

THE EFFECTS OF FINANCIAL CRISES ON THE PERFORMANCE
OF THE NAIROBI STOCK EXCHANGE.

BY:

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A MANAGEMENT RESEARCH PROJECT SUBMITTED IN
PARTIAL FULFILMENT OF THE REQUIREMENTS FOR THE
DEGREE OF MASTER OF BUSINESS ADMINISTRATION,
SCHOOL OF BUSINESS, UNIVERSITY OF NAIROBI.

OCTOBER 2010

Declaration

This management project is my own original work and has not been presented for a degree in any other university.

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Dedication

To my family and friends with all my love.

Acknowledgements

This study was made possible by a number of people and institutions to whom I am greatly indebted and to whom I would like to express a lot of gratitude.

I am grateful to God for the gift of life, health, strength and vigor through the entire course. I sincerely thank my supervisor, Angela Kithinji for the continuous guidance and advice she gave me during the study. I would also like to extend my thanks to the staff of the School of Business, University of Nairobi, all my colleagues in the MBA program for their encouragement and assistance.

To my parents, family and friends a big thanks for your continued support and encouragement.

Finally, to everyone who I have not mentioned but assisted me in one way or another, Thank you very much.

Abstract

The term financial crisis is applied broadly to a variety of situations in which some financial institutions or assets suddenly lose a large part of their value. Many economists have offered theories about how financial crises develop and how they could be prevented. There is little consensus, however, and financial crises are still a regular occurrence.

The objective of this study was to investigate whether global financial crisis has any impact on the performance of the Nairobi Stock Exchange. The performance indicator was the NSE 20 share index. Data on the NSE 20 Share Index was collected from the NSE for the period 1991-2010. The month end indices for the period obtained from the NSE were analyzed using means and variances with the assistance of the SPSS statistical package. The research results were presented using tables, graphs and charts.

The study results indicate that there is a significant difference in the performance of the market on the year after the crisis hits the major exchanges though the effects are not very strong to warrant any panics. The market performance is low during the financial crises period but immediately after the crises market performance improves.

Abbreviations

CMA- Capital Markets Authority

EMH - Efficient Market Hypothesis

NSE - The Nairobi Stock Exchange

IMF - International Monetary Fund

TABLE OF CONTENTS

Declaration	ii
Dedication	iii
Acknowledgements	iv
Abstract	v
Abbreviations	vi

CHAPTER ONE

1.0 Introduction	1
1.1 Background of the Study.....	1
1.2 Statement of the Problem.....	5
1.3 Objectives of the Study.....	6
1.4 Importance of the Study	6

CHAPTER TWO

2.0 Literature Review.....	7
2.1 Financial Crises	7
2.2 Causes of Financial Crises	8
2.2.1 Strategic complementarities in financial markets	8
2.2.2 Leverage	9
2.2.3 Asset liability mismatch	9
2.2.4 Uncertainty and herd behavior	10
2.2.5 Regulatory failures	10
2.2.6 Fraud	11
2.2.7 Contagion	12
2.2.8 Recessional effects	12

2.3	Theories of Financial Crises	13
2.3.1	Marxist Theories.....	13
2.3.2	Minsky’s Theory.....	14
2.3.3	Coordination Games.....	15
2.3.4	Herding Models and Learning Models.....	15
2.4	Stock Market	16
2.5	Efficient Market Hypothesis	17
2.6	Financial Crises and Stock Market Performance	19
2.7	Empirical Studies	20
2.8	Shocks at National Level.....	23
2.9	Summary of Literature Review	26

CHAPTER THREE

3.0	Research Methodology.....	27
3.1	Introduction	27
3.2	Research Design.....	27
3.3	Data Collection.....	27
3.4	Data Analysis.....	28

CHAPTER FOUR

4.0	Data Analysis and Results.....	30
4.1	Introduction	30
4.2	Hypothesis Test.....	30
4.3	Statistical Analysis.....	31
4.3.1	Year by Year Analysis	31
4.3.2	Control Years	32

4.3.3 Least Squares Method of Regression	33
4.3.3 Test of Statistical Significance	34
4.4 NSE Index Performance.....	36
CHAPTER FIVE	
5.0 Summary of Findings Conclusions and Recommendations.....	40
5.1 Summary of Findings and Conclusions.....	40
5.2 Recommendations	41
5.3 Limitations of the Study	41
5.4 Suggestions for Further Research	42
REFERENCES	43
APPENDICES	47

CHAPTER ONE

INTRODUCTION

1.1 Background of the Study.

A financial crisis can be defined as a large-amplitude oscillation affecting all or part of a set of financial variables: issue volumes and prices of bonds and equities, volumes of outstanding loans and bank deposits, and exchange rates (Pareto, 1964). It is only when the value of these variables collapses that one can speak of a financial crisis. But the crisis in fact begins during the upswing, also very marked, which generally precedes its inception (Aglietta, 1997).

The "crisis" phase in the normally accepted sense of the term (in other words, a marked and rapid fall in the quantities and prices that measure banking and financial activities) is characterized by a desertion of those assets previously held. Suddenly and simultaneously, all operators want to exchange their holdings for instruments which seem to them to offer both greater negotiability (the ability to be traded at short notice) and liquidity (the ability to be traded without risk of capital loss). Generally speaking, a financial crisis takes the form of a sudden and steep increase in the demand for money for precautionary purposes (Kindleberger, 1989).

One of the early applications of computers in economics in the 1950s was to analyze economic time series. Business cycle theorists felt that tracing the evolution of several economic variables over time would clarify and predict the progress of the economy through boom and bust periods. Maurice Kendall examined this in 1953 but he could identify no predictable patterns in stock prices. His results implied that markets are dominated by erratic market psychology or "animal spirits"-that it follows no logical rules. On further reflection economists came to reverse their interpretation to Kendall's studies. It became apparent that random price movements indicate a well functioning or efficient market, not an irrational one. (Maurice, 1953) Kendall's attempt to find recurrent patterns in stock price movements was likely to fail because a forecast about a favorable future performance leads instead to favorable current performance as market participants all try to get in on the action before the price jump, hence any information that could be used to predict stock performance should already be reflected in the stock prices.

The G20 Summit which concluded on April 2 2009 gave a blueprint of the shape of the financial industry going forward. The members of the G20 conceded in a statement that “major failures” in regulation had been “fundamental causes” of the market turmoil they are trying to tackle. To make amends and to try to avoid a repeat of the crisis, they pledged to impose stronger restraints on hedge funds, credit rating companies, risk-taking and executive pay (The Economist 2009).

If regulation is required to minimize or obviate the costs of financial crises, it should be justified by a microeconomic welfare analysis based on standard assumptions. Furthermore, the form of the intervention should be derived from microeconomic principles. Financial institutions and financial markets exist to facilitate the efficient allocation of risks and resources. Any government intervention will have an impact on the normal functioning of the financial system. A policy of preventing financial crises will inevitably create distortions. One of the advantages of a microeconomic analysis of financial crises is that it clarifies the costs and benefits of these distortions (Fischer, 2003).

The efficient market hypothesis (EMH) came into being suggesting that stocks already reflect all available information. If the EMH held then markets would price financial assets broadly correctly. Deviations from equilibrium values could not last for long. If the information was out there then it was already in the price. On such ideas run the financial profession believed to make the financial system safer and the economy healthier.

That is why people view the financial crisis that begun in 2007 as a devastating blow to the credibility of the entire academic discipline of finance (The Economist 2009). This led to a strand of skeptical thought picking holes on the EMH. This include behavioral finance, career risk theory etc with research on other disciplines to try explain market phenomena.

Markets for long periods will be stable-which explains how they appear to be efficient most of the time-but they are punctuated by periods of crisis (bubble bursts). There is merit in both rational and behavioral views that try to explain this phenomenon. It is believed that investors are neither fully rational nor psychologically unhinged. Instead they work by making best guesses and by trial and error. Because markets are fiercely competitive, if one investment strategy fails they try another. If it works they stick with it (Financial Times 2009).

Though the EMH seems to give the best explanation so far there has been a quest for a better understanding of the markets. Stiglitz (2010) observes that if prices reflect all information, then there is no gain from going to the trouble of gathering it, so no one will. A little inefficiency is necessary to give informed investors an incentive to drive prices towards efficiency, but it is the belief that markets tend to return prices to their efficient equilibrium when they move away that gives the EMH continuing relevance. So far there is no new paradigm that allows replacement of the efficient markets hypothesis.

African markets have so far been remarkably resilient to the Global Financial Crisis, primarily due to the fact that our financial systems do not hold any of the “toxic” securities and debts that have precipitated and spread the crisis in the international financial system. The exception is Nigeria, whose financial markets are currently experiencing enormous strains due to both global and local market liquidity issues and high dependence on oil.

Kenya’s exposure to the crisis is driven by the following key factors: (Hezron, 2009)

Demand for Kenyan exports may decline. The recession in North America and Europe triggered by the credit crunch may reduce demand for Kenyan exports goods.

Kenyan banks have deposits and placements in foreign institutions. Kenyan institutions also do have credit lines with foreign banking institutions. Collapse of any of these institutions or a credit crunch could hurt the economy.

Kenyans living abroad remit money home to support consumption, and for investment purposes. Early indications show that Remittances may decline as disposable incomes decline in the countries experiencing the global recession.

Kenyan exporters and importers use letters of credit issued by financial institutions abroad to facilitate trade between Kenya and the rest of the world.

The shilling depreciated to the US dollar between September 1 and November 30, 2008 following pressure from the global financial crisis as foreign investors “fled to safety” while consolidating their finances to meet their obligations abroad.

The stock markets, and respective investors, recorded a sharp fall in the value of their investments and general financial net worth. Following the subprime mortgage global financial meltdown, Stock markets fell by 21 percent in Uganda, 24 percent in the South Africa and 27 percent in Kenya between September 1 and November 30, 2008 (Hezron, 2009).

1.2 Statement of the Problem.

The stock market plays a central role in the allocation of resources; enable individuals to make decisions on consumption timing, allocation of risks and separation of governance and ownership. In the event of a crisis, the stock market will retract on these functions leading to a disaster (Investments, 2009).

There is a research gap on the effects of global financial crises on the Kenyan stock market over time and the developments experienced through time, though a number of studies have been done establishing the relationships between the performances of major stock exchanges and global financial crises. Such studies are lacking on specific emerging markets and the stock market in Kenya. Relatively the space devoted by economic text books to the effects of financial crises on emerging markets is small or non-existent. This implies that investors, policy makers, researchers among others do not have the benefits such research would provide to them (Ngugi, 2008).

The effect of financial crises on various parameters is not known specifically, leading to various questions; what are the elements of the global financial and economic shocks, including their types and magnitudes? What are the shocks at the national level, identifying the effects so far on international capital and equity flows, based on before and after comparisons as well as existing or new models? What are the effects on investments and growth? What are the policy implications, distinguishing among actual (what the country has already done), possible (what there is capacity to do) and optimal policy responses, such as economic and financial policies to manage shocks and accelerate normal development policies, such as investment and diversification?

1.3 Objectives of the Study.

To investigate the effects of financial crises on the performance of the Nairobi Stock Exchange.

1.4 Importance of the Study.

Myron Scholes states that much of the blame for the recent financial crisis woes should be pinned not on financial theories, models and the academic profession but on those players in the

stock market that push the practice too far. The market dynamic is one of a continual search for profitable trading rules, followed by destruction by overuse of those rules found to be successful, followed by more search for yet-undiscovered rules.

Studying these trends in the market will help unveil sources of inefficiency (and efficiency) and link the academic field to actual practice. Politicians and regulators trying to reform finance will learn to trust the academia for offered solutions to every situation.

This study will give a direction to policy formulators and will aid in capital market development, deepening and growth of the Kenyan economy, and give a guideline to the response expected in case of bubble bursts.

The investors will benefit from this study by gaining an understanding of how the Kenyan stock market adapts to crises.

CHAPTER TWO

LITERATURE REVIEW

2.1 Financial Crises

The term financial crisis is applied broadly to a variety of situations in which some financial institutions or assets suddenly lose a large part of their value. In the 19th and early 20th centuries, many financial crises were associated with banking panics, and many recessions coincided with these panics. Other situations that are often called financial crises include stock market crashes and the bursting of other financial bubbles, currency crises, and sovereign defaults. Financial crises directly result in a loss of paper wealth; they do not directly result in changes in the real economy unless a recession or depression follows (Tight, 1994).

Many economists have offered theories about how financial crises develop and how they could be prevented. There is little consensus, however, and financial crises are still a regular occurrence around the world.

Most of the time, banking systems and financial markets function smoothly. Admittedly, the equilibrium point on the capital markets is constantly shifting, but without major discontinuities. The banking systems and the financial markets serve the purpose of allocating that rare resource, capital, which makes it possible to finance investment that is itself the source of productivity gains. In so doing, they contribute to the growth of the economies they finance. Of this there is not the slightest doubt: over the long term, the least developed countries are also those where the capital markets are the most embryonic or even nonexistent. Financial crises can therefore be regarded as the pathological state of a system which generally functions in a healthy fashion. They are, in a way, a caricature exaggerating the essential features of economic life (Rueff, 1989). Analyzing them therefore is of both practical and theoretical interest. The practical interest is obvious: financial crises tend to discredit the free-market economy and provoke a temptation to "throw the baby out with the bath water." From the theoretical standpoint, financial crises cast a particular and sometimes disturbing light on certain essential assumptions and questions in the field of economic analysis (Kindleberger, 1989) as regards agents' behavior and expectations, money and credit, and policies to be implemented.

2.2 Causes of Financial Crises

2.2.1 Strategic complementarities in financial markets

It is often observed that successful investment requires each investor in a financial market to guess what other investors will do. George Soros has called this need to guess the intentions of others 'reflexivity' (Soros, 1994). Similarly, John Maynard Keynes compared financial markets to a beauty contest game in which each participant tries to predict which model other participants will consider most beautiful (Keynes, 1936). Furthermore, in many cases investors have incentives to coordinate their choices. For example, someone who thinks other investors want to buy lots of Japanese yen may expect the yen to rise in value, and therefore has an incentive to buy yen too. Likewise, a depositor in a bank who expects other depositors to withdraw their funds may expect the bank to fail, and therefore has an incentive to withdraw too. Economists call an incentive to mimic the strategies of others strategic complementarities (Bulow et al, 1985).

It has been argued that if people or firms have a sufficiently strong incentive to do the same thing they expect others to do, then self-fulfilling prophecies may occur. For example, if investors expect the value of the yen to rise, this may cause its value to rise; if depositors expect a bank to fail this may cause it to fail. Therefore, financial crises are sometimes viewed as a vicious circle in which investors shun some institution or asset because they expect others to do so (Obstfeld, 1996).

2.2.2 Leverage

This refers to borrowing to finance investments and is frequently cited as a contributor to financial crises. When a financial institution (or an individual) only invests its own money, it

can, in the very worst case, lose its own money. But when it borrows in order to invest more, it can potentially earn more from its investment, but it can also lose more than all it has. Therefore leverage magnifies the potential returns from investment, but also creates a risk of bankruptcy. Since bankruptcy means that a firm fails to honor all its promised payments to other firms, it may spread financial troubles from one firm to another. The average degree of leverage in the economy often rises prior to a financial crisis. For example, borrowing to finance investment in the stock market ("margin buying") became increasingly common prior to the Wall Street Crash of 1929 (Kaufman et al, 2003).

2.2.3 Asset-liability mismatch

Another factor believed to contribute to financial crises is asset-liability mismatch, a situation in which the risks associated with an institution's debts and assets are not appropriately aligned. For example, commercial banks offer deposit accounts which can be withdrawn at any time and they use the proceeds to make long-term loans to businesses and homeowners. The mismatch between the banks' short-term liabilities (its deposits) and its long-term assets (its loans) is seen as one of the reasons bank runs occur (when depositors panic and decide to withdraw their funds more quickly than the bank can get back the proceeds of its loans) (Diamond, 1983).

Likewise, Bear Stearns failed in 2007-08 because it was unable to renew the short-term debt it used to finance long-term investments in mortgage securities (Economist, 2009).

In an international context, many emerging market governments are unable to sell bonds denominated in their own currencies, and therefore sell bonds denominated in US dollars instead. This generates a mismatch between the currency denomination of their liabilities (their bonds) and their assets (their local tax revenues), so that they run a risk of sovereign default due to fluctuations in exchange rates (Eichengreen, 2005).

2.2.4 Uncertainty and herd behavior

Many analyses of financial crises emphasize the role of investment mistakes caused by lack of knowledge or the imperfections of human reasoning. Behavioral finance studies errors in

economic and quantitative reasoning. Eliazon (2006) has also analyzed failures of economic reasoning in his concept of 'œcopathy'.

Kindleberger, (2005) points out that crisis often follow soon after major financial or technical innovations that present investors with new types of financial opportunities, which he called "displacements" of investors' expectations. Early examples include the South Sea Bubble and Mississippi Bubble of 1720, which occurred when the notion of investment in shares of company stock was itself new and unfamiliar, and the Crash of 1929, which followed the introduction of new electrical and transportation technologies. More recently, many financial crises followed changes in the investment environment brought about by financial deregulation, and the crash of the dot com bubble in 2001 arguably began with "irrational exuberance" about Internet technology (Kindleberger, 2005).

Unfamiliarity with recent technical and financial innovations may help explain how investors sometimes grossly overestimate asset values. Also, if the first investors in a new class of assets (for example, stock in "dot com" companies) profit from rising asset values as other investors learn about the innovation (in our example, as others learn about the potential of the Internet), then still many others may follow their example, driving the price even higher as they rush to buy in hopes of similar profits. If such "herd behavior" causes prices to spiral up far above the true value of the assets, a crash may become inevitable. If for any reason the price briefly falls, so that investors realize that further gains are not assured, then the spiral may go into reverse, with price decreases causing a rush of sales, reinforcing the decrease in prices (Kindleberger, 2005).

2.2.5 Regulatory failures

Governments have attempted to eliminate or mitigate financial crises by regulating the financial sector. One major goal of regulation is transparency: making institutions' financial situations publicly known by requiring regular reporting under standardized accounting procedures. Another goal of regulation is making sure institutions have sufficient assets to meet their contractual obligations, through reserve requirements, capital requirements, and other limits on leverage (Franklin, 2004).

Some financial crises have been blamed on insufficient regulation, and have led to changes in regulation in order to avoid a repeat. For example, the Managing Director of the IMF, Dominique Strauss-Kahn, has blamed the financial crisis of 2008 on 'regulatory failure to guard against excessive risk-taking in the financial system, especially in the US'. Likewise, the New York Times singled out the deregulation of credit default swaps as a cause of the crisis (New York Times, 2008).

However, excessive regulation has also been cited as a possible cause of financial crises. In particular, the Basel II Accord has been criticized for requiring banks to increase their capital when risks rise, which might cause them to decrease lending precisely when capital is scarce, potentially aggravating a financial crisis (Gordy, 2004).

2.2.6 Fraud

Fraud has played a role in the collapse of some financial institutions, when companies have attracted depositors with misleading claims about their investment strategies, or have embezzled the resulting income. Examples include Charles Ponzi's scam in early 20th century Boston, the collapse of the MMM investment fund in Russia in 1994, the scams that led to the Albanian Lottery Uprising of 1997, and the collapse of Madoff Investment Securities in 2008(New York Times, 2008).

Many rogue traders that have caused large losses at financial institutions have been accused of acting fraudulently in order to hide their trades. Fraud in mortgage financing has also been cited as one possible cause of the 2008 subprime mortgage crisis; government officials stated on September 23, 2008 that the FBI was looking into possible fraud by mortgage financing companies Fannie Mae and Freddie Mac, Lehman Brothers, and insurer American International Group (CNN Money, 2008).

2.2.7 Contagion

Contagion refers to the idea that financial crises may spread from one institution to another, as when a bank run spreads from a few banks to many others, or from one country to another, as when currency crises, sovereign defaults, or stock market crashes spread across countries. When

the failure of one particular financial institution threatens the stability of many other institutions, this is called systemic risk (Kaufman, 2003).

One widely-cited example of contagion was the spread of the Thai crisis in 1997 to other countries like South Korea. However, economists often debate whether observing crises in many countries around the same time is truly caused by contagion from one market to another, or whether it is instead caused by similar underlying problems that would have affected each country individually even in the absence of international linkages (Kaufman, 2003).

2.2.8 Recessionary effects

Some financial crises have little effect outside of the financial sector, like the Wall Street crash of 1987, but other crises are believed to have played a role in decreasing growth in the rest of the economy. There are many theories why a financial crisis could have a recessionary effect on the rest of the economy. Some 'third generation' models of currency crises explore how currency crises and banking crises together can cause recessions (Burnside, 2008).

While crises often occur in recessions, it could be that the occurrence of a crisis adds nothing to the severity of those recessions, and that all we are picking up is the output effects of the latter. While crises may have been growing more frequent, they have not obviously been growing more costly. Recessions with crises last longer than recessions without them. Twin crises are twice as disruptive as currency crises, which are twice as disruptive as banking crises. Thus, formal tests cannot reject the null that the output effects of currency, banking and twin crises remain the same today as over the century that ended in 1971 (Bordo et al, 2000).

2.3 Theories of Financial Crises

2.3.1 Marxist theories

Recurrent major depressions in the world economy at the pace of 20 and 50 years (often referred to as the business cycle) have been the subject of studies since Jean Charles Leonard de Sismondi (1773–1842) provided the first theory of crisis in a critique of classical political economy's assumption of equilibrium between supply and demand. Developing an economic crisis theory became the central recurring concept throughout Karl Marx's mature work. Marx's

law of the tendency for the rate of profit to fall borrowed many features of the presentation of John Stuart Mill's discussion Of the Tendency of Profits to a Minimum (Principles of Political Economy). The theory is a corollary of the tendency towards the centralization of profits. In a capitalist system, successfully-operating businesses return less money to their workers (in the form of wages) than the value of the goods produced by those workers (i.e. the amount of money the products are sold for). This profit first goes towards covering the initial investment in the business. In the long-run, however, when one considers the combined economic activity of all successfully-operating business, it is clear that less money (in the form of wages) is being returned to the mass of the population (the workers) than is available to them to buy all of these goods being produced. Furthermore, the expansion of businesses in the process of competing for markets leads to an abundance of goods and a general fall in their prices, further exacerbating the tendency for the rate of profit to fall (Kindleberger, 2005).

The viability of this theory depends upon two main factors: firstly, the degree to which profit is taxed by government and returned to the mass of people in the form of welfare, family benefits and health and education spending; and secondly, the proportion of the population who are workers rather than investors/business owners. Given the extraordinary capital expenditure required to enter modern economic sectors like airline transport, the military industry, or chemical production, these sectors are extremely difficult for new businesses to enter and are being concentrated in fewer and fewer hands (Kindleberger, 2005).

2.3.2 Minsky's theory

Minsky (2008) has proposed a post-Keynesian explanation that is most applicable to a closed economy. He theorized that financial fragility is a typical feature of any capitalist economy. High fragility leads to a higher risk of a financial crisis. To facilitate his analysis, Minsky defines three approaches financing firms may choose, according to their tolerance of risk. They are hedge finance, speculative finance, and Ponzi finance. Ponzi finance leads to the most fragility. For hedge finance, income flows are expected to meet financial obligations in every period, including both the principal and the interest on loans. For speculative finance, a firm must roll over debt because income flows are expected to only cover interest costs. None of the principal is paid off. In the case of Ponzi finance, expected income flows will not even cover interest cost,

so the firm must borrow more or sell off assets simply to service its debt. The hope is that either the market value of assets or income will raise enough to pay off interest and principal.

Financial fragility levels move together with the business cycle. After a recession, firms have lost much financing and choose only hedge, the safest. As the economy grows and expected profits rise, firms tend to believe that they can allow themselves to take on speculative financing. In this case, they know that profits will not cover all the interest all the time. Firms, however, believe that profits will rise and the loans will eventually be repaid without much trouble. More loans lead to more investment, and the economy grows further. Then lenders also start believing that they will get back all the money they lend. Therefore, they are ready to lend to firms without full guarantees of success. Lenders know that such firms will have problems repaying. Still, they believe these firms will refinance from elsewhere as their expected profits rise. In this way, the economy has taken on much risky credit. Now it is only a question of time before some big firm actually defaults. Lenders understand the actual risks in the economy and stop giving credit so easily. Refinancing becomes impossible for many, and more firms default. If no new money comes into the economy to allow the refinancing process, a real economic crisis begins. During the recession, firms start to hedge again, and the cycle is closed (Minsky 1986, 2008).

2.3.3 Coordination games

Mathematical approaches to modeling financial crises have emphasized that there is often positive feedback between market participants' decisions as seen in strategic complementarities. Positive feedback implies that there may be dramatic changes in asset values in response to small changes in economic fundamentals. For example, some models of currency crises imply that a fixed exchange rate may be stable for a long period of time, but will collapse suddenly in an avalanche of currency sales in response to a sufficient deterioration of government finances or underlying economic conditions (Cooper, 1998).

According to some theories, positive feedback implies that the economy can have more than one equilibrium. There may be an equilibrium in which market participants invest heavily in asset markets because they expect assets to be valuable, but there may be equilibrium where participants flee asset markets because they expect others to flee too. This is the type of

argument underlying bank runs, in which savers withdraw their assets from the bank because they expect others to withdraw too. Likewise, in Obstfeld's model of currency crises, when economic conditions are neither too bad nor too good, there are two possible outcomes: speculators may or may not decide to attack the currency depending on what they expect other speculators to do (Obstfeld, 1996).

2.3.4 Herding models and learning models

A variety of models have been developed in which asset values may spiral excessively up or down as investors learn from each other. In these models, asset purchases by a few agents encourage others to buy too, not because the true value of the asset increases when many buy, but because investors come to believe the true asset value is high when they observe others buying.

In "herding" models, it is assumed that investors are fully rational, but only have partial information about the economy. In these models, when a few investors buy some type of asset, this reveals that they have some positive information about that asset, which increases the rational incentive of others to buy the asset too. Even though this is a fully rational decision, it may sometimes lead to mistakenly high asset values (implying, eventually, a crash) since the first investors may, by chance, have been mistaken (Avery, 1998).

In "adaptive learning" or "adaptive expectations" models, investors are assumed to be imperfectly rational, basing their reasoning only on recent experience. In such models, if the price of a given asset rises for some period of time, investors may begin to believe that its price always rises, which increases their tendency to buy and thus drives the price up further. Likewise, observing a few price decreases may give rise to a downward price spiral, so in models of this type large fluctuations in asset prices may occur (Cipriani, 2008).

2.4 Stock Market

Following the recent boom and bust cycles in a number of asset markets around the globe there exists renewed interest in understanding better the factors contributing to the emergence of such drastic asset price movements. Learning by investors gives rise to endogenously driven low-

frequency waves of optimism and pessimism which are associated with sustained asset price booms and busts. These phenomena occur although all investors behave individually rational.

While investors may hold subjective prior beliefs about returns, investors are ‘internally rational’ in the sense of Adam and Marcet (2010). Specifically, all investors make contingent plans to maximize infinite horizon utility and hold complete and consistent set of probability beliefs about payoff relevant variables. Imperfect information about the return process has strong implications for asset prices because agents then use past return realizations to learn about the stochastic process governing returns. Such learning from past observations tends to generate momentum in asset price behavior to the extent that agents become more optimistic (pessimistic) about the return process whenever they are positively (negatively) surprised by realized returns. This is so because increased optimism (pessimism) increases (decreases) investors’ asset demand, if the inter temporal elasticity of substitution is larger than unity. Increased (decreased) asset demand in turn leads to further price increases (decreases), thereby reinforcing the initial tendency of increased optimism. As a result, asset prices changes tend to display low frequency momentum, which gives rise to sustained price increases and decreases. After a sequence of sustained changes countervailing forces come into play that dampen the price momentum, eventually halt it and lead to a reversal.

Consider a situation where increased return optimism has given rise to an asset price boom. Investors’ return optimism induces them to also make optimistic plans about future consumption. This causes the marginal rate of substitution to fall, thereby reduces agents’ demand for assets that allow transferring resources into the future. As a result, price increases eventually come to an end. At this point, however, agents’ return beliefs turn out to be too optimistic relative to the actual return data because large part of returns in the past has been fueled by increases in investor optimism. The subsequent downward revision in beliefs induces negative price momentum and may even cause prices to undershoot their fundamental value substantially and for prolonged periods of time. The effect of future consumption plans then eventually works in reverse and halts this downward momentum. (Adam et al, 2010)

2.5 Efficient Market Hypothesis

“If Kendall (1953) had discovered that stock prices are predictable, this could have been a goldmine. If Kendall’s equations could be used to predict stock prices, investors would reap unending profits simply by purchasing stocks that the computer model implied were about to increase in price and by selling those stocks about to fall in price (Kendall, 1953).”

“A moment’s reflection should be enough to convince that this situation could not persist for long. For example suppose that the model predicts that XYZ stock price currently at \$100 per share will rise dramatically in 3 days to \$110, what will all investors with access to the model’s prediction do today? They would place a great wave of immediate buy orders to cash on in on the prospective increase in stock price. No one holding XYZ however would be willing to sell. The net result would be an immediate jump in the stock price to \$110. The forecast of a future price increase will lead instead to an immediate price increase. In other words, the stock price will immediately reflect the “good news” implicit in the model’s forecast.” (Investments, 2009).

This simple example illustrates why Kendall’s attempt to find recurrent patterns in the stock price movements was likely to fail. A forecast about favorable future performance leads instead to favorable current performance, as market participants all try to get it on action before the price jump.

More generally, any information that could be used to predict stock performance should already be reflected in the stock prices. As soon as there is any information indicating that the stock is under priced and therefore offers a profit opportunity, investors flock to buy the stock and immediately bid up the price for a fair level, where only ordinary rates of return are expected. These “ordinary rates” are simply rates of return commensurate with the risk of the stock (Busse and Green, 2002).

However, if prices are bid immediately to fair levels, given all available information, it maybe that they increase or decrease only in response of new information. New information, by definition, must be unpredictable; if it could be predicted then the prediction would be part of today’s information. Thus the stock prices can change in response to new (unpredictable) information also must move unpredictably.

This is the essence of the argument that stock prices should follow a random walk, that is, that price changes should be random and unpredictable. Far from a proof of the market irrationality, randomly evolving stock prices would be the necessary consequence of intelligent investors competing to discover relevant information on which to buy or sell stocks before the rest of the market becomes aware of that information (Lo, 1988) .

Randomness of price changes should not be confused with irrationality in the level of prices. If prices are determined rationally, then only new information will cause them to change. Therefore, a random walk would be the natural result of prices that always reflect all current knowledge. Indeed, if the stock prices were predictable, that would be damning evidence of stock market efficiency, because the ability to predict prices would indicate that all the available information was not already reflected in stock prices. Therefore, the notion that the stock already reflects all available information is referred to as the efficient market hypothesis (EMH).

2.6 Financial Crises and Stock Market Performance

The 2007-2008 financial crisis caused by the burst of the U.S. housing bubble is not new. History has too often witnessed the rise and collapse of nationwide asset bubbles. Each time, an entire economy cheered for a bubble's birth and then mourned its death. The first recorded nationwide bubble is the "Tulip mania". A period in Dutch history during which contract prices for tulip bulbs reached extraordinarily high levels and then suddenly collapsed.

Infinitely lived agents are willing to invest in bubbles even though they may burst at any moment. The reason is that with incomplete financial markets and borrowing constraints, bubbles provide liquidity and help diversify idiosyncratic risks by serving as stores of value. Bubbles can generate recessions, and the perceived changes in the probability of the bubbles burst can cause asset price movements many times more volatile than aggregate output.

People invest in bubbles for many reasons. The idea that infinitely lived rational agents are willing to hold bubbles with no intrinsic values to self-insure against idiosyncratic income risks can be traced back at least to Bewley (1980). This idea is more clearly articulated recently in general equilibrium models by Kiyotaki and Moore (2008) and Kocherlakota (2009), where heterogeneous firms use intrinsically worthless assets to improve resource allocation and

investment efficiency when financial markets are incomplete. More importantly, casual observation suggests that more often the bubbles are likely to exist in goods with fundamental values, such as antiques, bottles of wines, paintings, flower bulbs, rare stamps, houses, land, and so on (Burnside, 2008).

2.7 Empirical Studies

Empirical studies on stock market integration are extensive, covering the relationships between developed countries, between developing countries, and between developed and developing countries, as well as covering all regions. The literature provides evidence that the degree of market integration has increased for most countries Yoshida (2009).

The existence of a high correlation between stock market returns for an emerging country and developed countries may only indicate that the fluctuations in the Dow Jones create ripple effects around the world. By examining 14 emerging countries, nevertheless, Cuadro-Saez et al. (2009) show that shocks in emerging markets have a significant impact on global equity markets.

One conclusion is that the crisis problem is not new. Banking crises, currency crises and twin crises are hardy perennials; over the last 100 years, crises have been followed by downturns lasting on average 2-3 years. The difference exists in that in the turn of the century there has been a greater frequency of occurrence (Bordo, 2000).

Reform of the international financial system, or of the international financial architecture, rose to prominence in the wake of the financial crisis in Mexico in 1994-95. Interest in it intensified as a result of the Asian financial crisis in 1997-98, and deepened following the Russian and Brazilian crises in 1998 and 1999. Now the challenge is to reduce the frequency of crises among the emerging market countries, the mostly middle-income developing countries that are open to

massive capital flow. To reduce the probability of crises, changes are necessary in: first, country policies and institutions; second, the actions of the IMF and other official international financial institutions; and third, the operation of the international capital markets (Fischer, 2003).

The global financial and economic crisis presents significant challenges for African countries. It has also exposed weaknesses in the functioning of the global economy and led to calls for the reform of the international financial architecture. Although the crisis was triggered by events in the United States housing market, it has spread to all regions of the world with direct consequences for global trade, investment and growth. The crisis represents a serious setback for Africa because it is taking place at a time when the region is making progress in economic performance and management. Since 2000, the Africa region has had an average growth rate of real output above 5 per cent and inflation has declined to single digits. There have also been significant improvements in governance and a reduction in armed conflicts, making the region more attractive for private capital flows. Net private capital flows to Africa increased from \$17.1 billion dollars in 2002 to \$81 billion dollars in 2007. The global financial and economic crisis threatens to reverse these gains in economic performance and management.

The impact of the crisis on Africa comes from both direct and indirect channels. The direct effects have been felt mostly through the financial sector. For example, stock market volatility has increased since the onset of the crisis and wealth losses have been observed in the major stock exchanges. In Egypt and Nigeria, the stock market indices declined by about 67 per cent between March 2008 and March 2009. Significant losses have also been observed in Kenya, Mauritius, Zambia and Botswana. The turmoil in African stock markets is beginning to have significant negative effects on the financial sector and on aggregate demand. For example, there is growing evidence that it has a negative effect on bank balance sheets and, if present trends continue, non-performing loans in the banking sector would likely increase, with direct consequences for financial stability in the region. In Ghana, the ratio of non-performing loans to gross loans increased from 7.9 per cent to 8.7 per cent between 2006 and the third quarter of 2008. In Lesotho, it increased from 2 per cent to 3.5 per cent over the same period (AU Commission, 2009).

It is important to observe that the financial sector could be vulnerable to effects of the global financial crisis and economic recession, as individuals and firms are likely to struggle to repay

debts, thereby resulting in a deterioration of the quality of loan portfolio, and profitability in the financial system. In particular, the Central Bank is cognizant that there may be a lag and perhaps second round effects of the crisis on the Kenyan economy.

There are three main areas of focus for Kenyan monetary authorities to respond in dealing with the global financial crisis, notably; The need to continuously strengthen the regulation of the financial sector; a reappraisal of the role and activities in the capital markets and the importance of strengthening coordination of regulatory authorities in Kenya.

There is need to undertake reforms in the Capital Markets to restore investor trust and confidence. The reforms should also cover a reappraisal of the role and activities of investment banks which remain the weakest link in the financial sector and their regulatory structure in order to stem any downside risk to the banking system. The reforms will entail: developing a comprehensive and enforceable regulatory framework and streamline the corporate governance in line with the international best practices and a thorough fit and proper vetting of directors and owners of these institutions, Re-assessing the use of the word “bank” by investment banks in Kenya – there is potential to confuse the public with traditional banking, and Increasing capitalization requirements – capital adequacy, and Institute risk management practices as well as improve disclosure requirements so financial market participants have better information.

The Kenyan financial sector is regulated by various institutions, namely, the Central Bank of Kenya, the Capital Markets Authority, the Insurance Regulatory Authority, and the Retirement Benefits Authority. Given the inter-dependence of financial markets, and contagion effects of risks emanating from any sector, there is need to begin thinking towards a Financial Services Authority (FSA), which will coordinate financial sector-wide stability surveillance at the technical level. In addition, regional cooperation is critical in addressing financial risks arising from events outside our borders, and within the Eastern Africa region (Hezron, 2009).

Over the past decade, foreign investors have increased their investments in the Nairobi Stock Exchange (NSE), attracted by high returns. As a consequence, the crisis has adversely affected the stock market, with foreign sales exceeding foreign buys in many counters, as foreign investors diversify away from the market.

The NSE 20-share index slumped by 35% in 2008, by 25% from July 2008. The index declined by 7.3% in January 2009. By end-February 2009, the index had declined by 23.2% in the previous one month, by 26.8% in the previous three months and by 46% in the previous one year, offsetting the gains made in the previous three years (one of the largest offsets in sub-Saharan Africa). Kenya's bourse is seen to be one of the worst hit in sub-Saharan Africa in the past one year, after Nigeria and Mauritius, countries that have long liberalized their capital markets.

The decline in the stock market has made it more difficult to borrow from the capital market. The public listing of Co-operative Bank of Kenya in 2008 managed only an 81% subscription, even after scaling down the target amount from KShs10 billion to 6.7 billion, the first under-subscription on the NSE in recent times. Several initial public offerings (IPOs) have also been postponed because of the crisis. However, an 18.5 billion infrastructure bond was oversubscribed (by 45%) in February 2009, indicating a lack of confidence in the bourse owing to poor governance. In 2007-2008, three brokerage firms collapsed, going down with substantial amounts of investor funds. (Mwega, 2009)

2.8 Shocks at the National Level.

It is argued that African banking sectors are insulated from foreign finance. The sectors rely on domestic deposits and lending and do not have derivatives or asset-based securities among their portfolios. According to Shanta Devarajan, Chief Economist of the Africa Region at the World Bank, 'African banks retain loans they originate on their balance sheets, the inter-bank market is small, and the market for securitized or derivative instruments is either small or nonexistent' (Business Daily, 2008). Even though some banks have significant foreign ownership, parent banks are typically not in the US and the foreign ownership share is less than 5%, compared with an average of 40% in other developing countries.

Financial contagion to developing countries may be classified into two categories: i) spillovers through financial market linkages; and ii) pure contagion (Massa, 2009). Under spillovers through financial market linkages, the stock markets (and the banking system) may be affected in various ways. First, foreign investors facing margin calls or redemption orders may be forced to

liquidate their equity positions in developing countries. Second, foreign banks experiencing huge losses in their home country may cut their credit lines in developing countries in order to restore their capital adequacy ratios. Finally, foreign banks facing an increase in the number of non-performing loans (NPLs) at home or facing losses on their securities portfolios may sell off assets in developing countries in order to rebalance their portfolios, thus reducing their overall value at risk. The impact of these channels will depend on the extent to which a country's financial system is integrated into the global system.

Pure contagion, on the other hand, may be caused by heightened risk perception and declining investor confidence as well as by increased risk aversion, rather than by changes in market fundamentals. These phenomena may lead foreign investors to sell off assets that are perceived to be riskier than high-quality assets in their home countries ('flight to quality').

Over the past decade, foreign investors have increased their investments in the Nairobi Stock Exchange (NSE), attracted by high returns. As a consequence, the crisis has adversely affected the stock market, with foreign sales exceeding foreign buys in many counters, as foreign investors diversify away from the market (Kibaara, 2008).

But according to some operators in the NSE, the worst is over: 'most foreign portfolio investments on the NSE have been liquidated by the fast moving and unpredictable hedge funds invested on the NSE'. Hence, 'the exit of foreign investors has already happened and the only way is for them to come back'.

The decline in the stock market has made it more difficult to borrow from the capital market. The public listing of Co-operative Bank of Kenya in 2008 managed only an 81% subscription, even after scaling down the target amount from KShs10 billion to 6.7 billion, the first under-subscription on the NSE in recent times. Several initial public offerings (IPOs) have also been postponed because of the crisis. However, an 18.5 billion infrastructure bond was oversubscribed (by 45%) in February 2009, indicating a lack of confidence in the bourse owing to poor governance. In 2007-2008, three brokerage firms collapsed, going down with substantial amounts of investor funds.

The impact of the financial crisis on African economies focused on secondary effects. The initial effects were on exchange rate depreciation occasioned by nonresident outflows from the

domestic equity and bonds markets. The US dollar was also perceived by investors as a safe haven. So, when global banks were not trading, its liquidity and hence value were affected. This was also followed by a slump in the stock markets. Foreign exchange reserves also fell below the statutory level of four months of imports as these were used to cushion the market from extreme exchange rate volatility. The third round effects of the financial crisis were economic in nature. These comprised of slowdown in exports (mainly horticultural) occasioned by reduced international demand, tourism, remittances and foreign direct investment. These effects also affected domestic economic activity and hence the economic slow-down took effect. However more research has to be done on the African context in order to find ways and means to mitigate financial crises dripping down from the developed nations (Ndung'u, 2010).

2.9 Summary of Literature Review

"From here to eternity" there will be financial crises. Pareto (1964) drew the conclusion that it was possible to conceive that crises would occur even in a planned economy, since planners are fundamentally no different from other men, capable of oscillating between enthusiasm and despair. The somber history of this century has shown that he was not entirely wrong. It is not the market economy that is in question, but rather the framework in which it operates (Allais, 1988). This observation, according to which economic and financial crises are, in the final analysis, a product of our all-too-human frailty, does not signify resignation, far from it. It is more a call for lucidity in the face of the type of dynamic that can move financial markets in certain circumstances and with certain monetary institutions. It is also a call to develop, promote and exploit the teachings of economic and financial history, the sole laboratory open to economists. This is perhaps the means (the most reliable means) of countering the tendency to forget the major crises and the trap (into which we so often fall) set by the tranquility paradox. The free market, it might be said, is the worst system except for all the others granted. But, if Lord Acton is to be believed, "power drives men mad, absolute power drives men absolutely mad." A market economy cannot function if money is unable to play a self-stabilizing role.

Despite this attention, there is no consensus view as to what causes financial crises, what the appropriate policies for ending a crisis are, and what are the real effects of such crises. History provides several examples of financial crisis from which one can draw inference. (Coe 2002)

Thus crisis literature is in crisis. Theory and practice does not have a very good understanding of what causes crises. It is therefore unable to provide policy-makers with good crisis prevention techniques and early warning systems.

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Introduction

This chapter presents the research methodology used in this study. Section 3.2 describes the research design, section 3.3, the data collection methods, section 3.4 data analysis tools and the research model to be applied.

3.2 Research Design

This is an event study analyzing the stock market before and after financial crises. The period of study focuses on NSE performance for the period between 1990 and 2010 which is the liberalization era. This period covers the 1991-1992 financial crises(The European financial crisis), the 1996-1997 financial crisis(Asian financial crisis),the 2000-2001 financial crisis(The dot com bubble), the 2007-2008 financial crisis(The subprime mortgage crisis or the global financial crisis). The NSE index performance during this period was analyzed and the performance of this index compared to non crisis years.

3.3 Data Collection

The study used secondary data on stock market index (NSE index). The NSE index is commonly used as a measure of stock market performance and was used by Ngugi (2008). This index is used because it is available and has been comprehensively collected for a long period of time. These data is nationally collected by the CMA and the NSE and is representative of the economic activities in the country hence its reliability.

3.4 Data Analysis

The main data variable for this study was the NSE index while the financial crisis was the event. The index is used to measure performance of the NSE from each trading day. An increase in the NSE index indicates that the NSE performance is on an upward trend with share prices of most shares increasing and economic activities increasing. Performance indicators, principally the NSE 20 share index and its derivatives (measures of volatility) were analyzed to capture trends of performance. Regression analysis was performed and T-tests for differences in mean used to compare significant differences. Percentage increase/decrease was calculated and comparisons between periods done. The analyzed data was presented in form of tables and graphs.

The data was analyzed using the event study method based on the market model. Brown and Warner (1980, 1985) conclude that event study methodologies based on least square method of regression and standard parametric tests are well specified under a variety of conditions. Some of Brown and Warner (1980, 1985)'s results indicate a striking similarity between the empirical power of the event study.

The least squares method of regression was performed using the following equation;

$$Y = \hat{a} + \beta X$$

The values of \hat{a} and β are estimated by the formula:

$$B = n (\Sigma XY) - (\Sigma X) (\Sigma Y) / n (\Sigma X^2) - (\Sigma X)^2$$

And

$$\hat{a} = \bar{Y} - \beta \bar{X}$$

Where:

β = estimated slope of the line (the regression coefficient)

\hat{a} = estimated intercept of the Y variable

Y = dependent variable

\bar{Y} = mean of the dependent variable

X = independent variable

\bar{X} = mean of the independent variable

n = no of observations

The least squares regression line was extrapolated and tests of statistical significance performed using the equation below;

Total variation = explained variation + unexplained variation

$$\Sigma(Y - \bar{Y})^2 = \Sigma(\hat{Y} - \bar{Y})^2 + \Sigma(Y - \hat{Y})^2$$

By partitioning the total sum of squares, SS_t into two parts: the regression sum of squares, SS_r , and the error sum of squares, SS_e .

$$SS_t = SS_r + SS_e$$

The F- test (analysis of variance) was performed to test the relative magnitude of the SS_r and SS_e , with their appropriate degrees of freedom.

The analysis of variance table was drawn and using the SS_t and SS_r the coefficient of determination obtained by; $r^2 = SS_r / SS_t$

Analysis of variance table:

<u>Source of variation</u>	<u>Sum of Squares</u>	<u>d.f</u>	<u>Mean square</u>	<u>F-Value</u>
Explained by regression	$SS_r = \Sigma(\hat{Y} - \bar{Y})^2$	k-1	$MS_r = SS_r / k-1$	
Unexplained (error)	$SS_e = \Sigma(Y - \hat{Y})^2$	n-k	$MS_e = SS_e / n-k$	

The test statistic calculation was then performed using the one tailed test to test the Hypothesis; $H_0; p = 0, H_1; = p > 0$ using a significance level of 0.05 and critical value of n-2. The test statistic was obtained by; $t = r\sqrt{(n-2)} / \sqrt{(1-r^2)}$

A further analysis from the graphs of volatility and percentage change was done during the crisis and non crisis periods to find out if there were any significant differences.

CHAPTER FOUR

DATA ANALYSIS AND RESULTS

4.1 Introduction

This section presents results of the performance of the NSE 20 share index for the periods 1991 to 2010. The results have been obtained from an analysis of the index at the end of each month during the study period. Analysis is mainly centered on obtaining statistics for the differences in means for the 20 year period.

Test for statistical significance was used to determine the selection of the appropriate hypothesis and further analysis of the trends of the movement of the performance of the market to describe its patterns. A correlation analysis is also utilized to understand the relationship between the period in question and the performance of the market at the particular time.

4.2 Hypothesis Test

The test was as follows:

Null Hypothesis: International financial crises have an effect on the performance of the NSE.

Alternative Hypothesis: International financial crises do not have an effect on the performance of the NSE.

4.3 Statistical Analysis

4.3.1 Year by Year Analysis

Statistics for 1991/1992 period

The mean index for the year 1991 is approximately 942 while for 1992 was 1142. Hence performance was lower in the first year of the crisis compared to the second. Accordingly it is concluded that there is significant variation in the performance during the crisis. The market was less volatile in 1991 as compared to 1992(1.86% to 8.06% respectively). It can be concluded that the market exhibited significantly more volatility in the first year of the crisis.

Statistics for 1996/1997 period

The mean performance of the market as measured by the index was similar (3117 to 3365 respectively) though for the first year of the crisis it was a bit lower. Volatility was also lower in 1996 as compared to 1997 which was 3.55% to 4.55%; though the market was a bit stable, there was significant difference in the performance of the market.

Statistics for 2000/2001 period

Mean performance for the year 2000 was slightly higher than for 2001(2070 to 1625 respectively). Market volatility was lower for the year 2000(11.37%) as compared to (12.24) for 2001. Though the data is close in similarity there seemed to be a significant difference in performance.

Statistics for 2007/2008 period

The mean index for the first year of the crisis was high recording the highest point of 5291. This was followed by a steep decline in 2008 to a low of 4534.volatility of the market showed that variation in stock performance was higher in 2007(5.02%) as compared to 4.52% in 2008. Performance is hence significantly different for the second year.

4.3.2 Control Years

Statistics for the 1993, 1994, 1995 period

The mean index for the three years differs significantly. It was lowest in 1993(1628). It rises to a high of 3990 in 1994 and slightly drops to 3442 in 1995. Volatility was highest in 1993(24.52%). It drops to 11.80% in 1994 and by 1995 it had dropped to a low of 3.94% indicating tendency to stability. This can be concluded that there is also some difference in performance of the index.

Statistics for the 1998/1999 period

Mean index performance was higher for 1998 as compared to 1999. (2972 as compared to 2637 respectively). Market volatility in 1999 was lower than in 1998(9.80% to 10.02% respectively).

Statistics for the 2003, 2004, 2005 period

The mean index shows a continuous increase for the three years. It was at a low of 2080 for 2003, 2827 in 2004, and reaches a high of 3655 in 2005. The market was highly volatile in 2003(16.49%) just a year after the crisis then market activity drops to a low of 6.55% and then steeply rises in 2005 to a high of 13.25%. There is a significant difference in performance for this period.

Statistics for the 2009/2010 period

The mean index performance of 2010 is higher than for 2009 showing a gradual increase from 3029 to 4691 indicating recovery. Market volatility in 2009 was lower exhibiting 6.30% as compared to 2010 with a volatility of 9.64%. There is significant increase in the performance for this period.

4.3.3 Least Squares Method of Regression Analysis.

The least squares method was performed using the equation below and a regression analysis performed on the yearly means from 1991-2010;

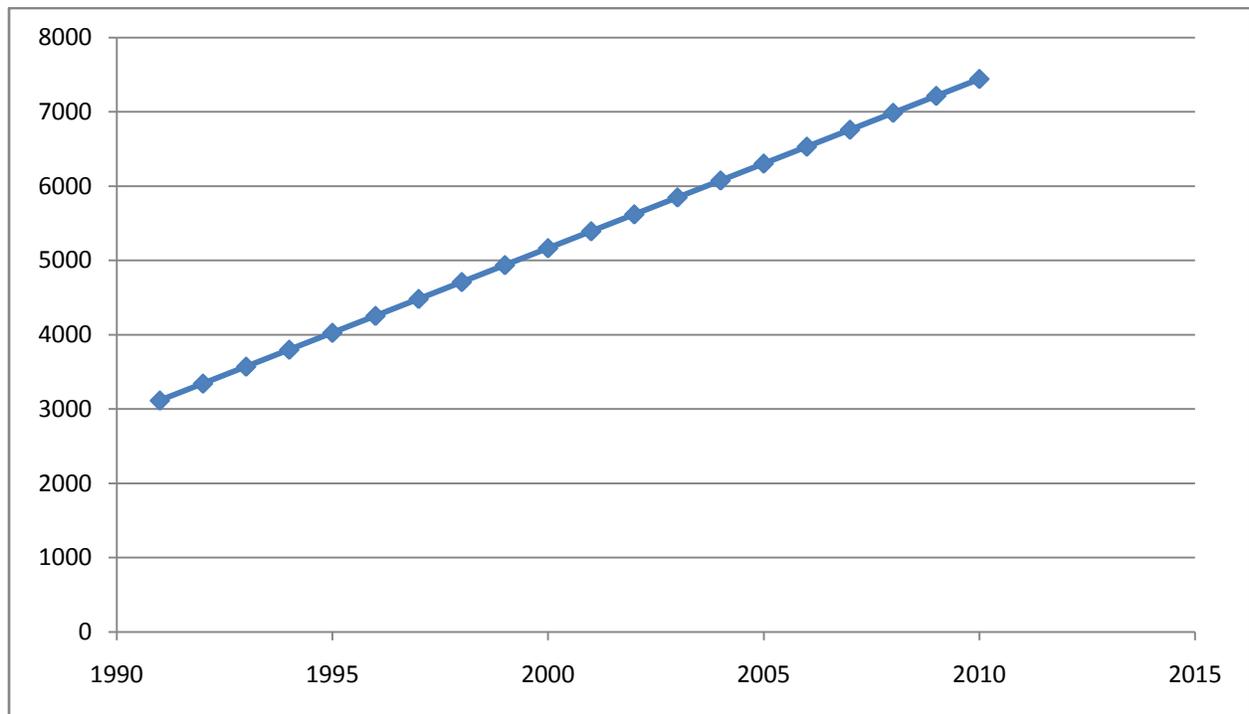
$$Y = \hat{a} + \beta X$$

Therefore;

$$Y = 2,886.3 + 227.688X$$

This regression equation was used to extrapolate the least squares regression line;

The least-squares regression line:



Graph 1: Least squares regression line for the NSE 20 share index yearly mean.

The least squares regression line was drawn to test statistical significance taking a more detailed look at the explained and unexplained variation in the means.

The regression line shows an increasing trend in the performance of the index through the 20 year period. Though it exhibited some variations in volatility and the mean spread the index shows a positive growing trend over the years.

The total sum of squares was then partitioned into two parts in order to perform the f-test (analysis of variance) to test for the relative magnitude of the SS_r and SS_e ,

4.3.4 Test of Statistical Significance:

Analysis of variance summary table for regression of the yearly mean of the NSE 20 share Index:

Source of variation	Sum of Squares	d.f	Mean square	F-Value
Explained by regression	1,871,469,130	1	1,871,469,130	15.66
Unexplained (error)	2,150,592,395	18	119,477,355.3	
Total	4,022,061,525			

The coefficient of determination, r^2 , reflects the proportion of variation explained by the regression line. The formula is;

$$r^2 = SS_r / SS_t = 0.465$$

Therefore 46% of the variation in the index could be explained.

The regression sum of squares and the total sum of squares was used to obtain the coefficient of determination (r^2) which reflects the proportion of variation explained by the regression line.

A 46% explanation is weak. This means that only a small variation in the mean index could be explained by the regression line, negating the predictability of the events effects.

Test statistic calculation:

Linear correlation coefficient(r) of 0.682 was obtained from the 20 pairs of data.

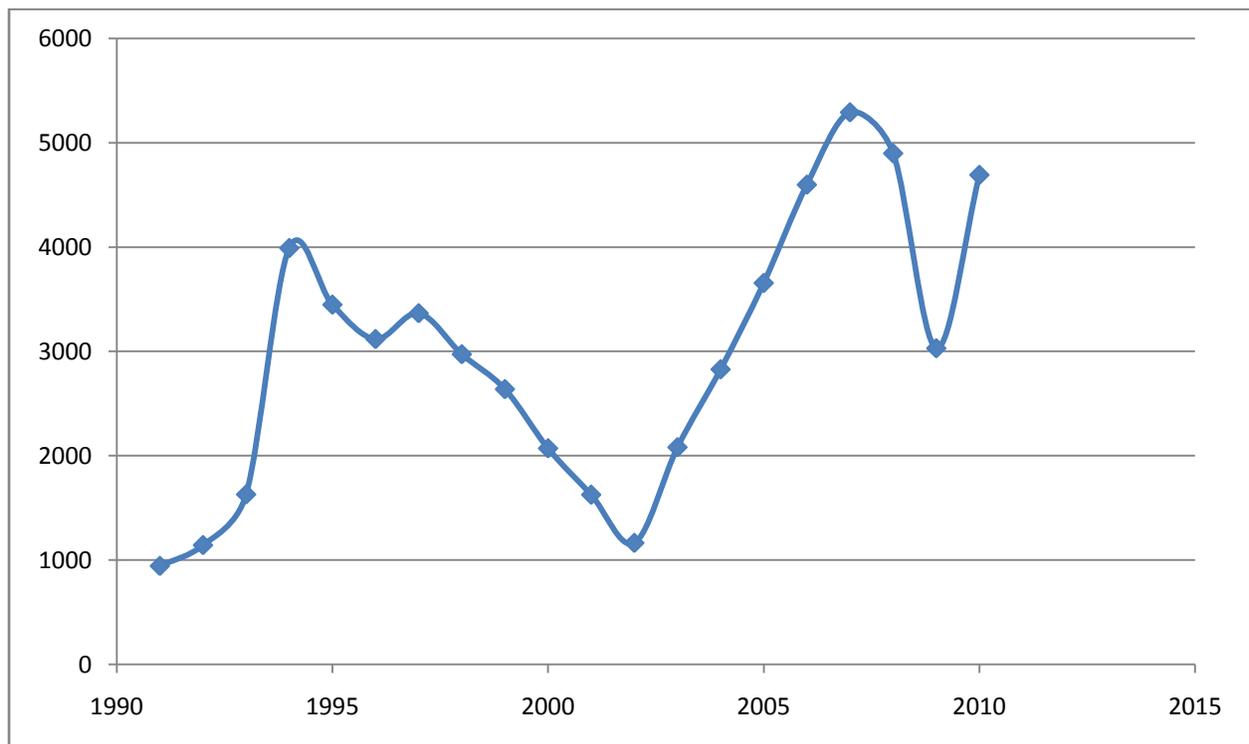
1. Hypothesis (using the one tailed test)
2. Significance level = 0.05
3. The critical value (for $n-2=18$) is 1.734
4. The test statistic : $t = r\sqrt{(n-2)/\sqrt{(1-r^2)}}$
 $= 0.682\sqrt{18/1-(0.682)^2}$
 $= 3.956$
5. So $3.956 > 1.734$ so we can reject the alternate hypothesis.

Since the value of the calculated statistic is above the critical value we may conclude that there is a correlation between the mean index and the events which is significantly above zero. It should be noted that the critical t here was 1.734 and the coefficient registers above the critical value indicating some significance. The coefficient measures the sensitivity of the dependent variable hence the events have some significant impact on the NSE performance.

There is considerable correlation between the years being studied and the absolute variance of the market. The correlation coefficient is equal to 0.682 which shows some significant correlation between the variables. This there seems to be some significant relationship between

the point in time the market is observed and the degree of volatility though the correlation is not very high.

4.4 NSE Index Performances

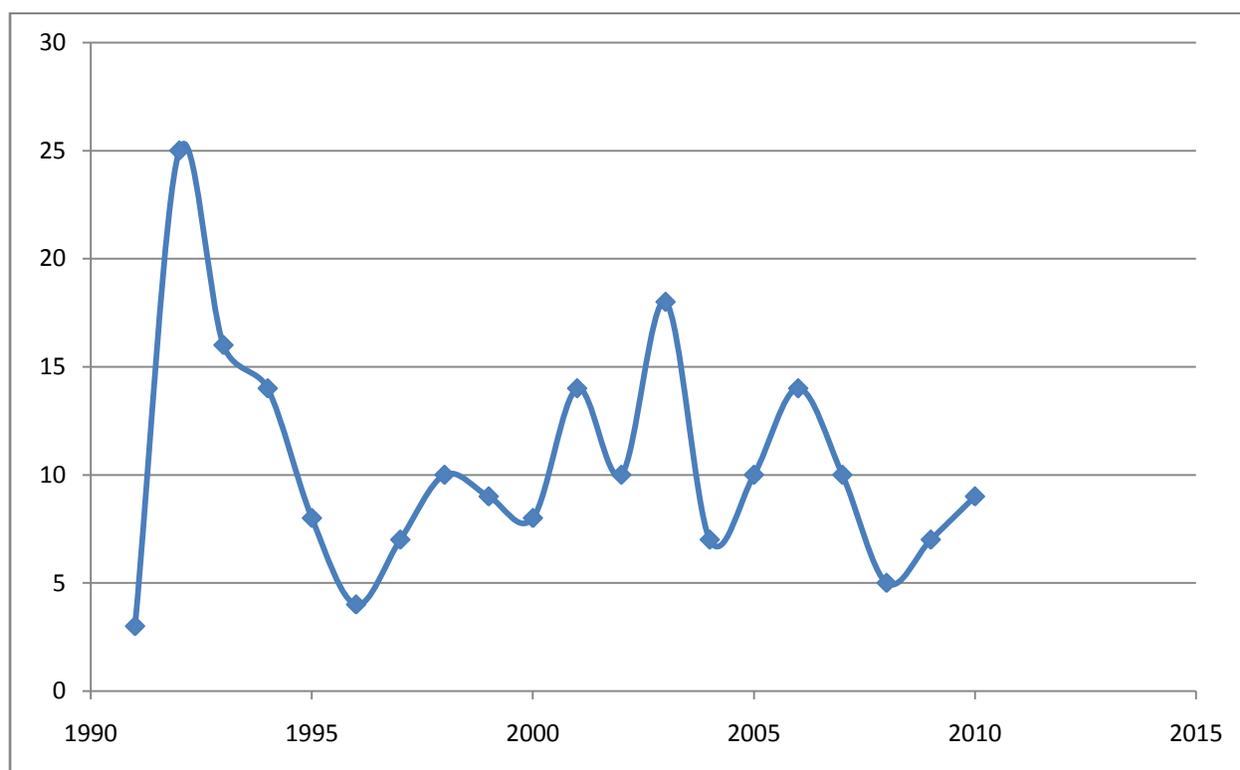


Graph 2: Graph of the yearly mean of the NSE 20 Share Index.

According to the trend curve, the market had the highest performance in 1994 and 2007. During these years the index averaged approximately 4000 and 5200 points respectively. Performance was lowest in 1991 and 2002 with the index score averaging approximately 950 and 1100 points respectively. The index for the crisis years of 1991/92, 1996/97, 2000/2001, 2007/2008 is approximately 950/1140, 3100/3300, 2070/1625, and 5200/4500. This indicates that the market performance was lowest in the 1991/92 crisis but was highest during the 2007/08 period.

From the graph it is clear that performance began dropping immediately after the 1996/97 crisis until it was lowest after the 2000/01 financial crisis. Thereafter the market continued to improve until it peaked in the year 2007. The global financial crisis that originated from the United States took place at this point in time and the market began to fall in performance. It is clear that after this crisis in the period 2009/2010 the NSE index began to improve again.

Relative market volatility for the study period:



Graph 3: Graph of market volatility.

Graph of market volatility.

The market exhibited significant variation over the study period. The above graph shows that dispersion was highest in the year 1993 and 2003. It was lowest in 1991 and 1996. This shows that volatility is lowest in the years when financial crisis begins. Variation was also low in 2000 and in 2007.

The market exhibited the highest volatility in the period just after the 1991/92 financial crisis with the greatest volatility occurring in 1993. There after there was a steep decline in volatility indicating that the markets are moving towards stability. It reaches its lowest in the year 1996 again when the Asian financial crisis began. Immediately after the crisis in 1997, market volatility began rising though less steeply.

The market then realized steep volatility after the 2000/2001 crisis was over having its peak in 2003. Thereafter there was a drop in volatility reaching a low of about 7.0% in 2004. There was a further rise in volatility which was highest in 2006 and dropped during the 2007/08 crisis. After this crisis market volatility started rising until the year 2010.

CHAPTER FIVE

SUMMARY OF FINDINGS, CONCLUSIONS AND RECOMMENDATIONS

5.1 Summary of Findings and Conclusions

The objective of the study was to determine whether global financial crises have any effect on the performance of the Nairobi Stock Exchange. The study shows that there is a significant difference in the performance of the market in the year the financial crisis strikes. One year after the effects have strongly hit the developed markets, volatility begins to increase indicating that investors are coming back to the markets hence the increase in activities. Though correlation analysis is low, showing that the effects are low, general market performance over time is seen to rise in degree according to the regression analysis.

The performance of the market seems to be strongly linked to other factors in the market especially the national elections which happened during the high volatility periods. Though correlation does not imply causation, it implies the strength of association is weak and shows that other major factors may be at play magnifying the effects. Accordingly it can be concluded that the market exhibits significantly more volatility in the years after crises.

The coefficient of determination indicates how well the regression fits the estimated equation. It also reveals the predictive accuracy of the equation. At a low of 46% the predictive accuracy seems to fall off. This can be due to the other contemporaneous events taking place concurrently.

In conclusion, the effects of financial crisis are low and mostly take place after financial crisis effects in the developed exchanges are fading. This shows that investors are cautious and a bit discouraged after international crises and might be watching to see whether the market will be hardly hit. But as we have seen correlation is low and over time the market is not strongly affected. Significantly with time it is seen that the market index has been assuming an upward trend.

5.2 Recommendations

The financial crisis events should not have a major impact in the Nairobi Stock Exchange. Though there is little impact one year after they strike, the market index has increased over the period of time.

The period of study covered twenty years so studies should continually be done as time goes on in order to get the trends over a longer time, and assess impacts as the investment environment changes.

The regulators are always alert changing policies when crisis hit the major world stock exchanges showing vigilance and alertness on the side of the NSE, thus policy makers should keep on mitigating these effects after financial crisis strikes. In the mean time investors should focus on their investment strategies and should not allow financial crisis originating from other world economies affect their decisions.

5.3 Limitations of the Study

One of the major limitations of this study is the availability of data. The NSE vends their data and their rates are quite expensive. As the amount of data increases so does the cost.

Another limitation is that Daily NSE data is not easily available hence monthly data is used. The data available from the NSE vendors is either the month end or year end mean average of the NSE 20 Share Index.

The period under study was limited to about 20 years. Better results would be possible if the study period was longer probably since the 1960,s when the NSE changed from being privately owned.

There is limited information on the impacts of global financial crisis on the emerging markets and the extent of foreigners' involvement in these markets. Most of the available information is on the developed stock exchanges and Asia.

5.4 Suggestions for Further Research

A study on the progress and extent of integration to the world markets should be done to identify whether the NSE is becoming more and more integrated to the world markets. Globalization has improved since the year 2000 while the emerging superpowers like China are getting more involved in the African continent.

Other factors apart from international financial crises and national elections should be studied, especially on the Local investor psychology and behavior and the level of awareness of the markets by the local investors. Investor Behavioral Finance still remains a relatively new area that is largely unexplored.

A study on the local financial crisis and collapse of local financial intermediaries should be done to ascertain their effects. Various brokerage firms have been put under receivership which has created panic among investors which might also affect the performance of the NSE.

This study used regression in its analysis; another study using descriptive statistics can be carried out to find out if the results would be the same. Descriptive analyses will reveal more on the policy impacts and responses to the effects of financial crisis.

A study on the level of participation of foreign investors in the NSE can be carried out. It is perceived that most foreign investors hide their investments through local mechanisms due to tax differences. The study should also venture into Foreign Direct Investments (FDI,s) in Africa which has seen an upsurge in the recent past.

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Appendix 1

Month/Year	1991	1992	1993	1994	1995	1996	1997	1998	1999
January	914	997	1176	3819	3940	3409	3477	3348	2983
February	942	1047	1221	5031	3897	3230	3474	3362	2989
March	924	1048	1252	4378	3640	3042	3355	3213	2815
April	970	1056	1342	3559	3519	3019	3289	3015	2768
May	949	1082	1398	3620	3415	3031	3461	3016	2760
June	949	1145	1508	4137	3464	3144	3530	2908	2756
July	924	1209	1650	4070	3326	3150	3467	2853	2745
August	922	1236	1724	3916	3115	3074	3403	2863	2494
September	949	1228	1811	3715	2845	3090	3447	2810	2428
October	955	1234	1844	3586	3237	3056	3315	2734	2309
November	954	1257	2096	3485	3496	3042	3047	2584	2294
December	958	1167	2514	4559	3469	3114	3115	2962	2303
Total	11310	13705	19537	47874	41363	37402	40379	35668	31645
Mean(Y)	942	1142	1628	3990	3447	3117	3365	2972	2637
Percentage Change	4%	22%	115%	291%	-32%	-10%	8%	-6%	-26%
(Y) Values	3113.988	3341.676	3569.364	3797.052	4024.74	4252.428	4480.116	4707.804	4935.492

Month/Year	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
January	2301	1897	1343	1511	3158	3094	4172	5774	4713	3262	3572
February	2278	1933	1314	1558	3175	3213	4057	5774	5072	2950	3591
March	2233	1831	1183	1608	2771	3209	4102	5134	4843	2474	4055
April	2162	1768	1129	1847	2708	3228	4025	5148	5336	2728	4072
May	2053	1636	1071	2075	2689	3505	4350	5002	5176	2829	4211
June	2003	1657	1087	1935	2640	3972	4260	5147	5186	3240	4247
July	1967	1621	1098	2005	2708	3982	4259	5340	4931	3357	4398
August	1959	1506	1043	2107	2709	3939	4486	5372	4649	3183	
September	2001	1401	1043	2380	2671	3833	4880	5146	4180	3080	
October	2043	1473	1116	2457	2830	3939	5314	4971	3459	2986	
November	1930	1420	1162	2737	2918	3974	5615	5235	3514	3089	
December	1913	1355	11363	2738	2946	3973	5646	5445	3353	3174	
Total	24844	19498	13952	24957	33921	43861	55165	63487	54412	36352	28146
Mean(Y)	2070	1625	1163	2080	2827	3655	4597	5291	4534	3020	4691
Percentage Change	-41%	-29%	20%	101%	116%	92%	42%	48%	-23%	-26%	42%
(Ŷ)Values	5163	5390	5618	5846	6073	6301	6529	6756	6984	7212	7440