/ or find investment strategies that align to their specific risk profile and financial goals (Warren, Stevens and McConkey, 1990). For example, Warren Buffett has often relied on EMT assumptions to develop philosophies that explain how his investment strategies made him a billionaire, while George Soros has often relied on BFT assumptions to develop philosophies that explain how he made his billions (Malkiel, 2005, DeBondt, Forbes, Hamalainen and Gulnur Muradoglu, 2010). While Buffet's investment strategies are designed to encourage passive investors to avert risk by refraining from taking active steps to outperform the market (Hagstrom, 2000), Soro's investment strategies are designed to encourage active investors to be risk neutral by making investment decisions irrespective of how confident they are in the soundness of those decisions (De Long, Shleifer, Summers and Waldmann, 1990).

Although a number of studies have used EMT and BFT assumptions as a means of adding theoretical and practical knowledge to the field of Finance and Investments (Modigliani and Miller, 1958, Jensen, 1969, Basu, 1977, Sharpe, 1966, Warren, Stevens and McConkey, 1990), few studies have used EMT and BFT to investigate the potential impact bad public announcements could have had on the level of investor confidence before both the 1929 Great Depression and the 2008 Global Financial Crisis (Ait-Sahalia, Andritzky, Jobst, Nowak and Tamirisa, 2012, Barrell

and Davis, 2008, Estrella and Mishkin, 1998). Understanding how security markets inherently operate is a preliminary requirement to finding measures that can be used to predict global financial crises (Fama, 1960, Thaler, 1980). Thus, EMT and BFT assumptions and implications will be used to explain whether the 1929 Great Depression and the 2008 Global Financial Crisis were a product of an efficient market restoring overvalued stocks back to equilibrium and/ or the product of investors responding irrationally to negative changes in market conditions (Malkiel and Fama, 1970, Shiller, 2003).

### 3.2.1. Efficient Market Theory

Eugene Fama was the first person to publish a theory which sought to explain how rational investors respond to new information in an efficient market that swiftly restores all overvalued and undervalued stocks back to equilibrium (Fama, 1960). This means that “in markets with significant informational asymmetries (e.g. security markets) information markets aggregate information effectively. Thus, a trader can infer all he needs to know about others’ information simply by observing prices” (Laffont and Maskin, 1990). According to Malkiel and Fama (1970), the EMT is derived from the Efficient Market Hypothesis (EMH) which is centered on two premises: 1) all information is swiftly reflected in market prices; and 2) changes in market prices follow a random walk. The first premise discusses the three forms of EMH which attempt to explain what type of information the term “all information” encompasses. These three forms of EMH are commonly referred to as: 1) Weak form of efficiency; 2) Semi-strong form of efficiency and 3) Strong form of efficiency (Fama, 1960). Essentially, the term “all information” encompasses any information that could possibly affect market prices, including: historical prices, information made available to the public and inside information (Timmermann and Granger, 2004). The second premise states that changes in market prices follow a random walk, which means that changes in market prices are unpredictable because they occur randomly and are independent of historical trends or patterns that reflect changes in market prices (Fama, 1995).

This implies that “neither technical analysis, which is the study of past stock prices in an attempt to predict future prices, nor even fundamental analysis, which is the analysis of financial information such as company earnings and asset values to help investors select “undervalued” stocks, would enable an investor to achieve returns greater than those that could be obtained by holding a randomly selected portfolio of individual stocks, at least not with comparable risk”

(Malkiel, 2003). According to Al-Khazali, Leduc & Alsayed (2016), many investors have struggled to be content with the notion that it is impossible to beat the market on a consistent basis, unless one increases returns simultaneously with risk. Tests have subsequently been conducted to examine the extent to which markets are efficient using: 1) Technical analysis, 2) Fundamental analysis; and 3) Insider Trading - none of which have successfully been able to provide scientific evidence to the contrary (Alexander, Sharpe, Bailey, 1989).

### 3.2.2. Behavioural Finance Theory

BFT is a body of work that was founded by Richard Thaler alongside other brilliant minds (De Bondt and Thaler, 1995, Barberis and Thaler, 2003). BF theorists have challenged a number of EMH assumptions, contending that investors are irrational; and markets are inefficient primarily on the basis of the varying degrees of swiftness at which information is made accessible to investors (Naseer and bin Tariq, 2015). Baker and Ricciardi (2014), reason that since investors are humans, most of their decision-making processes are influenced by emotional and cognitive biases instead of hard-core facts. The following emotional and psychological biases are just a handful amongst the plethora of assumptions BF theorists have used to explain why investors are irrational (Oechssler, Roeder & Schmitz, 2009, De Bondt, Muradoglu, Shefrin and Staikouras, 2008, Kahan and Klausner, 1996):

- 1) *Over-confidence*: over-estimating one's ability to predict a given outcome;
- 2) *Regret theory*: basing one's predictions on one's expected reaction to a future outcome;
- 3) *Prospect theory*: expecting the probability of extreme outcomes to be greater than the probability of normal outcomes;
- 4) *Anchoring*: basing one's predictions on initial information;
- 5) *Loss Aversion*: expecting the probability of incurring losses to be greater than the probability of earning gains; and
- 6) *Status quo*: making predictions based one's preference for the current state of affairs.

In addition to the emotional and cognitive biases that subject investor behaviour, notable outlier market occurrences also known as market anomalies provide tangible evidence of recurrent incidents that have been used by investors to predict price movements (Dimson, 1988). The following market anomalies are just a handful amongst the plethora of assumptions BF theorists



have used to explain how investors are able to predict changes in market prices (Gitman, Joehnk, Smart and Juchau, 2015):

- 1) *The calendar effect*: share prices can be predicted with greater certainty towards the end of the year, month or week;
- 2) *The small firm effect*: smaller firms are riskier compared to larger firms and are therefore, expected to generate higher returns;
- 3) *The post-earnings announcement momentum*: share prices are expected to change and remain changed for a certain period of time following a good or bad public announcement; and
- 4) *The value effect*: P/ E ratio can be used to identify security mis-pricings.

### 3.3. Leading indicators

Leading Economic Indicators (LEI) were founded in 1937 as a part of a research program at the National Bureau of Economic Research (NBER) (Stock and Watson, 1989). Cho (2001), defines a LEI as a “series that changes before the major change in an aggregate economic activity”. According to Stock and Watson (1989), the “traditional role of the Leading Economic Indicators [LEI] has been to signal future recessions and recoveries”. Diebold and Rudebusch (1989), suggests that LEI should be used to predict booms during expansionary phases and depressions during contractionary phases. Lahiri and Moore (1992), explain that LEI signal future recessions and recoveries by predicting changes in the level of economic activity in a given business cycle at least 3 months in advance. Zamowitz and Boschan (1975), also highlight the fact that while “recurrent, the business cycles of experience are definitely non-periodic; that is, their duration varies greatly, but they are sufficiently long to permit cumulative movements to develop both downward and upward directions, which normally requires several years”.

This component of technical analysis makes forecasts based on the current economic phase by using LEI to observe recurrent patterns in business cycles (Lahiri and Moore, 1992). LEI, like most forms of speculation, do not always provide accurate forecasts in terms of the direction the general economy is headed (Estrella and Mishkin, 1998). According to Akintoye, Bowen and Hardcastle (1998), a LEI is only useful to the extent that it is able to consistently precede changes in prices. McGuckin, Ozyildirim and Zarnowitz (2001), highlight that LEI often lack accuracy,



due to the tendency of forecasters to prefer complete over timely information. Chauvet (1998), suggests that in “order for leading indicators to be promptly available as demanded for real time business prediction, they are first released based on preliminary and incomplete information, as in the case of the Composite Index of Leading Indicators (CLI)”. Even though Ozyildirim, Schaitkin and Zarnowitz (2010), submit that LEI can be used to predict turning points in business cycles, Diebold and Rudebusch (1989) highlight the fact that LEI are limited in terms of predicting changes in numerical values.

This implies that a quantitative assessment of business cycles offers no more predictive value than a qualitative assessment of business cycles, provided that both assessments are able to accurately predict the general direction at which the economy is headed. Furthermore, Chapter 2 of this paper depicted systematic risk as a product of changes in market conditions (Gitman, and Zutter, 2012). Thus, since social, political, technological and environmental changes affect market conditions and consequently market risk, this study will not confine its assessment of systematic risk to economic factors. This implies that both LEI and LNEI will be used conjunctively as a means of qualitatively assessing the potential impact bad public announcements pertaining to the performance of LEI and LNEI had on the US’ level of investor confidence at least 3 months before the 1929 and 2008 stock market crashes (Lahiri and Moore, 1992).

### 3.4. Application

This study seeks to resolve the contention created by these two polarising theories by using the following criterion based on EMT premises to assess whether the data produced by this study either aligns with the EMT or (in the case of default) the BFT:

#### **EMT premise 1: all information is swiftly reflected in market prices**

*Criterion 1: asks whether the total predictive capacity of the 10 leading indicators remain constant in 1929 and 2008.*

- *EMT alignment:* If the answer is, yes.
- *BFT alignment:* If the answer is, no.

## EMT premise 2: changes in market prices follow a random walk

*Criterion 2: asks whether more than half of the 10 leading indicators have a total average predictive capacity that is greater than 2.5 between 1929 and 2008.*

- *EMT alignment:* If the answer is, no.
- *BFT alignment:* If the answer is, yes.

**Table 1: Demonstrates how the predictive capacity and the average predictive capacity of the 10 leading indicators will be measured using frequency and average frequency.**

Leading Indicators	Frequency		Average frequency
	1929	2008	1929 - 2008
<b>Leading Economic Indicators</b>			
Building permits	x	x	$\frac{x+x}{2}$
Housing market	x	x	$\frac{x+x}{2}$
Manufacturing activity	x	x	$\frac{x+x}{2}$
Money supply	x	x	$\frac{x+x}{2}$
New business start-ups	x	x	$\frac{x+x}{2}$
Stock market	x	x	$\frac{x+x}{2}$
<b>Leading Non-economic Indicators</b>			
International trading relations	x	x	$\frac{x+x}{2}$
Climate change	x	x	$\frac{x+x}{2}$
Technological innovation	x	x	$\frac{x+x}{2}$
Level of crime	x	x	$\frac{x+x}{2}$
<b>Total predictive capacity and average predictive capacity</b>	<b>xx</b>	<b>xx</b>	$\frac{xx+xx}{100}$

**Table 1** above demonstrates how the predictive capacity and the average predictive capacity of the 10 leading indicators will be measured using frequency and average frequency, respectively. Since this study relies on 5 sources of data to verify the poor performance of each leading indicator before both the 1929 and the 2008 stock market crashes, the leading indicator that has a frequency of 5 will be more likely to have a strong predictive capacity, while that which has a frequency of zero will be more likely to have a weak predictive capacity.

Furthermore, since this study relies on 5 sources of data to verify the poor performance of each leading indicator before both global financial crises, the leading indicator that has an average frequency of 5 is more likely to predict global financial crises consistently, while a leading indicator that has an average frequency of zero is less likely to predict global financial crises on a consistent basis.

Should the empirical findings of this study prove that: 1) the total frequency of sources verifying the poor performance of the 10 leading indicators remained constant in 1929 and 2008; and 2) more than half of the 10 leading indicators have an average frequency that is less than 2.5, the first and second premise of the EMT will not only be approved, but EMT implications will be used to explain the potential impact bad public announcements could have had on the level of investor confidence before the 1929 Great Depression and the 2008 Global Financial Crisis (Diebold and Rudebusch, 1989, Klein and Moore, 1983).

According to Wen-Chen and Ku-Jun (2005), the EMT has profound implications, the most important being that changes in stock prices are:

1. Dependent on changes in market conditions; and
2. Independent of changes in investor reaction to changes in market conditions.

This would in essence suggest that changes in stock prices had little to do with how investors responded to bad public announcements and more to do with the content that the bad public announcements actually held. Thus, the 1929 Great Depression and the 2008 Global Financial Crisis could be explained using the EMT which suggests that global financial crises are a product of the efficient market restoring overvalued security prices back to equilibrium and not a result of investors behaving irrationally in response to their observations of unfavourable public announcements.

However, should the empirical findings of this study prove that: 1) the total frequency of sources verifying the poor performance of the 10 leading indicators did not remain constant in 1929 and 2008; and 2) more than half of the leading indicators had an average frequency that is greater than 2.5, the first and second premise of the EMT will be disproved and BFT implications will instead be used to explain the potential impact bad public announcements had on the level of investor confidence before the 1929 Great Depression and the 2008 Global Financial Crisis (Diebold and Rudebusch, 1989, Klein and Moore, 1983).

According to Olsen (1998), the BFT has profound implications, the most important being that changes in stock prices are:

1. Dependent on changes in investor reaction to changes in market conditions; and
2. Independent of changes in market conditions.

This would imply that changes in stock prices had more to do with how investors responded to bad public announcements and little to do with the actual content that the bad public announcements held. Thus, the 1929 Great Depression and the 2008 Global Financial Crisis could be explained using the BFT which suggests that global financial crises are a product of investors behaving irrationally in response to their observations of unfavourable public announcements and not a product of an efficient market restoring overvalued security prices back to equilibrium

### 3.5. Conclusion

EMT and BFT are two theoretical frameworks that will be used in this study as a means of understanding how security markets inherently operate. An extended theoretical framework based on 6 NBER-based leading economic indicators (LEI) and 4 systematic risk-based leading non-economic indicators (LNEI) will be adopted in this study as a means of finding measures that can be used to predict global financial crises (Stock and Watson, 1989, Gitman and Zutter, 2012). The application of the theoretical framework and the extended theoretical framework was provided before concluding this chapter.

## 4. Research methodology

### 4.1. Introduction

The research question of this paper asks: What potential impact did bad public announcements have on the level of investor confidence before the 1929 Great Depression and the 2008 Global Financial Crisis? The focus of this chapter will be to describe and justify the philosophy, approach, method, procedure and sample data that will be used to produce the findings of this study. An interpretive paradigm based on symbolic interactionism will be employed to facilitate an inductive approach of analysing qualitative data. Grounded theory will be used to guide the procedure for data analysis. The Glaserian grounded theory procedure for data analysis is divided into four phases: 1) coding, 2) theoretical sampling, 3) writing; and 4) developing theory. The sample data of this study will comprise of bad public announcements that have been extracted from 40 books and 60 journal articles using 6 NBER-based leading economic indicators (LEI) and 4 systematic risk-based leading non-economic indicators (LNEI).

### 4.2. Research philosophy

A domain ontology based on an objectivist approach will be used as a basis for formulating assumptions pertaining to the notion concerning how financial markets inherently operate in the field of Finance and Investments (Kaiya and Saeki, 2006). An ontology is a philosophical study of the existence of reality (Gruber, 1993). While positivists believe that reality is constructed by “publicly observable and replicable facts”, constructivists argue that “any science of man that ignores [subjective] meaning and purpose is not a social science”. Consequently, many researchers find themselves divided between giving terms related to their field of expertise objective or subjective interpretations - the decision of which influences the research approach and research method that the researcher will use in their study. Since one of the main objectives of this study is to predict global financial crises, a domain ontology based on an objectivist approach will be used as a basis for formulating assumptions concerning how financial markets inherently operate in the field of Finance and Investments using EMT and/ or BFT. Noy and McGuinness (2001), state that the purpose of domain ontologies is to provide interpretations for terms used in a specific field. Hence, a domain ontology based on EMT and/ or BFT will be used in this study to not only establish whether global financial crises are a product of an efficient and/ or an inefficient market,



but to also ascertain whether leading indicators can be used to reach the end that this study seeks to achieve.

A constructivist epistemology based on correspondence theory will be used in this study to facilitate the process of understanding the potential impact that bad public announcements had on the level of investor confidence prior to the onset of the 1929 Great Depression and the 2008 Global Financial Crisis. Muis, Bendixen and Haerle (2006), state that researchers have not only used epistemology to gain understanding of the origins of different worldviews within their respective fields, but epistemologies have also been used to gain perspective regarding the thought processes individuals undergo before adopting a given worldview. While Arner (1972) defines an epistemology as a philosophical study of: existing knowledge, the possible reasons certain individuals hold existing knowledge to be true and the extent to which these individuals hold the existing knowledge to be true, Matthias (2005) simply defines an epistemology as the study of knowledge and justified belief. Honderich (1995), believes that knowledge can be acquired through sensation, memory, introspection and/ or reason. Nonetheless Tan (2006), suggests that the belief held in knowledge will only be justified to the extent that the knowledge is true.

According to Lehrer (1990), there are three main theories that describe the instance a belief in given knowledge is justifiable: 1) correspondence theory, 2) coherence theory; and 3) pragmatic theory. According to Tan (2006), the correspondence theory of truth requires knowledge to correspond with a “fact, some situation or a state of affairs” in order for an individual’s belief in his/ her truth to be considered justifiable. On the contrary, an individual’s belief in existing knowledge is only justifiable according to the coherence theory if the belief is consistent with the other beliefs that the individual holds and the belief either strengthens or reinforces the other beliefs that the individual holds (Tan, 2006). Antagonistically, the pragmatic theory submits that a belief in existing knowledge is only justifiable to the extent that it has been successfully applied in practice (Tan, 2006). Since this paper seeks to use qualitative data to infer whether leading indicators can be used to predict global financial crises, an epistemology based on correspondence theory will be employed as a basis upon which assumptions pertaining to this study will be formulated.

Symbolic interactionism is the interpretive paradigm that will be used in this study to interpret the meaning that US investors gave to bad public announcements before the 1929 Great Depression

and the 2008 Global Financial Crisis. Herbert Blumer designed symbolic interactionism in 1969 as a means of developing a theoretical framework that researchers can use to subjectively examine the extent to which individuals influence each other's conduct on a micro-level (Chamberlain-Salaun, Mills and Usher, 2013). According to Aldiabat and Navenec (2011), researchers have used symbolic interactionism not only as a means understanding how individuals perceive the world, but also as a means of understanding the thought processes individuals undergo prior to adopting a certain worldly outlook. This research philosophy differs from the traditional positivist approach which objectively examines the impact various institutional bodies have on individuals on a macro-level (Carter and Fuller, 2015).

Blumer (1986), formulated three premises to describe how society operates on a micro-level:

“[1] human beings act towards things on the basis of the meanings that the things have for them”;

According to Aldiabat and Navenec (2011), the first premise implies that human behaviour is a product of the meaning a given symbol has for the individual within a given context. For example, the term “phone” is likely to be perceived by students as an educational tool instead of a tool that can be used for entertainment purposes if a professor explicitly permits students to use their phones in a classroom setting (Aksan, Kısac, Aydın and Demirbuken, 2009).

“[2] the meaning of such things is derived from, or arises out of, the social interaction that one has with one's fellows”;

According to Aldiabat and Navenec (2011), the second premise implies that symbolic meanings are a product of human interaction and not a product of the inherent meaning a given symbol holds. For example, if the utilisation of phones for entertainment purposes was prohibited, while the use of phones for educational purposes was simultaneously permitted within a classroom setting, some students (irrespective of the restriction that prohibits the use of phones) are likely to use their phones secretly in a classroom environment as a result of what Aldiabat and Navenec (2011) describe as “a complex interpretive and interaction process with self, others, and [entertainment].”

“[3] these meanings are handled in, and modified through, an interpretive process used by the person in dealing with the things he encounters”

According to Solomon (1983), the third premise implies that “people interpret the actions of others rather than simply reacting to them”. Lauer and Handel (1977), state that an individual’s interpretation of a given symbol is a product of their own interpretations of a given symbol - adjusted by how the individual interprets the actions of others. For example, students who use their phones secretly for entertainment purposes (against the restriction that prohibits them from using their phones) are likely to act according to the extent to which their interpretation of other students’ disobedience aligns to their personal desire to disobey (Aldiabat and Navenec, 2011).

Symbolic interactionism encourages researchers to “stand in the shoes” or “look through the eyes” of the subjects of their study in order to obtain a near-complete understanding of how their subjects perceive the world (Taylor and Medina, 2011). Thus, this study will use symbolic interactionism as a means of establishing the impact that bad public announcements had on the level of investor confidence before the 1929 Great Depression and the 2008 Global Financial Crisis by interpreting the meaning US investors gave to bad public announcements using codified instead of actual interpretations of leading indicators. This will be done to establish whether EMT and/ or BFT implications can be used to explain the potential impact bad public announcements had on the level of investor confidence before the 1929 Great Depression and the 2008 Global Financial Crisis.

An axiology based on a constructivist perspective will be used to make provision for the researchers’ personal values and ethics to play some if not a minor role in the scientific process of this study. An axiology is a philosophical study of the nature of value and ethics (Schroeder, 2008). Axiology addresses questions related to what is valued and considered to be desirable or good for humans and society. According to Killam (2013), axiology is used by researchers to disclose the possible extent to which their personal values and ethics have influenced their chosen research process. While positivists believe that “one’s values, hopes, expectations, and feelings have no place in scientific inquiry”, constructivists believe that “the researcher’s values and lived experience cannot be divorced from the research process” (Ponterotto, 2005). The scope of the axiology used in this study will be disclosed and discussed in the limitations of this study (see **Chapter 7**).

### 4.3. Research approach

Descriptive research will be used in this study to determine the extent to which leading indicators can be used to predict global financial crises. According to Nassaji (2015), the purpose of a descriptive research is to describe the nature of a given phenomenon. Kothari (2004), states that descriptive researches are mainly characterised by the restriction placed on researchers to describe the findings of their study, without manipulating or fabricating the variables used in their research. According to Koh and Owen (2000), researchers have conducted descriptive research in a vast number of fields as a means of solving problems and/ or enhancing solutions that exist in practice.

Inductive reasoning will be employed in this study in order to gain understanding of the extent to which the level of investor confidence in the US was affected by bad public announcements before both the 1929 Great Depression and the 2008 Global Financial Crisis. Even though inductive approaches are mainly used in health and social sciences, inductive reasoning will be applied in this study as a means of approving and/ or disproving existing theories regarding investor behaviour using raw data - whilst avoiding rigid research methodologies (Thomas, 2003). Arthur (1994), states that studies which make use of inductive forms of reasoning follow a broad to narrow approach. This allows researchers to transform a general hypothesis into one that is more specific by the end of the research project (Soiferman, 2010).

Qualitative data extracted from books and journal articles will be used in this study as a means of constructing a theory describing how financial markets are inherently presumed to operate. Denzin and Lincoln (2008), state that a host of research philosophies are associated with the term “qualitative research”. According to Creswell and Creswell (2017), researchers who follow qualitative approaches usually rely on constructivist perspectives as a basis for formulating knowledge claims. Newman, Benz and Ridenour (1998), adds that “the qualitative, naturalist approach is used when observing and interpreting reality with the aim of developing a theory that explains what was experienced”.

According to Creswell and Creswell (2017), a notable advantage that qualitative studies possess over quantitative studies is centered on their ability to allow researchers who have very little working knowledge regarding their respective subjects of interest to immerse themselves in their studies, without having to follow rigid methods that hamper innovative and creative thinking.



Rahman (2017), also notes that qualitative studies are capable of producing solutions that are more effective compared to quantitative studies in fields that deal directly with people design, administrative and linguistic fields - particularly in an environment where people are encouraged to share their feelings, opinions and experiences.

Nonetheless, quantitative studies are perceived to be more reliable compared to qualitative studies (Lune and Berg, 2016). Harry and Lipsky (2014), attribute the lack of credibility of qualitative studies to the use of sample sizes that are too small to accurately represent the population. According to Marshall (1996), qualitative researchers often rely on smaller sample sizes as they are “least costly to the researcher, in terms of time, effort and money”. Qualitative researches are also known for containing greater levels of biases compared to quantitative researches (Bryman, 2006). Collier and Mahoney (1996), particularly warn researchers who undertake qualitative studies to avoid selection biases, as such biases carry serious potential of undermining the credibility of their work. Heckman (1979), believes that selection biases occur when qualitative researchers fail to employ random methods of collecting data. Since, this study seeks to enhance most of the advantages that qualitative studies offer and mitigate most if not all their disadvantages, purposive sampling will be employed to achieve this object.

Purposive sampling will be used in this study to ascertain whether leading indicators have sufficient predictive capacity to foresee a global financial crisis prior to its onset. According to Morse (1991), purposeful sampling is a non-randomised sampling technique that is designed to satisfy the informational objectives of a study. Purposive sampling involves identifying and selecting information that is relevant to the social phenomenon being described (Palinkas, Horwitz, Green, Wisdom, Duan and Hoagwood, 2015). Although bias is inevitable in purposive sampling, Patton (2002) suggests that “random sampling, even of small samples, will substantially increase the credibility of the results”.

#### 4.4. Research tool

Atlas.ti 8.4 is a computerised software that will be used as a tool to facilitate the process of data collection and data analysis (Muhr, 1991). Atlas.ti has often been used by researchers as a means of analysing and interpreting data in textual, audio and/ or visual form (Smit, 2002). According to Albertus (2016), this research instrument analyses data collected from a wide range of sources in



a manner that is cost-effective and allows the researcher to not only compare data, but to draw logical inferences pertaining to the data. This research tool is accordingly suitable for comparing data which will be extracted from textual books and journal articles pertaining to the 1929 Great Depression and the 2008 Global Financial Crisis.

#### 4.5. Research method

Grounded theory will be used in this study to construct a hypothesis regarding the potential impact bad public announcements had on the level of investor confidence before the 1929 Great Depression and the 2008 Global Financial Crisis. Grounded theory is a research method that allows researchers to systematically and simultaneously collect and analyse data in a manner that grounds the theory constructed in the data produced by the empirical findings of a study (Charmaz and Belgrave, 2007). Barney Glaser and Anselm Strauss developed grounded theory in 1967 in a book titled “The Discovery of Grounded Theory”, as a means of “closing the embarrassing gap between theory and empirical research” (Strauss and Corbin, 1994). This research method was designed at a time when researchers relied on reason instead of evidence to substantiate their work (Levers, 2013). According to Charmaz (1983), “It was written largely as a protest against what they viewed as a rather passive acceptance that all the “great” theories had been discovered and that the role of research lay in testing these theories through quantitative “scientific” procedures”.

Grounded theory is a popular research method that has been used by researchers to conduct inquiries into a host of different social phenomena (Charmaz, 2014). This research method allows researchers to integrate the strengths inherent in quantitative methods with those inherent in qualitative methods (Walker & Myrick, 2006). Although Suddaby (2006), warns against the impracticalities associated with applying grounded theory in a generic fashion that makes excessive use of positivistic connotations, Charmaz and Belgrave (2007) states that “grounded theory methods are suitable for studying individual processes, interpersonal relations and the reciprocal effects between individuals and larger social processes.”

The primary factor that distinguishes grounded theory from other research methods is its inductive approach of theory development (Strauss and Corbin, 1994). The inductive nature of this research technique allows the researcher to intuitively develop his/ her theory as he/ she collects data (Strauss and Corbin, 1994). Grounded theory’s intuitive appeal lies in its ability to facilitate

creative and innovative thinking by providing researchers with flexible guidelines that are easy to follow (Charmaz, 2006). According to Charmaz and Belgrave (2007), grounded theory provides a general, yet systematic procedure that can be used to capture the meanings research participants give to various terms by bridging interpretive analysis with positivist assumptions. This is especially effective in promoting objectivity by eliminating extreme biases that are inherent in qualitative studies which excessively rely on secondary sources of data to support their arguments (Cox, Martin, Van Staa, Garbe, Siebert and Johnson, 2009).

Another important factor that distinguishes grounded theory from other research methods lies in the fact that it “allows for multiple data sources which may include interviews, observation of behaviour, and published reports” (Goulding, 1998). Charmaz (2006), suggests that multiple data sources provide researchers with “rich data [that] will enable the researcher to develop analytic categories that facilitates the comparison of data in order to percolate new ideas”. According to Hussein, Hirst, Salyers and Osuji (2014), rich data allows the researcher to gain an in-depth understanding of the constructs of a given social phenomenon.

However, a well-known limitation of grounded theory lies in the difficulty associated with conceptualising the precise factors that the researcher needs to investigate in order to prove that a given phenomenon exists (Rennie, Phillips and Quartaro, 1988). According to Hussein, Hirst, Salyers and Osuji (2014), “novice researchers may become so hindered and absorbed with the coding process that they may lose sight of accomplishing the task of discovering the ideas and themes that emerge from the data”. Annells (1996), warns that the process of “fine-tuning” codes and code groups could take several months, if the research lacks direction and focus.

Another common shortcoming that researchers experience when employing grounded theory as a research method lies in the temptation to use purposeful samples instead of theoretical samples to approve or disprove a given phenomenon (Charmaz, 1990). However, Hussein, Hirst, Salyers and Osuji (2014), suggest that this problem can be resolved by reverting the purposeful samples into theoretical samples by way of repeating the merged processes of sampling, data collection and data analysis until the researcher is unable to generate new information.

#### 4.6. Procedure for data analysis

Barney Glaser and Anselm Strauss developed two generally accepted, but conflicting methodological procedures that have been applied by qualitative researchers who have used grounded theory as a research method in their studies (for example, see Walker and Myrick, 2006). Heath and Cowley (2004), suggest that Glaser's methodological procedure should be followed when the researcher employs inductive reasoning, while researchers who employ deductive reasoning should employ Strauss' methodological procedure. Since this study employs inductive reasoning, Glaser's methodological procedure for data collection and data analysis will be employed.

Glaser's methodological procedure for data collection and data analysis that will be employed in this study is divided into four stages: 1) coding, 2) theoretical sampling, 3) writing; and 4) developing theory (Van Niekerk and Roode, 2009).

##### 4.6.1. Coding

1. The first step in the coding process requires the researcher to search for repetitive concepts from existing literature using a function referred to as open coding on Atlas.ti 8.4.
2. The second step in the coding process requires the researcher to selectively code the most recurrent concepts by giving each code a narrow interpretation that acts as a criterion for data assessment (see **Table 2** below).
3. The third step in the coding process requires the researcher to create a duplicate code for each leading indicator in order to individually examine the predictive capacity and the consistency at which each leading indicator is able to predict both the 1929 Great Depression and the 2008 Global Financial Crisis.
4. The fourth step in the coding process requires the researcher to organise the selected codes into LEI and LNEI that are also referred to as code groups on Atlas.ti 8.4 (see **Table 1** above)

##### 4.6.2. Theoretical sampling

1. The first step in the theoretical sampling process requires the researcher to simultaneously collect and analyse data relating to the codes selected for the study from books and journal articles using quoting, note-taking and memoing functions provided by Atlas.ti 8.4. The

process of collecting data requires the researcher to simultaneously use Google Scholar and Atlas.ti 8.4 to randomly select and analyse books and journal articles that contain keywords extracted from the coded interpretations of the leading indicators in their respective titles or abstracts as data for the study. For example, the building permit LEI coded interpretation is: "the number of building permits issued by the government in the US 3 - 8 months before the 1929 and 2008 stock market crashes". The keywords that will be used to find the data will be "1929 Great Depression building permits" or "2008 Global Financial Crisis building permits". Each LEI and LNEI should contain at least 5 sources verifying the poor performance of each leading indicator before both the 1929 and the 2008 stock market crashes.

2. The second step in the theoretical sampling process requires the researcher to continue the process of analysing by imputing every code as a search term in each document as a means of efficiently extracting relevant information pertaining to whether the various codes align to the narrow interpretation given to them in the previous stage. Each search term should be analysed extensively not only within the context of the given document, but also against other documents pertaining to the study to prevent misinterpreting the data.
3. The third step in the theoretical sampling process requires the researcher to record the frequency at which the information retrieved from the data aligns to the narrow interpretation given to it in the coding stage. **Table 3** below shows how the predictive capacity of the 10 leading indicators will be measured using frequency. Since this study relies on 5 sources of data to verify the poor performance of each leading indicator before both the 1929 and the 2008 stock market crashes, the leading indicator that has a frequency of 5 will be more likely to have a strong predictive capacity, while that which has a frequency of zero will be more likely to have a weak predictive capacity.
4. The fourth step in the theoretical sampling process requires the researcher to find the average frequency at which the information retrieved from the data aligns to the narrow interpretation given to it in the coding stage. **Table 3** below shows how the average predictive capacity of the various leading indicators will be measured using average frequency. Since this study relies on 5 sources of data to verify the poor performance of each leading indicator before both global financial crises, the leading indicator that has an average frequency of 5 is more likely to predict global financial crises consistently, while



a leading indicator that has an average frequency of zero is less likely to predict global financial crises on a consistent basis

5. The final step in the theoretical sampling process requires the researcher to record the total predictive capacity as well as the total average predictive capacity of both the 1929 Great Depression and the 2008 Global Financial Crisis from the 40 books and 60 journal articles used in this study.

#### 4.6.3. Writing

1. The first step involved in the writing process requires the researcher to interpret the data recorded in **Table 3**. The researcher is expected to identify patterns and relationships derived from the theoretical samples during and after the process of data collection and analysis.
2. The second step involved in the writing process requires the researcher to use the criterion discussed in **Chapter 3** of this paper in order to explain why the data produced from the previous phases either align or do not align with EMT premises.

#### 4.6.4. Developing theory

1. The only step involved in the process of developing theory requires the researcher to use the refined data in conjunction with EMT and/ or BFT implications (see **Chapter 3**) as a basis for explaining the potential impact that bad public announcements had on the level of investor confidence before the 1929 Great Depression and the 2008 Global Financial Crisis.

#### 4.7. Sample data

The population of this study comprises of all LEI and LNEI that can be used to predict changes in the level of economic activity in any given country, over any given timeframe. Due to the fact that the number of LEI and LNEI is not a closed list, this study will confine its theoretical sample to leading indicators which have a predictive capacity of 3 - 8 months (De Leeuw, 1991). The 6 LEI that will be used in this study will be extracted from NBER's CLI based on data accessibility, while the 4 LNEI that will be used in this study will be selected based on the factors that influence systematic risk. Thus, bad public announcements pertaining to 6 NBER-based leading economic indicators (LEI) and 4 systematic risk-based leading non-economic indicators (LNEI) will be



coded and observed for 3 – 8 months before the 24<sup>th</sup> October 1929 and 29<sup>th</sup> September 2008 stock market crashes in order to investigate the potential impact bad public announcements had on the level of investor confidence before and during the 1929 Great Depression and the 2008 Global Financial Crisis (Lahiri and Moore, 1992).

The predictive capacity of the leading indicators will exclusively be observed in the US in order to determine whether a global financial crisis could have been predicted early enough to avoid the abnormal losses that were incurred during the 1929 Great Depression and the 2008 Global Financial Crisis. Data pertaining to the 6 NBER-based leading economic indicators (LEI) and 4 systematic risk-based leading non-economic indicators (LNEI) will be extracted from 40 books and 60 journal articles (Diebold and Rudebusch, 1989). Each LEI and LNEI will contain at least 5 sources per global financial crisis verifying the capacity of each leading indicator to predict the 1929 Great Depression and the 2008 Global Financial Crisis. Of the 5 sources, 2 will stem from books and 3 will stem from journal articles.

#### 4.8. Conclusion

This chapter focused on describing and justifying the philosophy, approach, method, procedure and sample data that will be used to produce the findings of this study. An interpretive paradigm based on symbolic interactionism will be employed to facilitate an inductive approach of analysing qualitative data. Grounded theory will be used to guide the procedure for data analysis. The Glaserian grounded theory procedure that will be used in this study for data analysis is divided into four phases: 1) coding, 2) theoretical sampling, 3) writing; and 4) developing theory. The sample data of this study will comprise of bad public announcements that have been extracted from 40 books and 60 journal articles using 6 NBER-based leading economic indicators (LEI) and 4 systematic risk-based leading non-economic indicators (LNEI).

## 5. Empirical findings

### 5.1. Introduction

The focus of this chapter will be to use the findings of this study as a means of establishing whether: 1) leading indicators have sufficient predictive capacities to predict global financial crises; and 2) the EMT and/ or the BFT best explain the potential impact bad public announcements had on the level of investor confidence before the 1929 Great Depression and the 2008 Global Financial Crisis. The predictive capacity of the leading indicators will be measured by giving each leading indicator: 1) a contextual description detailing how each leading indicator is applied in practice; and 2) a narrow interpretation that seeks to establish the instance upon which risk-averse investors would interpret the poor performance of a given leading indicator as a bad public announcement. The sufficiency of the predictive capacity of the 10 leading indicators will be measured by calculating the average frequency and the frequency differential of the 10 leading indicators. The applicability of the market efficiency and/ or inefficiency theory that best explain the potential impact that bad public announcements had on the level of investor confidence before the 1929 Great Depression and the 2008 Global Financial Crisis will be entirely based on whether the predictive capacity and average predictive capacity of the 10 leading indicators used in this study fulfill the pre-determined criteria established in **Chapter 3**.

### 5.2. Predictive capacity and average predictive capacity

**Table 2** below provides a preview of how this study attempts to qualitatively analyse systematic risk (Boyatzis, 1998, Crabtree and Miller, 1999). The codes created for each of the 10 leading indicators are briefly described below with the intent of establishing what a bad public announcement would constitute were risk-averse investors to interpret the performance of the various leading indicators.

**Table 2: Provides an interpretation of what would constitute a bad public announcement regarding the performance of each of the 10 leading indicators.**

<b>Leading Indicators</b>		
<b>Leading Economic Indicators</b>	<b>Bad public announcement</b>	<b>Criteria</b>
Building permits	Decrease	Number of building permits issued
Housing market	Decrease	Number of housing starts
Manufacturing activity	Decrease	Number of goods sold by manufacturers
Money supply	Decrease	Total value of money circulating the economy
New business start-ups	Decrease	Number of new business start-ups
Stock market	Increase	Stock price volatility
<b>Leading Non-economic Indicators</b>		
International trading relations	Increase	Number of trade restrictions passed
Climate change	Increase	Severity and/ or duration of extreme weather conditions or natural disasters
Technological innovation	Decrease	Demand for low-skilled workers
Level of crime	Increase	Number of fraud cases reported

**Table 3** below records the predictive capacity and the average predictive capacity of the 10 leading indicators and cites the sources extracted from Atlas.ti 8.4 (Albertus, Ngwenyama and Brown, 2015).

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**Table 3: Records the predictive capacity and the average predictive capacity of the 10 leading indicators and cites the sources extracted from Atlas. ti 8.4.**

Leading Indicators	Frequency				Average frequency
	1929	Source	2008	Source	1929 - 2008
<b>Leading Economic Indicators</b>					
Building permits	2	DOC= 62 76	0		1
Housing market	2	DOC= 57; 60	1	DOC= 187	1.5
Manufacturing activity	1	DOC= 64	0		0.5
Money supply	2	DOC= 68; 82	0		1
New business start-ups	0		0		0
Stock market	1	DOC= 87	0		0.5
<b>Leading Non-economic Indicators</b>					
International trading relations	0		0		0
Climate change	0		0		0
Technological innovation	0		0		0
Level of crime	0		0		0
<b>Total predictive capacity and average predictive capacity</b>	<b>8</b>		<b>1</b>		<b>0.09</b>

### 5.2.1. Building permits

The building permit LEI is concerned with how the number of building permits issued by the government per year in a given country can be used to predict changes in business cycles several months in advance (Stock and Watson, 1989). Dua, Miller and Smyth (1999), suggest that “the business cycle in the macro economy moves partly in response to housing-market activity - new home construction, renovations of existing properties, and volume of home sales - since the housing market represents such a large share of the macro economy”. According to Riggelman (1933), the number of building permits issued is usually reflective of the demand for buildings instead of the number of buildings started or completed. Romer (1993), explains that building activity is usually a strong indicator of the level of economic activity in the US, due to the US construction industry usually being the first to react to decreased levels of building activity before economic recessions.



Crossett, Culliton, Wiley and Goodspeed (2004), suggest that the number of building permits issued for single-family and multi-family housing can be used to track the region that is most responsible for economic growth. The term “building permit” involves obtaining permission to renovate existing private residential or non-residential buildings and/ or construct new residential or non-residential property (Cochran, Townsend, Reinhart and Heck, 2007). Since, the purpose of this study is to investigate the potential impact bad public announcements have on the level of investor confidence before the 1929 Great Depression and the 2008 Global Financial Crisis, the following interpretation will be given to the term “building permit”: A bad public announcement pertaining to the term "building permit" involves a decrease in the number of building permits issued by the government in the US 3 – 8 months before the 1929 and 2008 stock market crashes.

**Table 3** above shows that the frequency at which the building permit LEI was able to predict the 1929 and 2008 stock market crashes 3 – 8 months in advance was 2 and 0, respectively (**see Appendices**). This means that there are two sources that verified a decline in the number of building permits issued 3 - 8 months before the 1929 stock market crash and none that verified a decline in number of building permits issued 3 - 8 months before the 2008 stock market crash. The average predictive capacity of the building permit leading indicator is 1. Although the results of the average predictive capacity is significantly skewed to the left, the average predictive capacity of 1, nonetheless implies that were the building permit LEI to be observed in isolation, it would be considered to have insufficient predictive capacity, due to less than of half the sources used to measure the potential impact bad public announcements pertaining to the performance of building permits have on the level of investor confidence before the 1929 Great Depression and the 2008 Global Financial Crisis verifying this fact; and also due to the predictive capacity of the building permit leading indicator not remaining constant before both the 1929 and the 2008 stock market crashes.

### 5.2.2. Housing market

The housing market LEI is concerned with how the number of housing starts that have commenced per year in a given country can be used to predict changes in business cycles several months in advance (Ashuri, Shahandashti and Lu, 2012). Dua, Miller and Smyth (1999), explain that “housing starts are new private housing units started and come from various issues of the Survey of Current Business. This series differs from new building permits issued since it represents actual

home-building activity and not just the intention to build”. According to Joseph and Larrain (2012), housing starts is a strong LEI as a “collapse in residential housing market investments preceded most recessions dating back to the great depression”. Vargas-Silva (2008), suggests that this is usually because “housing starts respond negatively to monetary policy shocks”.

Housing starts affect the demand for both durable and non-durable goods (Dua, Miller and Smyth, 1999). Runeson (1988), believes that this is due to the fact that changes in building costs are positively correlated with changes in the prices of goods and services which are particularly sensitive to market conditions. Sari, Ewing and Aydin (2007), suggest that an increase in housing investment plays a significantly positive role in boosting the number of housing starts in a given economy. Since, the purpose of this study is to investigate the potential impact bad public announcements have on the level of investor confidence before the 1929 Great Depression and the 2008 Global Financial Crisis, the following interpretation will be given to the term “housing market”: A bad public announcement pertaining to the term "housing market" involves a decrease in the number of housing starts that have commenced in the US 3 – 8 months before the 1929 and 2008 stock market crashes.

**Table 3** above shows that the frequency at which the housing market LEI was able to predict the 1929 and 2008 stock market crashes 3 – 8 months in advance was 2 and 1, respectively (**see Appendices**). This means that there are twice as many sources verifying a decline in the number of housing starts that commenced 3 - 8 months before the 1929 stock market crash than the number of sources that verified a decline in the number of housing starts that commenced 3 - 8 months before the 2008 stock market crash. The average predictive capacity of the housing market leading indicator is 1.5. Although the results of the average predictive capacity of the housing market leading indicator is partly skewed to the left, the average predictive capacity of 1.5, nonetheless implies that were the housing market LEI to be observed in isolation, it would be considered to have insufficient predictive capacity, due to less than half the sources used to measure the potential impact bad public announcements pertaining to the performance of the housing market have on the level of investor confidence before the 1929 Great Depression and the 2008 Global Financial Crisis verifying this fact; and also due to the predictive capacity of the housing market leading indicator not remaining constant before both the 1929 and the 2008 stock market crashes.

### 5.2.3. Manufacturing activity

The manufacturing LEI is concerned with how the number of goods sold by manufacturers per year in a given country can be used to predict changes in business cycles several months in advance (Stock and Watson, 1989). Kauffman (1999), believes that manufacturing activity is a strong LEI because manufacturing activity was found to be twice as sensitive to changes in the level of economic activity compared to the GDP in his study. Bretz (1990), adds that manufacturing activity plays the biggest role in triggering business cycle fluctuations. Bildirici, Kayıkçı and Onat (2015), explain that “during economic growth, demand [for] raw materials increase[s] as production and investments [] increase”.

While Harris (1991) suggests that Purchasing Manager’s Index (PMI) should be used to measure the level of manufacturing activity in a given country, Graff and Etter (2004) suggests that collectively using “industry sales, production, orders and inventories” allows one to predict the level of manufacturing activity with greater accuracy as production levels do not always coincide with industry sales levels. Zamowitz and Boschan (1975), nonetheless emphasise that the products produced and orders made must be new to avoid double counting. Since, the purpose of this study is to investigate the potential impact bad public announcements have on the level of investor confidence before the 1929 Great Depression and the 2008 Global Financial Crisis, the following interpretation will be given to the term “manufacturing activity”: A bad public announcement pertaining to the term "manufacturing activity" involves a decrease in the number of goods sold by manufacturers in the US 3 – 8 months before the 1929 and 2008 stock market crashes.

**Table 3** above shows that the frequency at which the manufacturing activity LEI was able to predict the 1929 and 2008 stock market crashes 3 – 8 months in advance was 1 and 0, respectively (**see Appendices**). This means that there is one source that verified a decline in the number of goods sold by manufacturers 3 - 8 months before the 1929 stock market crash and none that verified a decline in number of goods sold by manufacturers 3 - 8 months before the 2008 stock market crash. Although the average predictive capacity of the manufacturing activity leading indicator is partly skewed to the left, the average predictive capacity of 0.5, nonetheless implies that were the manufacturing activity LEI to be observed in isolation, it would be considered to have insufficient predictive capacity, due to less than half the sources used to measure the potential impact bad public announcements pertaining to the level of manufacturing activity have on the

level of investor confidence before the 1929 Great Depression and the 2008 Global Financial Crisis verifying this fact; and due to the predictive capacity of the manufacturing activity leading indicator not remaining constant before the 1929 and the 2008 stock market crashes.

#### 5.2.4. Money supply

The money supply LEI is concerned with how the total value of money circulating the economy per year in a given country can be used to predict changes in business cycles several months in advance (Stock and Watson, 1989). Rozeff (1975), explains that “For many stock market analysts, money supply movements are now treated as superior indicators of trends in central bank monetary policy and are frequently interpreted as providing information about future stock price movements”. According to Chaudhuri and Smiles (2004), the real money supply is a macroeconomic variable used to measure the level of economic activity in a given country.

Although Yan-liang (2012) suggests that a “proper growth of money supply [] guarantee[s] proper economic growth”, Cover (1992) states that no deductive conclusion has been drawn from existing literature concerning whether money supply regulation has a positive or negative effect on the general level of economic activity of a given economy. Sargent and Wallace (1975), suggest that this is because “economic agents contract in nominal terms for periods longer than the time it takes the monetary authority to react to changing economic circumstances”. Since, the purpose of this study is to investigate the potential impact bad public announcements have on the level of investor confidence before the 1929 Great Depression and the 2008 Global Financial Crisis, the following interpretation will be given to the term “money supply”: A bad public announcement pertaining to the term "money supply" involves a decrease in the total value of money circulating the US economy 3 – 8 months before the 1929 and 2008 stock market crashes.

**Table 3** above shows that the frequency at which the money supply LEI was able to predict the 1929 and 2008 stock market crashes 3 – 8 months in advance was 2 and 0, respectively (**see Appendices**). This means that there are two sources that verified a decline in the total value of money circulating the US economy 3 - 8 months before the 1929 stock market crash and none that verified a decline in total value of money circulating the US economy 3 - 8 months before the 2008 stock market crash. The average predictive capacity of the money supply leading indicator is 1. Although the results of the average predictive capacity is significantly skewed to the left, the



average predictive capacity of 1, nonetheless implies that were the money supply LEI to be observed in isolation, it would be considered to have insufficient predictive capacity, due to less than half the sources used to measure the potential impact bad public announcements pertaining to money supply have on the level of investor confidence before the 1929 Great Depression and the 2008 Global Financial Crisis verifying this fact; and also due to the predictive capacity of the money supply leading indicator not remaining constant before both the 1929 and the 2008 stock market crashes.

#### 5.2.5. New business start-ups

The new business start-ups LEI is concerned with how the number of new business start-ups per year in a given country can be used to predict changes in business cycles several months in advance (Parker, Congregado and Golpe, 2012). Gries and Naudé (2009), defines entrepreneurship as the process of starting and maintaining a new business. Klapper, Love and Randall (2014), believe that new business formation can assist policymakers not only create employment, but also develop effective strategies that can be used to reduce the effects of economic recessions. Henderson (2002), states that “during the longest economic expansion in the United States economy, the majority of new jobs were created by small and medium-sized entrepreneurs operating high-growth businesses”.

According to Audretsch and Keilbach (2008), new knowledge derived from increased competition caused by new market entrants is the key factor that drives the level of economic activity. Acs and Szerb (2007), add that “innovations that now characterize modern life – the automobile, telephone, airplane, air conditioning, personal computer, most software and Internet search engines – were all developed and commercialized by entrepreneurs”. Since, the purpose of this study is to investigate the potential impact bad public announcements have on the level of investor confidence before the 1929 Great Depression and the 2008 Global Financial Crisis, the following interpretation will be given to the term “new business start-ups”: A bad public announcement pertaining to the term "new business start-ups" involves a decrease in the number of new business start-ups in the US 3 – 8 months before the 1929 and 2008 stock market crashes.

**Table 3** above shows that the frequency at which the new business start-ups LEI was able to predict the 1929 and 2008 stock market crashes 3 – 8 months in advance was 0 and 0, respectively. This



means that there are no sources that verified a decline in the number of new business start-ups 3 - 8 months before the 1929 or the 2008 stock market crashes. Not only do these results suggest that both the predictive capacity and the consistency at which the books and journal articles were able to predict both the 1929 and the 2008 stock market crashes are 0, but it also implies that the new business start-ups LEI has insufficient predictive capacity, due to less than half the sources used to measure the potential impact bad public announcements pertaining to number of new business start-ups have on the level of investor confidence before the 1929 Great Depression and the 2008 Global Financial Crisis verifying this fact; and also due to the predictive capacity of the new business start-up leading indicator remaining constant in being unable to predict the 1929 Great Depression and the 2008 Global Financial Crisis before both the 1929 and the 2008 stock market crashes.

#### 5.2.6. Stock market

The stock market LEI is concerned with how stock price volatility in a given country can be used to predict changes in business cycles several months in advance (Comincioli, 1996). According to Estrella & Mishkin (1998), “financial variables, such as the prices of financial instruments, are commonly associated with expectations of future economic events”. Chauvet (1998), believes that “contractions in the stock market usually begin some months before an economic recession and end before the trough, and, therefore, anticipate the economic recovery”.

While Hamilton and Lin (1996) suggest that short-term interest rates, spreads between risky and risk-free bonds and dividend yields can be used to predict stock return volatility, Chen (2009) suggests that expected investment, expected consumption and even certain industry portfolios can be used to predict stock market movements, due to the significant and positive relationship these factors have with stock market returns. According to Harvey (1989), the “Standard & Poor's 500 stock price index (S & P 500) carries an important weight in the Department of Commerce's widely quoted index of leading indicators”. Since, the purpose of this study is to investigate the potential impact bad public announcements have on the level of investor confidence before the 1929 Great Depression and the 2008 Global Financial Crisis, the following interpretation will be given to the term “stock market”: A bad public announcement pertaining to the term "stock market" involves an increase in US stock price volatility 3 – 8 months before the 1929 and 2008 stock market crashes.

**Table 3** above shows that the frequency at which the stock market LEI was able to predict the 1929 and 2008 stock market crashes 3 – 8 months in advance was 1 and 0, respectively (see **Appendices**). This means that there is one source that verified the increase in the volatility of stock prices 3 - 8 months before the 1929 stock market crash and none that verified the increase in the volatility of stock prices 3 - 8 months before the 2008 stock market crash. Although the average predictive capacity of the stock market leading indicator is partly skewed to the left, the average predictive capacity of 0.5, nonetheless implies that were the stock market LEI to be observed in isolation, it would be considered to have insufficient predictive capacity, due to less than half the sources used to measure the potential impact bad public announcements pertaining to the performance of the stock market have on the level of investor confidence before the 1929 Great Depression and the 2008 Global Financial Crisis verifying this fact; and due to the predictive capacity of the stock market leading indicator not remaining constant before the 1929 and the 2008 stock market crashes.

#### 5.2.7. International trading relations

The international trading relations LNEI is concerned with how the number of trade restrictions passed by a given country per year can be used to predict changes in business cycles several months in advance (Venter and Pretorius, 2004). According Yanikkaya (2003), most empirical growth studies have been able to prove that a positive relationship exists between economic growth and trade liberalisation. A report released by the Organisation for Economic Co-operation and Development (OCED), stated that “more open and outward oriented economies consistently outperform countries with restrictive trade and [foreign] investment regimes” (Rodriguez and Rodrik, 2000).

Lee (1993), suggests that “even a small government distortion in international transactions is shown in the model to substantially lower the productivity of capital and thus the growth rate over a long period”. Rodrik (2001), reasons that trade restrictions have the worst impact on developing countries because it prevents these countries from accessing technology and capital that promote rapid economic growth. Since, the purpose of this study is to investigate the potential impact bad public announcements have on the level of investor confidence before the 1929 Great Depression and the 2008 Global Financial Crisis, the following interpretation will be given to the term “international trading relations”: A bad public announcement pertaining to the term "international

trading relations" involves an increase in the number of trade restrictions passed by the US 3 – 8 months before the 1929 and 2008 stock market crashes.

**Table 3** above shows that the frequency at which the international trading relations LNEI was able to predict the 1929 and 2008 stock market crashes 3 – 8 months in advance was 0 and 0, respectively. This means that there are no sources that verified an increase in the number of trade restrictions passed 3 - 8 months before the 1929 or the 2008 stock market crashes. Not only do these results suggest that both the predictive capacity and the consistency at which the books and journal articles were able to predict both the 1929 and the 2008 stock market crashes are 0, but it also implies that the international trading relations LNEI has insufficient predictive capacity, due to less than half the sources used to measure the potential impact bad public announcements pertaining to international trading relations have on the level of investor confidence before the 1929 Great Depression and the 2008 Global Financial Crisis verifying this fact; and also due to the predictive capacity of the international trading relations leading indicator remaining consistent in its inability to predict the 1929 Great Depression and the 2008 Global Financial Crisis before the 1929 and the 2008 stock market crashes.

#### 5.2.8. Climate change

The climate change LNEI is concerned with how the severity and/ or duration of extreme weather conditions or natural disasters in a given country per year can be used to predict changes in business cycles several months in advance (Dell, Jones and Olken, 2008). According to Bloesch & Gourio (2015), “Extremes of temperature, dryness or humidity, and precipitation (rain or snow) make economic progress difficult for some countries in Africa and Asia. Closer to home, the Caribbean countries and Central America regularly experience hurricanes that destroy housing, infrastructure, and production capacity”. Koubi, Bernauer, Kalbhenn and Spilker (2012), explain that among “the wide range of negative effects, climate change tends to exacerbate the scarcity of important natural resources, such as freshwater, and it may trigger mass population dislocations (migration) due to extreme weather events, droughts, floods, desertification, and rising sea-levels”.

According to Fankhauser and Tol (2005), climate change is a significant LNEI as one can expect “forward-looking agents to change their savings behaviour in anticipation of future climate change”. Zenghelis (2006), suggests that this is due to the fact that both tangible and intangible

costs are associated with extreme weather conditions and/ or natural disasters. A study conducted by Dell, Jones and Olken (2008), specifically found that even though extreme climate changes had an insignificant impact on the productivity of most countries, it had a negative impact on the economic growth of poor countries. Since, the purpose of this study is to investigate the potential impact bad public announcements have on the level of investor confidence before the 1929 Great Depression and the 2008 Global Financial Crisis, the following interpretation will be given to the term “climate change”: A bad public announcement pertaining to the term "climate change" involves an increase in the severity and/ or duration of extreme weather conditions in the US 3 – 8 months before the 1929 and 2008 stock market crashes.

**Table 3** above shows that the frequency at which the climate change LNEI was able to predict the 1929 and 2008 stock market crashes 3 – 8 months in advance was 0 and 0, respectively. This means that there are no sources that verified an increase in extreme weather conditions or natural disasters 3 - 8 months before the 1929 or the 2008 stock market crashes. Not only do these results suggest both that the predictive capacity and the consistency at which the books and journal articles were able to predict both the 1929 and the 2008 stock market crashes are 0, but it also implies that the climate change LNEI has insufficient predictive capacity, due to less than half the sources used to measure the potential impact bad public announcements pertaining to the climatic conditions have on the level of investor confidence before the 1929 Great Depression and the 2008 Global Financial Crisis verifying this fact; and also due to the predictive capacity of the stock market leading indicator remaining constant in its inability to predict the 1929 Great Depression and the 2008 Global Financial Crisis before the 1929 and the 2008 stock market crashes.

#### 5.2.9. Technological innovation

The technological innovation LNEI is concerned with how the demand for low-skilled workers per year in a given country can be used to predict changes in business cycles several months in advance (Venter and Pretorius, 2004). Barnichon (2010), argues that “Since technology and aggregate demand shocks generate opposite co-movements in unemployment and productivity, a change in their relative importance could switch the sign of the unemployment-productivity correlation”. Acemoglu (2012), suggests that employing technology that can be used by low-skilled workers is the only way new technology can result in economic growth.



Marchant, Stevens and Hennessy (2014), state that over “the years, technology has consistently been a net enhancer of employment. Past innovations in industries such as the automobile, agricultural, chemical, energy, computer, and telecommunications sectors have sparked rapid growth in quality, gainful jobs”. According to Davis (1998), “technology has been identified as a key reason for the rising US wage inequality”. This is due to the fact that new technology offers higher wages in exchange for higher skill levels (Mincer and Danninger, 2000). Since, the purpose of this study is to investigate the potential impact bad public announcements have on the level of investor confidence before the 1929 Great Depression and the 2008 Global Financial Crisis, the following interpretation will be given to the term “technological innovation”: A bad public announcement pertaining to the term "technological innovation" involves a decrease in the demand for low-skilled workers in the US 3 – 8 months before the 1929 and 2008 stock market crashes.

**Table 3** above shows that the frequency at which the technological innovation LNEI was able to predict the 1929 and 2008 stock market crashes 3 – 8 months in advance was 0 and 0, respectively. This means that there are no sources that verified a decline in the demand for unskilled labour 3 - 8 months before the 1929 or the 2008 stock market crashes. Not only do these results suggest that the predictive capacity and the consistency at which the books and journal articles were able to predict both the 1929 and the 2008 stock market crashes are 0, but it also implies that the technological innovation LNEI has insufficient predictive capacity, due to less than half the sources used to measure the potential impact bad public announcements pertaining to technological innovation have on the level of investor confidence before the 1929 Great Depression and the 2008 Global Financial Crisis verifying this fact; and also due to the predictive capacity of the technological innovation leading indicator remaining constant in being unable to predict the 1929 Great Depression the 2008 Global Financial Crisis before the 1929 and the 2008 stock market crashes.

#### 5.2.10. Level of crime

The level of crime LNEI is concerned with how the number of fraud cases reported per year in a given country can be used to predict changes in business cycles several months in advance (Cantor and Land, 1985). According to Bănărescu (2015), fraud “involves inclusively significant financial risks which may threaten profitability, and the image of an economic entity”. Hulsart, James and Cummings (2012), defines fraud as the instance upon which one misinterprets him/ herself to

another with the intention of gaining advantage. Tsalikis (2011), notes that large-scale “empirical studies of the relationship between profitability and ethics at the firm level have shown mixed results. But none have found a negative correlation between a firm’s ethical practices and profits. Moreover, ethical firms also tend to perform better in the stock market”.

Levi and Smith (2011), explains that the level of crime is a significant LNEI because it holds the potential to influence an investor’s ability to make rational decisions. According to Pontell, Black and Geis (2014), “control fraud, unchecked, widespread, and endemic to the economy, can hyper-inflate financial bubbles that eventually result in systemic crises”. Since, the purpose of this study is to investigate the potential impact bad public announcements have on the level of investor confidence before the 1929 Great Depression and the 2008 Global Financial Crisis, the following interpretation will be given to the term “level of crime”: A bad public announcement pertaining to the term "level of crime" involves an increase in the number of fraud cases reported in the US 3 – 8 months before the 1929 and 2008 stock market crashes.

**Table 3** above shows that the frequency at which the level of crime LNEI was able to predict the 1929 and 2008 stock market crashes 3 – 8 months in advance was 0 and 0, respectively. This means that there are no sources that verified a decline in the number of fraud cases reported 3 - 8 months before the 1929 or the 2008 stock market crashes. Not only do these results suggest that the predictive capacity and the consistency at which the books and journal articles were able to predict both the 1929 and the 2008 stock market crashes are 0, but it also implies that the level of crime LNEI has insufficient predictive capacity, due to less than half the sources used to measure the potential impact bad public announcements pertaining to the level of crime have on the level of investor confidence before the 1929 Great Depression and the 2008 Global Financial Crisis verifying this fact; and also due to the fact that the predictive capacity of the level of crime leading indicator remained constant in its inability to predict the 1929 Great Depression and the 2008 Global Financial Crisis before the 1929 and the 2008 stock market crashes.

### 5.3. Applicable market efficiency and/ or inefficiency theory

#### 5.3.1. Total predictive capacity

##### **EMT premise 1: all information is swiftly reflected in market prices**

*Criterion 1: asks whether the total predictive capacity of the 10 leading indicators remain constant in 1929 and 2008.*

- *EMT alignment:* If the answer is, yes.
- *BFT alignment:* If the answer is, no.

**Table 3** above shows that the total predictive capacity at which the 10 leading indicators were able to predict the 1929 and 2008 stock market crashes are 8 out of 50 and 1 out of 50, respectively. Despite **Table 3** above suggesting that the 10 leading indicators would be 8 times more likely to accurately predict the 1929 Great Depression compared to the 2008 Global Financial Crisis were these 10 leading indicators to be assessed collectively, it also implies that the 10 leading indicators used in this study possessed inconsistent degrees of usefulness in predicting a global financial crisis 3 – 8 months in advance between 1929 and 2008. Thus, a fair portion the data produced by this study is aligned with BFT.

#### 5.3.2. Total average predictive capacity

##### **EMT premise 2: changes in market prices follow a random walk**

*Criterion 2: asks whether more than half of the 10 leading indicators have a total average predictive capacity that is greater than 2.5 between 1929 and 2008.*

- *EMT alignment:* If the answer is, no.
- *BFT alignment:* If the answer is, yes.

**Table 3** above shows that the total average predictive capacity of the 10 leading indicators that were used in this study is 0.09. This not only implies that none of the 10 leading indicators could be considered to have sufficient predictive capacity were they to be observed collectively, but at most 3 out of the 10 leading indicators would have an average predictive capacity that is greater than the total average predictive capacity. Nonetheless, since the total average predictive capacity

of 0.09 is less than and a mere fraction of the pre-determined total average predictive capacity of 2.5, the remaining portion of the data is aligned with EMT.

#### 5.4. Conclusion

The focus of this chapter was to use the findings of this study as a means of establishing whether: 1) leading indicators have sufficient predictive capacities to predict global financial crises; and 2) the EMT and/ or the BFT best explain the potential impact bad public announcements had on the level of investor confidence before the 1929 Great Depression and the 2008 Global Financial Crisis. The predictive capacities of the leading indicators were measured by giving each leading indicator: 1) a contextual description detailing how it is applied practice; and 2) a narrow interpretation that seeks to establish the instance upon which risk-averse investors would interpret the poor performance of a given leading indicator as a bad public announcement. The sufficiency of the predictive capacity of the 10 leading indicators was measured by calculating the average frequency and the frequency differential of the 10 leading indicators. The applicability of the market efficiency and /or inefficiency theory that best explain the potential impact that bad public announcements had on the level of investor confidence before the 1929 Great Depression and the 2008 Global Financial Crisis was entirely based on whether the total predictive capacity and the total average predictive capacity of the 10 leading indicators fulfilled the pre-determined criteria established in **Chapter 3**.

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## 6. Discussion

### 6.1. Introduction

The focus of this chapter will be to use both EMT and/ or BFT implications (where applicable) to develop a theory regarding: 1) the potential impact bad public announcements had on the level of investor confidence before the 1929 Great Depression and the 2008 Global Financial Crisis; and 2) the extent to which leading indicators can be used to predict global financial crises 3 – 8 months in advance. This will be done by providing possible reasons why EMT premises discussed in detail in **Chapter 3**, were either approved or dismissed by the literature and/ or the empirical findings of this study. The implications of the EMT and/ or the BFT discussed in **Chapter 3** will then be used (where applicable) as the foundation for formulating a theory regarding: 1) the potential impact bad public announcements had on the level of investor confidence before the 1929 Great Depression and the 2008 Global Financial Crisis; and 2) the extent to which leading indicators can be used to predict global financial crises 3 – 8 months in advance.

### 6.2. EMT premises

#### 6.2.1. All information is swiftly reflected in market prices

The empirical findings produced in **Chapter 5** dismissed the EMT premise that all information is swiftly reflected in market prices, due to the criteria of consistency not being satisfied. In other words, the term “swiftly” was proven to carry a subjective meaning as a result of the inconsistency at which the data sources were able to verify the poor performance of most leading indicators before the 1929 Great Depression compared to before the 2008 Global Financial Crisis. This not only implies that a fair portion of the findings produced by this study is aligned with BFT, but also suggests that changes in stock prices had more to do with how investors responded to bad public announcements and little to do with the actual content that the bad public announcements held.

This explanation is not far removed from what the literature used in this study has been trying to say. In **Chapter 2**, it was established that investors are more likely to analyse systematic risk subjectively using public announcements as an alternative means of making observations when lacking proper finances, skill and/ or time (Tetlock, 2010). Roszkowski and Davey (2010), described this speculative behaviour as risk denial, “the finding that generally people tend to be overly optimistic about risks that they have not experienced and tend to perceive less risk for

themselves than for others engaged in the same activities”. The fact that most investors partook in extremely risk-seeking behaviour before both the 1929 Great Depression and the 2008 Global Financial Crisis, suggests that speculating was so spectacularly normal that investors saw little need for incorporating rationality into their decision-making processes (Fisher, 1933, Barberis, 2013). This problem is particularly complex when corporates and institutions that are expected to act ethically publicise misleading information without fear of being sanctioned by the law.

Nonetheless, the events that took place before the 1929 and 2008 stock market crashes contradict the Prospect Theory, which states that risk-averse investors are particularly more sensitive to bad news than they are to good news (Barberis, 2013). According to Fisher (1933) and Barberis (2013), the heightened level of investor confidence not only had the effect of inflating the confidence investors had in key markets and institutions, but also had the effect of inflating their ability to make sound investment decisions. This implies that before a stock market crash, investors are less sensitive to bad public announcements than they are to good public announcements.

The empirical findings of this study reiterate this notion. **Table 3** above shows that the total predictive capacity at which the 10 leading indicators were able to predict the 1929 and 2008 stock market crashes are 8 out of 50 and 1 out of 50, respectively. Despite **Table 3** above suggesting that the 10 leading indicators would be 8 times more likely to accurately predict the 1929 Great Depression compared to the 2008 Global Financial Crisis were these 10 leading indicators to be assessed collectively, it also implies that the 10 leading indicators used in this study possessed inconsistent degrees of usefulness in predicting a global financial crisis 3 – 8 months in advance between 1929 and 2008. Thus, a fair portion the data produced by this study is aligned with BFT.

According to Olsen (1998), the BFT has profound implications, the most important being that changes in stock prices are:

1. Dependent on changes in investor reaction to changes in market conditions; and
2. Independent of changes in market conditions.

Thus, a holistic view of the findings produced by this study allowed the researcher to develop the following theory regarding the potential impact bad public announcements had on the level of investor confidence before the 1929 Great Depression and the 2008 Global Financial Crisis:

- 1) Global financial crises are partly a product of how irrational investors respond to unfavourable public announcements; and
- 2) The accuracy of bad public announcements does not have a significant impact on the level of investor confidence before global financial crises, particularly if prevailing market conditions are favourable.

#### 6.2.2. Changes in market prices follow a random walk

The findings produced in **Chapter 5** approved the EMT premise that states that changes in market prices follow a random walk, due to the criteria of average frequency not being satisfied. In other words, the collective application of the 10 leading indicators used in this study to qualitatively predict the 1929 Great Depression and the 2008 Global Financial Crisis 3 – 8 months in advance, was proven to be futile. This not only implies that a fair portion of the findings produced by this study is aligned with EMT, but also suggests that changes in stock prices were a product of the content bad public announcements actually held.

This explanation was anticipated, as **Chapter 3** of this paper established that even though using leading indicators to predict changes in business cycles several months in advance is considered a sophisticated form of technical analysis, the prediction remains speculative due to leading indicators lacking the ability to attach actual numerical values to these predictions (Diebold and Rudebusch, 1989, Lahiri and Moore, 1992, Estrella and Mishkin, 1998). Furthermore, **Chapter 3** of this paper also established that changes in market prices follow a random walk, which means that changes in market prices are unpredictable because they occur randomly and are independent of historical trends or patterns that reflect changes in market prices (Fama, 1995). This inevitably implies that “neither technical analysis, which is the study of past stock prices in an attempt to predict future prices, nor even fundamental analysis, which is the analysis of financial information such as company earnings and asset values to help investors select “undervalued” stocks, would enable an investor to achieve returns greater than those that could be obtained by holding a randomly selected portfolio of individual stocks, at least not with comparable risk” (Malkiel, 2003).

The empirical findings of this study reiterate this notion. **Table 3** above shows that the total average predictive capacity of the 10 leading indicators that were used in this study is 0.09. This

not only implies that none of the 10 leading indicators could be considered to have sufficient predictive capacity were they to be observed collectively, but at most 3 out of the 10 leading indicators would have an average predictive capacity that is greater than the total average predictive capacity. Nonetheless, since the total average predictive capacity of 0.09 is less than and a mere fraction of the pre-determined total average predictive capacity of 2.5, the remaining portion of the data is aligned with EMT.

According to Wen-Chen and Ku-Jun (2005), the EMT has profound implications, the most important being that changes in stock prices are:

1. Dependent on changes in market conditions; and
2. Independent of changes in investor reaction to changes in market conditions.

Thus, a holistic view of the findings produced by this study allowed the researcher to develop the following theory regarding the extent to which leading indicators can be used to predict global financial crises:

- 1) Global financial crises are partly a product of the efficient market restoring overvalued security prices back to equilibrium; and
- 2) Global Financial Crises cannot be wholly predicted using leading indicators to make a qualitative assessment of systematic risk 3 – 8 months in advance.

The findings produced by this study were rather perplexing, given the fact that even though investors who were alive before the 2008 stock market crash had greater access to education, technology and protection by legislation, they were influenced more significantly by bad public announcements compared to investors who were alive before the 1929 stock market crash. Although, part of the blame could be transferred on to academics and experts in the field of Finance and Investments for publishing quantitative books and journal articles that are relatively incomprehensible to the reasonable man in a field that is already highly geared towards quantitative studies, the previous section established that the accuracy of information has little bearing on the level of investor confidence before global financial crises, particularly if prevailing market conditions are favourable.



### 6.3. Conclusion

The focus of this chapter was to use both EMT and/ or BFT implications (where applicable) to develop a theory regarding: 1) the potential impact bad public announcements had on the level of investor confidence before the 1929 Great Depression and the 2008 Global Financial Crisis; and 2) the extent to which leading indicators can be used to predict global financial crises 3 – 8 months in advance. This was done by providing possible reasons why EMT premises discussed in detail in **Chapter 3**, were either approved or dismissed by the literature and/ or the empirical findings of this study, viewed in light of the events that preceded both the 1929 Great Depression and the 2008 Global Financial Crisis. The implications of the EMT and/ or BFT discussed in **Chapter 3** were then used (where applicable) as the foundation for formulating a theory regarding: 1) the potential impact bad public announcements had on the level of investor confidence before the 1929 Great Depression and the 2008 Global Financial Crisis; and 2) the extent to which leading indicators can be used to predict global financial crises 3 – 8 months in advance.



## 7. Conclusion

### 7.1. Summary of findings

The 2008 Global Financial Crisis was a stark reminder of the 1929 Great Depression. According to Eichengreen (2014), both the 2008 Global Financial Crisis and the 1929 Great Depression had a devastating impact on the level of investor confidence after scores of investors failed to recover their investments following the announcement of a stock market crash first, on the 24<sup>th</sup> October 1929 and then later on the 29<sup>th</sup> September 2008. What precisely caused a loss in investor confidence in stock markets before and during the 1929 Great Depression and the 2008 Global Financial Crisis is and continues to remain a profound mystery in the field of Finance and Investments. In an attempt to conduct an in-depth exploration of this phenomena, this study extracted bad public announcements from 40 books and 60 journal articles using 6 NBER-based leading economic indicators (LEI) and 4 systematic risk-based leading non-economic indicators (LNEI) in order to: 1) qualitatively assess the extent to which leading indicators can be used to predict global financial crises 3 – 8 months in advance; and 2) use the EMT and/ or BFT to provide an explanation concerning the potential impact that bad public announcements had on the level of investor confidence before the 1929 Great Depression and the 2008 Global Financial Crisis.

The empirical findings of this study not only suggested that global financial crises cannot be wholly predicted using leading indicators to make qualitative assessments of systematic risk 3 - 8 months in advance, but also implied that contrary to the Theory of Prospect, the accuracy of bad public announcements does not have a significant impact on the level of investor confidence before global financial crises, particularly if prevailing market conditions are favourable. The split outcome of these findings suggested that both EMT and BFT implications provide valid explanations concerning the possible factors that could have triggered both the 1929 Great Depression and the 2008 Global Financial Crisis. Thus, the 1929 Great Depression and the 2008 Global Financial Crisis were established to be jointly triggered by the efficient market restoring overvalued security prices back to equilibrium and investors responding irrationally to unfavourable public announcements.

This study sought to contribute to existing literature by qualitatively conceptualising the notion of the term “investor confidence” whilst drawing special attention to its frailty using the 1929 Great

Depression and the 2008 Global Financial Crisis. This study can be used to assist governments, reserve banks and key institutions develop effective strategies that can be used to prevent and/ or mitigate the effects of global financial crises by limiting the scope of their governing authority to exclusively regulate good and/ or bad public announcements that are significant enough to cause extreme market inefficiencies. This study can also be used by short-term traders to predict when good and/ or bad public pre-announcements are most likely to have a significant impact on market prices based on prevailing market conditions, while long-term investors can use this study to determine the extent to which they should adjust their discount rates based on the potential impact good/ and or bad public announcements may have on their long-term investments.

The short-term implication of these findings suggest that a general, yet consistent reduction in the level of investor confidence can be expected in sluggish economies for as long as bad announcements pertaining to economic, social, political, environmental and technological conditions continue to be publicised. The long-term implication of these findings suggests that until effective predictors of changes in business cycles are designed, a possibility of another unexpected global financial crisis continues to loom.

## 7.2. Limitations

### 7.2.1. Methodological limitations

This study compromises of the following methodological limitations:

1. The term “global financial crises” is too broad to thoroughly explore and draw logical inferences within the limited scope this paper provides. This methodological limitation implies that the findings of this study could lack scientific weight on the basis of empirical outcomes being non-replicable amongst a wider range of global financial crises. Nonetheless, some degree of comparative value was preserved by restricting the term “global financial crises” to make exclusive reference to the 1929 Great Depression and the 2008 Global Financial Crisis. Comparing two of the most notable and catastrophic global financial crises, provided the researcher with the necessary scope upon which logical inferences could be drawn.
2. The predictive capacity of the 10 leading indicators that were used in this study were exclusively observed in the US, particularly due to the fact that the US became one of the most

influential countries in the world since the Roaring Twenties (see **Chapter 2**). This methodological limitation implies that valuable information pertaining to the predictive capacity the various leading indicators had in different countries was foregone. Nonetheless, this study compensated for the loss in valuable information pertaining to the predictive capacity the various leading indicators had in different countries by providing an in-depth analysis of the extent to which the various leading indicators were able to predict the 1929 Great Depression and the 2008 Global Financial Crisis in the US.

3. Leading indicators were used in place of coinciding and lagging indicators, since the purpose of this study was to predict global financial crises instead of measuring the effect these crises had once they occurred. This methodological limitation implies that valuable information that could have been provided by the coinciding and lagging indicators were forfeited for the sole reason that the information could not be exploited pre-meditatively. Nonetheless, this limitation could hardly be avoided as the limited scope of this paper prevented the researcher from thoroughly exploring the extent to which all leading indicators could have been used to predict global financial crises (see **Chapter 7**).
4. The 6 LEI that were used in this study were extracted from NBER's CLI based on the criteria of data accessibility, while the 4 LNEI that were used in this study were selected based on the factors that influence systematic risk. This methodological limitation not only implies that leading indicators with relatively less predictive capacity could have been used in place of leading indicators which have relatively more predictive capacity on account of information inaccessibility, but also suggests that less weight could have been attached to non-economic factors which could have potentially had a greater impact on the global economy. Nonetheless, this study ensured that the essence of the empirical findings were preserved by giving all leading indicators relatively encompassing interpretations.
5. This study used qualitative data instead of quantitative data to assess the impact that bad public announcements had on the level of investor confidence before the 1929 Great Depression and the 2008 Global Financial Crisis. This methodological limitation implies that valuable objective information provided by quantitative data pertaining to the potential impact bad



public announcements have on the level of investor confidence before global financial crises could have been overlooked. Nonetheless, the loss in valuable objective information provided by quantitative data had on the empirical findings was mitigated by extracting quantitative data from the various qualitative sources that were used in this study.

#### 7.2.2. Research limitations

This study comprises of the following research limitations:

1. The qualitative data that was used in this study was extracted from books and journal articles, due to a lack of finances needed to travel to US to gather pertinent information pertaining to the psychology of US investors. This research limitation implies that the intricacies involved in investor decision-making processes could not have been captured with profound insight as would be provided by personal interviews, focus-group discussions and/ or surveys. Nonetheless, the study managed to avoid the inherent biases associated with secondary sources of data by using objective qualitative data which is widely accepted as a credible source of information.
2. The poor performances of the various leading indicators were observed from a relatively small sample size comprising of 40 books and 60 journal articles, due to time constraints. This research limitation implies that the inferences that this study may have drawn pertaining the potential impact that bad public announcements have on the level of investor confidence before global financial crises could have lacked some level of conclusiveness. Nonetheless, the empirical findings suggest that using a larger sample size to find information pertaining to the narrow specifications given to the various leading indicators in the coding phase would not significantly enhance the outcomes of the findings that this study produced (see **Table 3**).
3. The findings of this study does not have the capacity to approve or disprove the entire EMT and/ or BFT on the sole basis that these market theories fail to meet the criteria established by this study in an attempt to achieve the prescribed outcomes of this study. This is not only due to the fact that leading indicators are merely a component of technical analysis, which is considered the weakest form of market efficiency, but also due to the fact that technical analysis exists alongside other forms of market efficiency - fundamental analysis being the second form and insider trading being the third. Nonetheless, the findings of this study still

holds the capacity to evaluate the extent to which leading indicators can be used to enhance the process of technical analysis as a popular trading predictive tool.

### 7.3. Recommendations

#### 7.3.1. Policy recommendations

This study seeks to contribute to existing literature by qualitatively conceptualising the notion of the term “investor confidence” whilst drawing special attention to its frailty using the 1929 Great Depression and the 2008 Global Financial Crisis. This study also seeks to assist governments, reserve banks and key institutions develop effective strategies that can be used to prevent and/ or mitigate the effects of global financial crises. Global financial crises can be prevented by managing good public announcements when the level of investor confidence in a given economy is particularly high; while the effects of global financial crises can be mitigated by managing bad public announcements when the level of investor confidence in a given economy is particularly low. The following recommendations provide general suggestions which governments, reserve banks and key institutions can employ to achieve the aforementioned propositions:

##### 7.3.1.1. Preventing global financial crises

According to Summers (2000), “the best national response to crisis is not to have one”. The government can attempt to prevent global financial crises by managing the effects significant good public announcements have on the level of investor confidence by promoting transparency in financial markets. The government can promote transparency in financial markets by enacting laws that require banks, financial intuitions and firms to provide records justifying the specific reasons certain market-signaling transactions were concluded. Akyüz (2009), alternatively proposes that the government can instead: 1) “leave the conduct of regulation and supervision to national authorities within a framework established according to the same principles as the WTO”; or 2) “extend the mandate and improve the governance of existing bodies such as the FSF, the BIS, the Basle Committee on Banking Supervision, the International Association of Insurance Supervisors, and the International Organization of Securities Commissions”.

##### 8.3.1.2. Mitigating the effects of global financial crises

In the event that a global financial crisis has already occurred, the government can attempt to mitigate the effect bad public announcements have on the level of investor confidence by playing

an active role in addressing matters of public interest promptly. Aikins (2009), encourages the government to use its authority to restore extreme market inefficiencies created by significant bad public announcements. According to Sargent (1974), government authorities can manage extreme market inefficiencies by enacting laws that prevent the media from publicising disreputable news that may significantly influence the confidence investors have in key markets and intuitions. Although immediate responses are known to provide temporary solutions to problems, they are preferred to less immediate responses which are less likely to realise (Peters, Pierre and Randma-Liiv, 2011).

### 7.3.2. Recommendations for further research

1. A qualitative assessment of the potential impact bad public announcements had on the level of investor confidence before a large number of small-scale financial crises can be used to provide greater insight pertaining to the precise triggers of global financial crises.
2. A comparative assessment pertaining to the potential impact that bad public announcements had on the level of investor confidence before the 1929 and 2008 stock market crashes across the globe can be used to assess the extent to which the impact of global financial crises could have potentially varied between different countries.
3. A quantitative assessment pertaining to the potential impact bad public announcements had on the level of investor confidence before the 1929 Great Depression and the 2008 Global Financial Crisis can be used to provide more conclusive evidence on the findings of this study.
4. Using more leading indicators to qualitatively or quantitatively assess the potential impact bad public announcements had on the level of investor confidence before the 1929 Great Depression and the 2008 Global Financial Crisis can be used to enhance the credibility of the findings of this study.
5. Leading, coinciding and lagging indicators can be used collectively to qualitatively or quantitatively assess the impact that bad public announcements had on the level of investor

confidence before the 1929 Great Depression and the 2008 Global Financial Crisis as well as provide more conclusive evidence on the findings of this study.

6. A qualitative assessment using personal interviews, focus-group discussions and/ or surveys can be used to investigate the most wide-spread investor psychological behaviour that precedes global financial crises, in order to obtain a greater understanding concerning the underlying trigger behind most if not all global financial crises.
7. Using more books and journal articles to qualitatively assess the potential impact bad public announcements had on the level of investor confidence before the 1929 Great Depression and the 2008 Global Financial Crisis can be used to enhance the credibility of the findings of this study.





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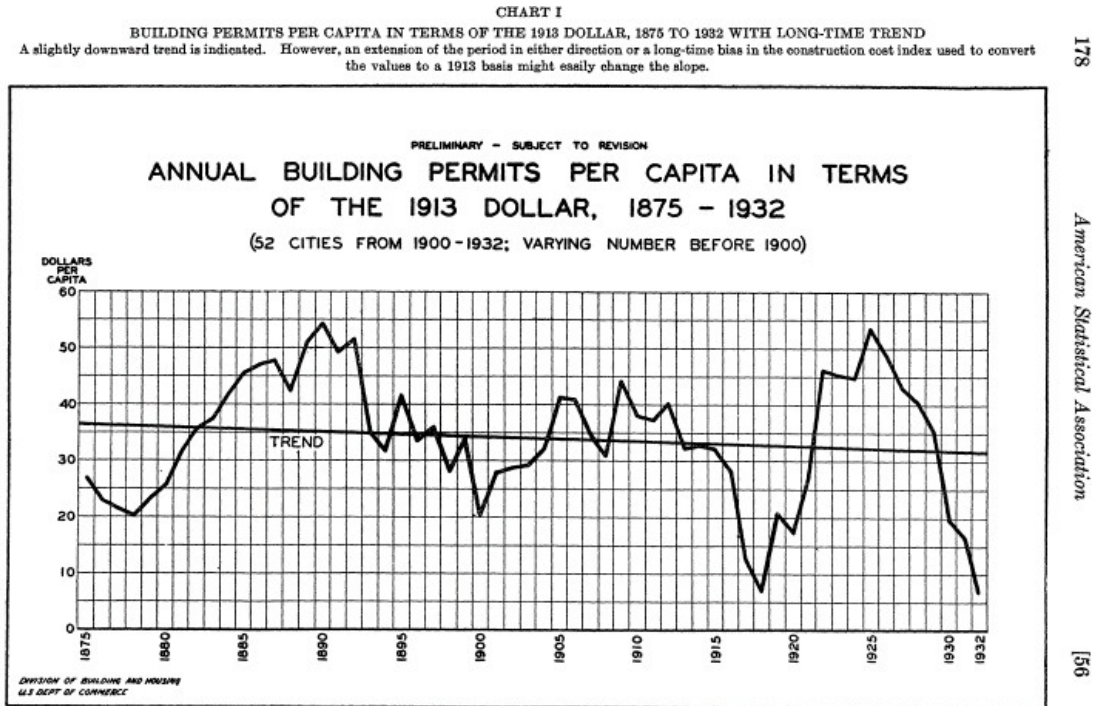
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## 9. Appendices

### 9.1. Building permit source documents

#### 1929 Great Depression [DOC 62]:



**\*Comment:** The building permit per capita declined by 7 dollars in 1929.

**1929 Great Depression [DOC 76]:** “the value of construction contracts fell from July, 1929, by an amazing 90 percent, and the value of building permits by 94 percent”.

9.2. Housing market source documents

**1929 Great Depression [DOC 57]:** “Housing starts plunged sharply after the business cycle peak in mid-1929”.

**1929 Great Depression [DOC 60]:**

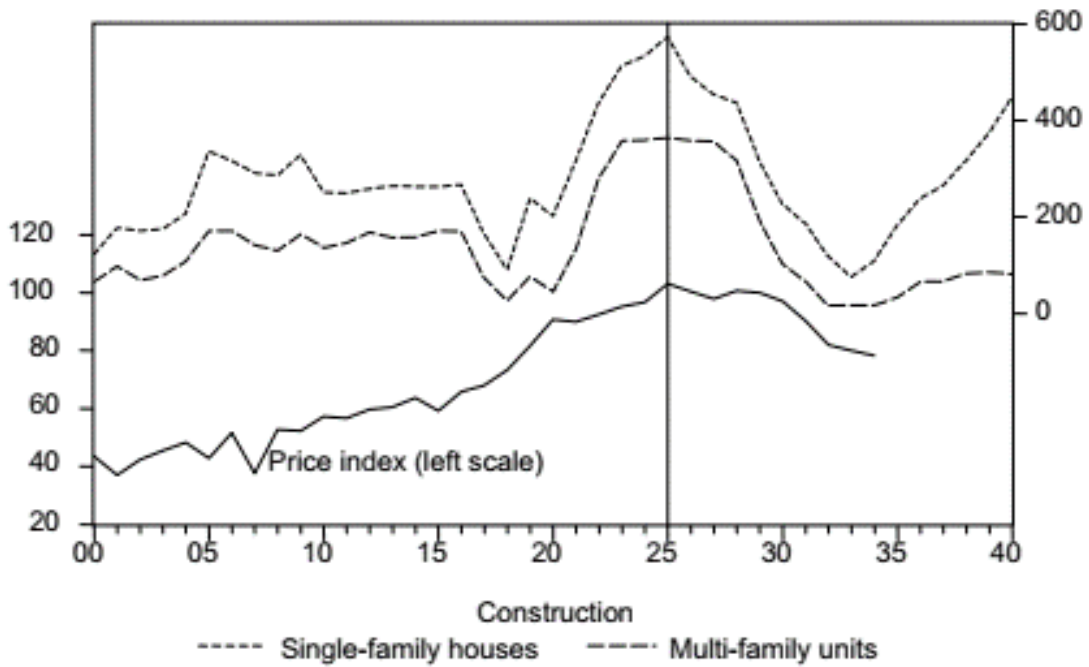


Fig. 5.1 Housing construction and house prices, 1900–1940 (annual)

**\*Comment:** There was a gradual decline in the number of single-family and multi-family housing construction in 1929.

2008 Global Financial Crisis [DOC 187]:

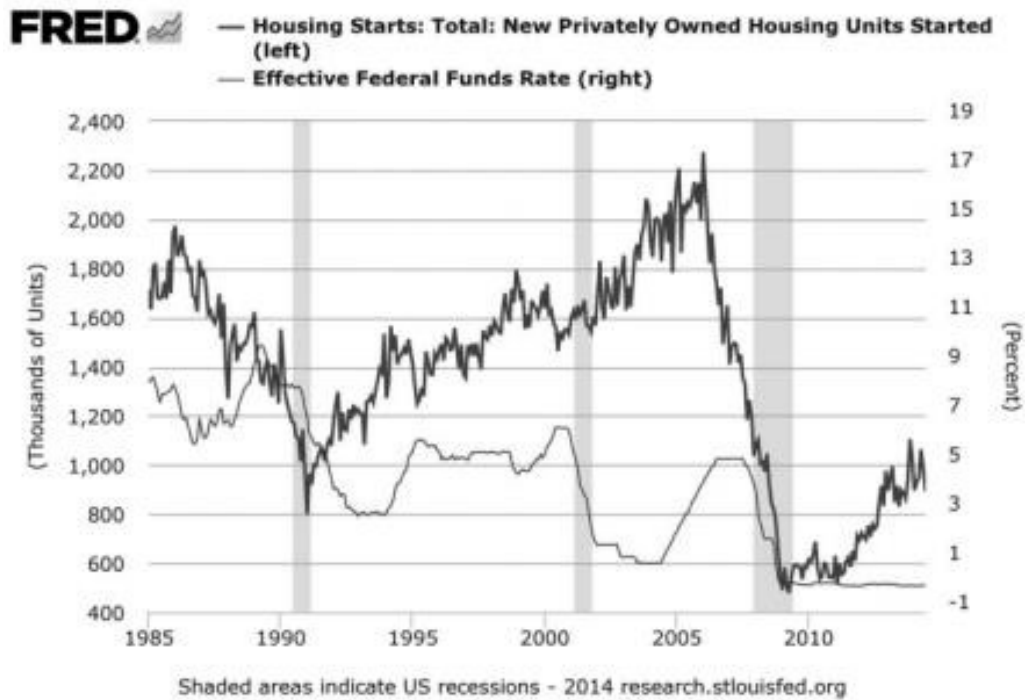
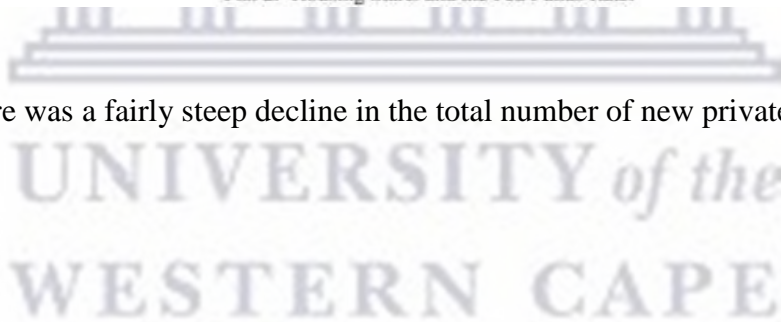


FIG. 2. Housing Starts and the Fed Funds Rate.

\***Comment:** There was a fairly steep decline in the total number of new privately-owned housing starts in 2008.





### 9.3. Manufacturing activity source documents

**1929 Great Depression [DOC 64]:** *“the producer price index declined by slightly over 40 percent between July 1929 and July 1932”.*



#### 9.4. Money supply source documents

**1929 Great Depression [DOC 68]:** *“From mid-1928 to August 1929, the Federal Reserve responded to the stock market boom with repeated interest rate hikes and a slowdown in monetary growth”.*

**1929 Great Depression [DOC 82]:** *“was a central cause of the Great Depression in the United States. The U.S. money supply declined 33 percent between the business cycle peak in August 1929 and the trough in March 1933.1 Financial panic.”*



9.5. Stock market source documents

1929 Great Depression [DOC 87]:

INDEX OF SECURITY PRICES  
(1926 = 100)

Year and Month	Index	Year and Month	Index	Year and Month	Index
1925		1928		1931	
January .	83	January .	137	January .	103
February .	84	February .	135	February .	110
March .	81	March .	141	March .	112
April .	80	April .	150	April .	100
May .	83	May .	155	May .	89
June .	85	June .	148	June .	87
July .	88	July .	148	July .	90
August .	89	August .	153	August .	89
September .	92	September .	162	September .	76
October .	98	October .	166	October .	65
November .	100	November .	179	November .	68
December .	100	December .	178	December .	54
1926		1929		1932	
January .	102	January .	193	January .	54
February .	102	February .	192	February .	53
March .	96	March .	196	March .	54
April .	93	April .	193	April .	42
May .	93	May .	193	May .	38
June .	97	June .	191	June .	34
July .	100	July .	203	July .	36
August .	103	August .	210	August .	52
September .	104	September .	216	September .	56
October .	102	October .	194	October .	48
November .	103	November .	145	November .	45
December .	105	December .	147	December .	45
1927		1930		1933	
January .	106	January .	149	January .	46
February .	108	February .	156	February .	43
March .	109	March .	163	March .	42
April .	110	April .	171	April .	49
May .	113	May .	160	May .	65
June .	114	June .	143	June .	77
July .	117	July .	140	July .	84
August .	122	August .	139	August .	79
September .	129	September .	139	September .	81
October .	128	October .	118	October .	76
November .	131	November .	109	November .	77
December .	136	December .	102	December .	79

This index, compiled by the *Standard Statistics Company*, is based on 335-351 ordinary industrial shares, the average of the closing prices on each Thursday of the month being used.

**\*Comment:** The index price of 351 ordinary industrial shares decreased by 16 points within 3 months, from 210 points in August 1929 to 194 points in October 1929.