Assessing the Impact of Stock Market Development on Economic Growth in Saudi Arabia: An Empirical Analysis

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by

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Ahmed Misfer Alghamedi

Abstract

The relationship between stock market development and economic growth has long been a significant subject of debate. Some argue that a well-functioning stock market can have an accelerating effect on economic growth by channelling more savings to investment and enhancing capital productivity through the efficient allocation of resources. In contrast, others hold that stock market development has little relevance to real economic activity or even that may be harmful to the economy. The majorities of empirical studies on this topic focus on advanced markets and developed emerging markets, and no major study exists for markets in petroleum-based economies, such as Saudi Arabia. This research therefore aims to conduct an empirical analysis of the overlooked role of stock market development in the economic growth process in the case of Saudi Arabia; thereby it aims to examine the effect of stock market development on economic growth in Saudi Arabia.

In order to achieve the research aim, a mixed method approach is taken, combining quantitative and qualitative methods to enhance the study's validity and reliability. In the initial empirical chapter, time-series econometric analysis is utilised to measure the nexus between economic growth and stock market. After treating the data for time series features, the OLS regression analysis showed the market capitalisation (*LNMC*) variable was statistically significant in all of the results presented. In addition, the number of shares traded (*LNNST*) was found to be significant in all of the results, except in the *non-oil PSGDP* model. These results indicate that the Saudi economy in general still relies on oil revenues and fiscal policies. As part of the econometric analysis, the results of the Granger causality analysis produced inconclusive results, which revealed that the government plays an active role in the economy and intervenes when the macro-economic performance does not achieve the desired results. These interventions seem to be situational rather than long-term and structural. The causal relationships from the independent variables of the financial markets weakened, when the influence of the oil revenues was removed from the equation, suggesting that the Saudi financial markets still rely heavily on oil revenues. Finally, the results of Error Correction Model or ECM with all the models for *GDP* showed that there is a bi-directional causality that runs from *GDP, NOGDP, NOPSGDP, GFC* and *NOGFC* to MCR, and to *NST*. The Error Correction Model of EC_{t-1} shows that the significant results indicate the speed of adjustment to the long-run equilibrium, and reveal the direction of causality.

Secondly, in an attempt to provide qualitative meaning to the results, eighteen interviews were conducted with respondents closely linked to the stock market, in order to elicit their opinions. These interviews complemented the empirical work and added better understanding to the study's findings. The analysis of the interviews shows that the Saudi stock market is an emerging market, which has undergone several stages of development. Some of the interviewees were optimistic, believing that movements of stock market prices over the next five years may be more stable as a result of the strength of the Saudi economy. Those with an optimistic outlook saw more stability, improvement and profits, while those with a more pessimistic outlook foresaw more volatility, fluctuations and losses.

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Most importantly, thanks and love to my wonderful parents and family. They have wished so long for this thesis, waited and supported me throughout these years. To them I dedicate this work.

Ahmed Misfer Alghmedi
May 2012

DECLARATION

I hereby confirm that this thesis is a result of my original work; none of the materials in this thesis has previously been submitted for any other degrees in this or any other university.

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CHAPTER 1

INTRODUCTION

1.1. INTRODUCTION

The financial system in Saudi Arabia in recent years has expanded, become stronger and more efficient and the quality of services provided by financial institutions has improved significantly. As part of financial developments, the capabilities of the Saudi capital market make a substantial contribution to economic growth. In empirically investigating the subject matter, some studies have found that the capital market has a good performance in terms of size and liquidity, and hence has a positive effect on economic growth.

In facilitating the financial development and expanding the contribution of financial development on economic growth, the Saudi government introduced or modified several legislations and regulations to regulate and stimulate the expansion and performance of the financial sector. One of the most important of these was the Capital Market System, whose objective was the provision of a legal and regulatory framework for the implementation of all activities related to the financial market, such as the sale and purchase of stocks, bonds and securities trading and investment funds.

As part of the continuous development, sweeping reforms of the financial sector are underway with the aim of developing, extending and increasing access to financial markets and improving financial services. This increases economic diversification, encourages growth and supports employment opportunities. Examining, therefore, the relationship between stock market and economic growth in Saudi Arabia is rather timely, in particular considering the Saudi Arabian search for economic diversification and global difficulties in the finance sector all over the world.

Investigating the link between the financial market development and economic growth, hence, has become a matter of debate among economists. In this context, the theoretical and empirical relationship between financial market development and the growth of real per capita *GDP* still gives rise to contradictory evidence. The question

hinges on whether financial factors, and specifically the stock market in the empirical study, are an important influence on economic growth. Opinions differ greatly among economists on this point, from the earliest studies in this area by Bagehot (1873), and Schumperter (1912), through Fisher (1933), Robinson (1952), Gurley and Shaw (1955), Patrick (1966), Goldsmith (1969), and Hicks (1969), up to McKinnon (1973), Shaw (1973), and Lucas (1988).

Conversely, in theory, they all have a very consistent view of the significance of finance in the growth process. Most of such studies consider the financial sector to be a "real sector". The earlier studies in this field were made by Goldsmith (1969). In conventional growth theory, while financial intermediation could be associated with the level of the capital stock per worker or with the level of productivity, it could be associated with their respective growth rates, as these were attributed to exogenous technical progress.

According to Mckinnon (1973) and Shaw (1973), among others, there is considerable evidence to show that there is a positive correlation between financial intermediation and economic growth. Although their work offered considerable insights, it lacked an analytical basis. Bagehot (1873) and Hicks (1969) for instance, argued that financial development played a crucial part in the industrialisation of England by facilitating the mobilisation of capital for large-scale works. Schumpeter (1912) and Patrick (1966) argued that services provided by financial intermediaries are vital for the promotion of innovation in technology, which has significant effects on growth.

According to Fisher (1933), poorly performing financial markets represented an important factor contributing to the severe economic recession during the Great Depression. For their part, Gurley and Shaw (1955) saw direct link between financial markets and real activity. They highlighted that financial markets permit the extension of borrowers' financial capacity, make inter-temporal trade more efficient and are able to pool investors' funds and offer producers external finance. Hence, financial markets are vital to development as they improve physical capital accumulation.

In contrast to these opinions, Robinson (1952), among others, does not view finance as having a “role" in development. Rather, he argues that economic growth creates a demand for financial services, as "where enterprise leads, finance follows”, (Robinson 1952: 86). His view suggests that financial development is only a corollary economic development and that financial institutions have no part to play in economic growth.

Empirically, the recent resurgence of interest in the relation between financial development and growth arises from the insights and techniques of the endogenous growth model, which has mainly shown that growth can be self-sustaining without an exogenous technical process and that growth rates can be linked to technology, income distribution and institutional arrangements. This gives the theoretical background lacking in early empirical studies of financial intermediation not only affecting the level of the economy but also the growth rate. The resulting models have given new momentum to empirical research on the impact of financial development on growth and the reverse. This body of literature, reviewed by Gertler (1988), Levine (1997), Bossone (2000), and Tsuru (2000), stress how economic growth can be affected by functions exercised by financial intermediation, such as mobilising capital, assisting in the allocation of resources, monitoring managers, and facilitating risk management.

Nonetheless, the majority of the empirical literature on growth that explicitly models finance as an explanatory variable in the growth process is limited to financial intermediation by the banking sector and fails to mention the role of the non-banking sector (that is, stock markets). More specifically, these studies have used highly aggregated indicators of financial intermediation; for instance, the ratio of M2 or private sector credit to *GDP*. Academics and practitioners have neglected the role of stock markets on economic development for many years. However, it has become hard to ignore the part played by the stock markets in everyday modern life. In recent years, although the theoretical literature has paid greater attention to the links between the stock markets and economic growth, there is still a dearth of empirical evidence. The absence of a standard set of indicators to measure the extent of market development has been the main reason for this scarcity of empirical literature on stock markets.

It should be noted that the empirical studies on this topic conduct cross-country growth regression and therefore, they do not explicitly confront the issue of causality. Stock market development may predict economic growth only by anticipating future growth; hence stock market development may be a strong indicator rather than a causal factor. Specifically, this approach involves averaging out variables over long periods of time, and using them in cross-section regressions, which aim to explain cross- country growth rate variables. Therefore, with this technique, different countries cannot be permitted to show differing patterns of causality. However, in some countries the stock market is a major sector, whereas in others it takes second place to the banking sector, meaning that the causality result is valid only on average. Therefore, these studies have not entirely completely solved the problem of causality, although they strongly imply that stock market development is a significant determinant of future economic growth. The questions about causality, thus, have not been solved, and hence the question remains to be answered: Does stock market development result in economic growth, does economic growth result in greater stock market development, or is the causality bi-directional?

Nevertheless, the literature survey indicates that there is no empirical evidence that gives policy makers information about the specific causal direction between the stock market development and the real economic sector. Moreover, there are opinions that dispute the positive influence of the stock market on economic growth in oil-rich countries such as Saudi Arabia. The main reasons given for this are market inefficiencies in emerging economies, which make it likely that stock markets will be more akin to casinos than to institutions dedicated to mobilising saving rates and improving investment decisions, technical innovation, and long-term growth.

1.2. AIM, OBJECTIVES AND THE RESESARCH QUESTIONS

This research aims to examine, evaluate, and analyse the impact of Saudi stock markets on the growth of the country through quantitative and qualitative study.
To reach this aim, the following objectives are developed:

(i) to conduct a critical theoretical review of the available literature on the topic of stock market and economic growth;

(ii) to review of the empirical studies on the relationship between stock market developments and economic growth;
(iii) to survey the development and growth of Saudi Arabian economy;
(iv) to conduct an econometric time-series modelling based study to empirically examine the Saudi Arabian case;
(v) to conduct interviews with a number of stakeholders to under through their perspectives on the relationship between stock market developments and economic growth.

The following research question is developed:
In what way are economic growth and stock market development in Saudi Arabia related?

It should be noted that there has been very little work carried out to determine how stock market development contributes to growth, specifically for Saudi economy. An examination of the contribution to non-oil growth is a potentially important aspect; however, there is still further work in this area to be done before the results can be confirmed.

As regards to the hypotheses, in fact there are two universal hypotheses concerning the relationship between stock market development and economic growth.
H_{01}: A well-functioning stock market may affect economic growth through mobilizing of saving, allocation of liquidity.
H_{02}: The stock market as a means of speculation that has little relevance to real economic activity or even that may be harmful to the economy.

It should be noted that in selecting an individual country (i.e. Saudi Arabia), the results of this study will be appropriate for policy decisions in emerging economies in general and Saudi Arabia in particular. Moreover, the provision of empirical evidence on this significant issue in the case of a single country will add to the literature on the role of stock market development in economic growth and open an interesting research topic.

1.3. RESEARCH METHO

This study evaluates the effect of stock market development on economic growth, taking Saudi Arabia as a country-specific case study and making use of macro data sets. Therefore, an assortment of different datasets and econometrics methodologies are used to assess the link between the stock market development and economic growth.

The aforementioned argument implies that financial intermediaries may have a natural tendency to change; if the composition of savings affects real growth rates, intermediaries will tend to encourage growth. In this regard, the analysis is informed by the contributions of the literature on endogenous growth, for example, Romer (1986), Prescott and Boyd (1987), and Lucas (1988). One of the many insights of this literature is that savings behaviour generally influences equilibrium growth rates. More specifically, as far as intermediaries tend to encourage capital investment, they will also tend to increase growth rates.

In line with the established literature, this study employs a time-series analysis and the characteristics of the data is scrutinised against a number of empirical analysis methods. In the first part of the empirical analysis the data will be tested for the existence of unit root. Second, following the adjustments after the unit root test, a series of *OLS* regression results will be presented. Third, these results will be further examined by using Johansen Co-integration analysis. Fourth, the dependent and independent variables will be controlled for causal relations among themselves in pairs. Finally, Error Correction Model (*ECM*) will be tested to capture the speed of adjustment to equilibrium in the case of any shock to any of the independent variables.

In supporting the findings developed from the quantitative examination of the secondary data, this research also utilized qualitative method of data analysis through primary data collected through interviews conducted with a number of stake holders. These data analysed through coding method, which provided a better understanding of impact of stock market having on the economic growth but also provided some preliminary insight into individual investor's behaviours in the stock market.

1.4. OVERVIEW OF THE STUDY

This thesis is structured as follows.

This present chapter, Chapter 1, is the Introduction chapter presenting the aims of the research, the underlying theory and the methodology used in the research.

Chapter 2 presents a review of the relevant literature. It is divided into two parts. The first part deals with theoretical considerations of stock market development and economic growth, comprising theoretical economic growth, neoclassical economic growth, and the endogenous economic growth model. Then the effects on capital allocation, productivity and savings rate are discussed. Then the channels of the financial sector functions and growth are discussed. The second part, there is an introduction, presenting a brief overview of the literature on the contribution of the stock market to economic growth. The main literature review is divided into two sections, the first concerning the literature on Classical and Neo-classical economic growth theory and the second, that on stock markets. This second section covers literature on liquidity, risk management, information transparency and the allocation of resources, monitoring managers and corporate control, efficient mobilisation of capital resources, and the transmission path for monetary policy. Next there is review of studies related specifically to Arab countries, and Chapter 2 ends by giving the background to some of the theoretical models of the part played by financial markets, particularly the stock market, in economic development.

Chapter 3 presents an outline of the background as a descriptive study of the environment of economic development. It is divided into three main sections. The first regards economic planning in Saudi Arabia, including a description of the eight five-year national development plans, up to 2010, including figures indicating the achievement of the Saudi Economy over the years when these plans were implemented. The second section of this chapter concerns indicators of Saudi economic growth, including *GDP*. The third part of the chapter regards the financial institutions of Saudi Arabia.

The subject of Chapter 4 is the Saudi Stock market. The chapter is divided into two sections. The first reviews the historical development of the Saudi stock market from

its official initiation in 1985 up to 2010. In the second section, legislation and regulation**,** graphical and statistical analyses are used, as well as descriptive study, to investigate the behaviour of the market.

Chapter 5 describes the material, models and methods used in the study. The theoretical backgrounds of methods are discussed. These methods are unit root tests, Johansen co-integration test, causality tests, Granger causality tests and Error Correction Model (*ECM*).

In Chapter 6, the characteristics of the data are scrutinised using a number of empirical analysis methods. Firstly, the data are tested for the existence of unit root, after which a series of OLS regression results will be presented. Third, these results are further examined by using Johansen Co-integration analysis. Fourth, the dependent and independent variables are controlled for causal relations among themselves in pairs and finally, Error Correction Model (*ECM*).

Chapter 7 analyses the primary data collected from through the interview process in order to obtain an understanding of various aspects of Saudi stock market development.

Chapter 8 presents the conclusion to the study. It comprises a summary of the main findings of the research, the contributions of the study and recommendations for future research.

CHAPTER 2
ECONOMIC GROWTH AND STOCK MARKET: LITERATURE REVIEW

2.1. INTRODUCTION

The determinants of economic growth have been a subject of an old debate for many decades. With the financial developments in particular in the 20th century, the focus also shifted on the impact of financial development on economic growth. An important part of financial development is the emergence of stock market in the developing world as well. Thus, theoretically it is expected that developments in stock market to contribute to economic growth. However, there are different views exists in the literature on this.

The speculative characteristics of the stock markets which aims to deepen financial markets and increase access to financial services and support of accelerated growth and employment opportunities, particularly those in developing countries, have elicited a great deal of criticism. It is argued that, by and large, observed prices and their movements are not captured by what Shiller (1981) terms 'market fundamentals', and that this has a negative impact on capital formulation and economic growth (De Long *et al.,* 1990). It has been maintained by certain critics that because of the inadequacy of available information which acts as a deterrent to investors, a dearth of reliable regulatory bodies, and the high costs of transactions, it is somewhat difficult to impose discipline on stock markets in developing countries.

Moreover, several researchers (*e.g*. Stiglitz, 1989a; Collier and Mayer, 1989; Cobham, 1995; and Dow and Gorton, 1997) have been of the view that banks are more appropriate for economic growth than stock markets, especially for developing countries. Singh (1992a, 1996, 1997a, 1999) went so far as to argue that stock markets do more harm than good, and that certain features of mature stock markets, such as volatility, deterrence of risk-averse savers and the demands of speculative investors for short-term profits at the expense of long-term growth, would pose far greater problems in developing countries and have an adverse effect on their economies.

Others (such as Levine, 1991; Bencivenga and Smith, 1991; Bencivenga *et al*., 1995, 1996; Diamond, 1996), Greenwood and Smith, 1997; and Fulghieri and Rovelli, 1998) maintain that stock market liquidity plays an important part in economic growth, while it has also been argued that stock market liquidity can raise motivation to obtain information about companies and improve corporate governance (*e.g.* Grossman and Stiglitz, 1980; Merton 1987; Bhide 1993; and Holstrom and Tirol, 1993). Obstfeld (1995), among others, demonstrates that resource allocation is enhanced by the international risk-sharing resulting from stock market integration, and that hence the economic growth rate is advanced.

Nonetheless, Mayer (1988) demonstrates that stock markets, no matter their size, are not significant sources of corporate finance, while Stiglitz (1985) maintains that liquid stock markets will not increase motivation to obtain information about companies and improve corporate governance. Tullio and Pagano (1994) finds that uncertainty decreases with increased stock market liquidity and this could have the result of reducing savings rates and thus slowing economic growth. Furthermore, it has been put forward by Devereux and Smith (1994) that the international integration of stock markets and concomitant risk sharing can slow economic growth by reducing savings rates. Morck *et al.,* (1990), among others, stress that economic growth can be hindered by stock markets through facilitating the mechanisms for corporate takeover.

Partially, a dearth of empirical research on the role played by stock markets in the process of economic development due to the lack of indicators capable of measuring the extent of stock market development with any accuracy. Scholars have had neither a common concept nor a common measure of stock market development (Demirguc-Kunt and Levine, 1996a). This subject has been almost entirely neglected, except by, at macro-economic level, Atji and Jovanovic (1993) and Levine and Zervos (1996, 1998a), and by Demirguc-Kunt and Maksimovic (1998, 2000), Rajan and Zingales (1998) and Beck, Levine and Loayza (2000) at company and industrial level.

This chapter aims to review the literature on the link between stock markets and economic growth, starting with a review of the literature on theoretical growth, and moving on to the literature on stock market functions. In this latter, the links between economic growth and the quality of the functions offered by stock markets which

play crucial parts in an economy is discussed. Among these functions are the facilitation of liquidity, the production of information, corporate monitoring and control, the mobilisation of capital, the diversification of risk, and the provision of a way of transmission for monetary policy. Next will come a presentation of the most significant theoretical literature that directly models the part played by financial markets in economic development.

2.2. ECONOMIC GROWTH: THEORETICAL BACKGROUND

Economic growth theory deals with the determination of living standards, a matter which is of the greatest significance to human welfare. It should be observed that economic growth, which is defined in this work as growth in real per capita gross domestic product (*GDP*), is not the only factor which determines economic development; other significant determinants are the distribution of wealth, access to health care and education, among others. However, economic growth is a key condition, and it is sustained economic growth is necessary for a continued increase in the average standard of living.

By the mid-twentieth century, the generally accepted approach to modelling growth was one based on neo-classical growth theory, as exemplified in the work of Solow (1956), Swan (1956) and Cass (1965). This type of framework assumes a neo-classical production function with a constant return to scale, diminishing returns to each input (labour and capital) and an easy flexibility of substitution between the inputs.

The neo-classical growth model is therefore a reasonably uncomplicated general equilibrium model that leads an economy to its steady-state vital role in ensuring confluence to such a steady state. However, it also implies that in the steady state, there is a fixed capital-labour ratio, and zero productivity of capital, and therefore growth-generated endogenous factors (*i.e.* capital accumulation) are zero. This model has been named as exogenous growth model, as in it the steady-state rate can be positive if an exogenous force such as technological development affects the system. This model does not offer a useful framework for understanding economic forces and policies, as it assumes that the rate of technological progress is exogenous; financial

factors cannot, therefore, influence the rate of economic growth, but only the equilibrium level of capital stock per worker.

So-called 'endogenous growth theory' grew out of a new trend in research on economic growth, which began in the mid-1980s. As its name suggest, endogenous growth theory attempted to generate alternative methods of modelling the determination of long-term growth rates by focusing on economic growth, as an endogenous result of an economic system. Romer (1986), Lucas (1988) and Rebelo (1991) developed models characterised by non-decreasing return to a broad class of capital goods, including human capital, constructing this framework on the earlier work of Arrow (1962), whose growth model did not have the tendency for capital accumulation to generate diminishing returns, due to the introduction of knowledge spillover across producers. Romer (1986) attempted to integrate these types of spillover into a competitive framework.

In the economic growth theory, marginal productivity plays a vital part. The traditional literature on economic growth stresses the dynamic process that would lead the economy to steady-state equilibrium in which per capita real output growth would eventually cease. In ensuring convergence to such equilibrium, decreasing growth over time is assumed.

However, in the new endogenous growth theory Romer (1986), Lucas (1988) and Rebelo (1991), another mechanism is considered, one in which the marginal productivity of capital does not converge to zero as capital grows unchecked. Therefore, even if exogenous productivity growth is absent, the endogenous growth of real per capita output is possible. The endogenous growth theory demonstrated that, by changing the rate of technological progress or human capital accumulation, and hence changing investment in physical and human capital, they could have an influence on steady, long-term growth. As, in this theory, there are externalities to human and physical capital, suitable choices and policies assist private agents to internalise these externalities, which could promote long-term growth. In this way, a country's general policy system, *e.g.* financial structures, market and regulatory systems, taxes, and macro-economic distortions, could change decisions on savings and investment in such a way as to change long-term growth.

Growth models have been developed since the introduction of the endogenous growth theory. In such models, such factors as government policies and technology, among others, can have an effect on the long-term rate. This has led to a re-awakening of interest in the part played by financial development in economic growth. The neoclassical model did not allow for the introduction of a role for finance in the determination of long-term rate; financial factors in the steady state could not be linked to their respective growth rates, but only to the level of productivity or the level of capital stock per worker. Financial factors could affect the transitional growth rate out with the steady state, but not the long-term growth rate.

Recent years have seen the appearance of a literature which expands on the developments in endogenous growth theory, and investigates the effects of financial development on long-term growth rates. This *oeuvre* has been reviewed by Levine (1997), Bossone (2000) and Tsuru (2000), and highlights how economic growth can be influenced by functions performed by financial intermediaries such as monitoring managers, facilitating risk management, mobilising capital, and assisting in the allocation of resources.

It is predicted in theoretical models of economic growth that higher savings and investment will result in a higher level of per capita income and more rapid economic growth (Claus *et al.*, 2001). When considering the process of economic growth, it is important to ask the question whether economic growth can be sustained in the long-run and if so, how the growth rate is determined? (Grossman and Helpman, 1994). Gross (2001) and Binswanger (1999) state that there have been three main approaches in the development of economic growth modelling.

This section concerns with the determinants of the growth rate of output over the long-run through two corresponding approaches: the standard neoclassical growth theory the Solow-Swan (1956) model and Lucas (1988) and Romer's (1986) endogenous economic growth theory.

2.2.1. Neoclassical Growth Model

Solow (1956) made perhaps the most important contribution to the growth literature (Dornbusch and Fischer, 1994; Agenor and Montiel, 1999; Gross 2001), whose model was developed in a setting where prices assume that supply is equal to

demand. The model presumes the supply of goods and services on a production function with constant returns to scale and imperfect substitution between production, capital and labour factors. It is also assumed in the model that aggregate output is produced in a Cobb-Douglas production function (Dornbusch and Fischer, 1994; Agenor and Montiel, 1999):

$$Y(L,K) = AK^{\alpha} L^{\beta} \qquad (2.1)$$

where Y= economic growth; K= capital; L= number of workers employed in the production process, A= level of technology, and α and β coefficients, which represent, the output elasticity of labour and capital respectively. These values are constants determined by available technology.

Output elasticity measures the responsiveness of output to any alteration in the levels of labour or capital used in production, all other things being equal. For instance, if β = 0.10, a 1% increase in labour would result in an increase in output of around 0.10% increase.

In neoclassical theory, the returns to scale ($\alpha + \beta = 1$) are usually assumed constant, therefore, all inputs in the same proportion raise output in that same proportion. If perfect competition where inputs are paid their marginal products is assumed, the change in output arising from technical progress and changes in inputs can be written as follows

$$DY/Y = (\beta \, DL/L) + (\alpha \, DK/K) + DA/A \qquad (2.2)$$

Where β and α, are the marginal products of labour and capital, respectively; $DL/L = n$ assume a given and constant rate of labour force growth. It should be stated that if DA/A= 0, there is no technical progress.

In addition, equations 2.2 and 2.1 become respectively:

$$Y = f(K) \qquad (2a.3)$$

$$Y(K) = AK^{\alpha} \qquad (2b.3)$$

If a fixed rate of population growth and no technical progress are assumed, then the growth rate of capital is the sole remaining variable element in equation 2.3, as saving depends on income, which in turn determines capital growth.

According to Gross (2001), an application model on steady growth driven by investment assumes:

$$k = Y\lambda - (n+\delta)K, \qquad 0<\lambda, \delta< 1 \qquad (2.4)$$

where δ and n stand for the tendency to save and the exogenous rate of population growth, respectively. It is positively related to investment per worker and negatively related to population growth and depreciation. Capital per worker increases when the population growth rate plus the depreciation are lower than the investment, *i.e.* when the saving per worker is more than the amount of investment required to compensate for new workers and depreciation. Capital per worker decreases as the population rises if there is no investment. From (2b.3) and (2.4) and consideration of the growth rate of the capital per worker yields:

$$G_k = k/K = \delta A K^{\alpha-1} - (n + \delta) \qquad (2a.5)$$

$$G_y = \alpha G_k \qquad (2b.5)$$

Where $k = Y\lambda - (n+\delta)K$ and G_y represents the rate of growth of output per worker. Capital must grow at the same rate as population growth, $n + \delta$, in order for k to be constant. There should be new investment concomitant to increases in the work force. Capital and labour grow at the same rate in the long run and the ratio remains constant, regardless of the savings rate (Gross, 2001). According to decreasing returns to capital, extra units of capital per worker produce less and less, with depreciation staying constant. Ultimately, all savings will be used to replace the amount of existing capital lost because of depreciation. As the economy moves towards to the new steady state output level, there is only a short-term effect on growth. The growth of capital is not affected by the savings rate in the long run. According to Swan (1956), the steady-state is a condition of the economy in which output and capital per worker do not alter change over time because the rate of new capital production from invested savings is precisely equal to the rate of existing capital depreciation (Swan, 1956).

There is also the assumption in this model that nations will not move towards the same steady state levels of per capita income despite having similar savings and population growth rates and production technologies. Solow's (1956) conclusion was that although poor countries will grow more rapidly than rich ones, both will move towards the same level of per capita income as per capita growth in the steady state relies completely on exogenous technological progress available to all countries. Hence, all countries will grow at the same rate (Agenor and Montiel, 1999). In sum, Gross (2001) states that the main conclusion of Solow's growth model is that only exogenously unexplained technical progress or changes in demographic factors can have an effect on growth once the steady state is achieved. While the per capita income will be increased by an increase in the saving rate or any policy change affecting the economy, long-run growth will not.

Conversely, endogenous growth models demonstrate that economic growth performance is linked to financial development, technology and income distribution (Caporale *et al*., 2002).

There are two main methods of endogenising the steady state growth rate. The first is that the rate of technical progress may be endogenous, $\triangle A/A$. The second is that the growth of technological change determines the steady-state growth rate if there are constant returns to factors of production that can be accrued. In the neoclassical growth models, however, steady state growth does not depend on the saving rate (Blanchard, 2003).

As well as the relationship between output and investment, it is necessary to consider the channels through which stock market development may be related to economic growth. Following Romer (1986, 1990) and Lucas (1988), the endogenous growth model described in the next section provides more detail.

2.2.2. Endogenous Economic Growth Model

In the traditional neoclassical growth model, growth is considered as exogenous outcome determined by external factors, such as advancement in technology. In other words, the source of growth is outside the model, whereas endogenous growth is found within the model. Among the early contributors to the endogenous growth theory were Romer (1986) and Lucas (1988), who investigated the suggestion that the

steady state growth rate is dependent in the long term on the levels of accumulation of capital, both physical and human. The recent interest in the relationship between financial development and economic growth springs largely from the insights and techniques of endogenous growth models. These have demonstrated that self-sustaining economic growth can exist without exogenous technical progress and that growth may be linked to technology, preferences, the distribution of income, and institutional systems (Pagano, 1993). This has also reawakened interest among theorists about the relation between stock market development and economic growth, and has resulted in the development of a number of models proposing possible links (Gronski, 2001).

There is a considerable literature on endogenous growth models. Their aim is to resolve some of the problems in neo-classical growth models, such as the assumption that the economy will cease growing at some point if it is not stimulated by exogenous technological progress (McCallum, 1996). The endogenous growth models use neo-classical assumptions to demonstrate that an economy can have perpetual growth.

There are a number of endogenous growth models, each of which models an internal mechanism as the source of growth, in which economic growth is enhanced by financial intermediation in three main ways. First, financial institutions pool funds and economise on liquid reserve holdings and direct these funds towards production by predicting withdrawal demand. This effect was modelled by Diamond and Dybvig (1983) and refers mainly to the banking sector. The role of the stock market is to provide liquidity to entrepreneurs when they require it, and thus they do not have to liquidate their investment. Bencivenga et al. (1995, 1996) proposed similar models. Their models concern the effect on the savings rate of return and the growth rate of the economy of improved liquidity as transaction costs fall, demonstrating that, under certain conditions, a lower growth rate may result from greater liquidity. Levine's (1991) model, on the other hand, concerns the development of the stock market leading to agents being able to avoid both liquidity and productivity risk.

Second, information is obtained by financial institutions, enables them to make efficient capital allocations. One of the best-known endogenous growth models in this area is that of Greenwood and Jovanovic (1990). In this model, financial activity

develops in parallel to the development of the economy. The most important role of intermediation is to gather and analyse information, thus assisting the ability to allocate funds to projects with the highest returns.

In Greenwood and Smith's (1997) two models financial markets develop in tandem with the economy. The first model can be applied to either banks or an equity market. It shows that equity markets increase the economic growth rate on condition that agents are adequately risk-averse. In this situation, if the economy was bank-based, agents would hesitate to invest their funds in physical capital. This model assumes that, due to the costs of establishing a financial market, financial development needs some initial real development and may therefore be applicable to developing economies. However, according to this model, financial intermediation may be inappropriate if it is enforced by the government to drive growth; rather, the economy should develop to an extent that would lead to an increase in market activity. The second model demonstrates the way in which intermediation can support specialisation, important in economic activity, can be supported by intermediation. This model also shows how resource can be allocated more efficiently through financial intermediaries.

Lastly, investors may obtain a higher and safer return by diversifying through intermediaries, resulting in increased investment and growth. In Saint-Paul's (1992) model, the main factor driving economic growth is the possibility of diversification. This model demonstrates that if financial intermediation is absent, investors will opt for 'flexible' and poorly-productive technologies. However, if the financial market is well-developed, they are able to diversify, preferring specialised technologies which will increase productivity growth.

Devereux and Smith (1994) and Obstfeld (1994) provide two models, based on the assumption of world market integration. Obstfeld (1994) demonstrates international diversification will lead to increased benefit due to the world portfolio moving from safe, low-yield capital into riskier, high-yield capital. However, according to Devereux and Smith's (1994) model, reduced uncertainty may reduce individual's inclination to save. Hence, there is a counterbalance between reduced risk and lower savings, with the latter possibly leading to lower growth. Devereux and Smith (1991), in an earlier study, examined how integration affected different generations. They

showed that, global integration initially leads to higher welfare as the risk-sharing effect is greater than the growth effect.

In Boyd and Smith's (1996) model borrowers can opt for either debt or equity. The amount of information required by an investor to monitor the investment determines borrowers' choice. They differentiate between three technologies which can be used by borrowers: a publicly-available production technology; a production technology which can be used by investors to check their investment cost-free, and; a production technology, which entails investors incurring some costs for their investment to be monitored.

Models in which growth can be generated endogenously were presented by Lucas (1988), Rebelo (1991) and Romer (1990) (MacCallum, 1996). In these models, two principal views were taken. The first, developed by Rebelo (1991), involves capital accumulation externality, while the second depends on the accumulation of human capital. Two types of factors of production were assumed by Rebelo (1991). All inputs in this model are reproducible and it operates according to a Cobb-Douglas function (Rebelo, 1991). Capital in Rebelo's (1991) model has a wider definition, referring not only to machines and buildings but also human capital. In the production process, human and physical capital interacts with no decreasing returns to capital.

To explain the possible effects of financial development on growth, many economists begin with the *AK* model, which is a special case of a Cobb–Douglas production function, the least complex endogenous growth model, in which aggregate output is a linear function of the aggregate capital stock. The *AK* endogenous growth model is similar to the models by Greenwood and Jovanovic (1990), Pagano (1993) and Gronski (2001), and elucidates how stock market development can influence economic growth via saving and investment. Saving and investment have a significant role in economic growth and development, as saving determines the country's capability for investment and hence, for production. This subsequently influences economic growth potential.

In a closed economy, where Y_t aggregate output is produced during period t and is a linear function of K_t the aggregate capital stock:

$$Y_t = AK_t \qquad (2.6)$$

As in Lucas (1988), K_t is the aggregate capital stock, comprising also physical and human capital, and A is the social marginal productivity of capital. Y stands for the growth rate $(Y_t/Y_{t-1}) - 1$, which at time $(t+1)$, is established only by the growth of capital input as:

$$Y_{t+1} = (K_{t+1} / Kt) - 1 \qquad (2.7)$$

Assuming that a single good is produced by the economy, this good can be either invested or consumed. If the former, it depreciates at the rate δ, per period. Gross investment, I_t can be expressed thus:

$$I_t = (K_{t+1}) - (1 - \delta) K_t \qquad (2.8)$$

That is, the difference between the capital stock at time $t+1$ and time t, with the addition of the depreciated capital stock at time t is equal to gross investment. The balance of the financial market assumes the equality between gross saving, S_t and gross investment, in this closed economy. That is, gross investment can be only financed by gross saving. If it is further assumed that a part of saving, $(1-\alpha)$ is lost during the financial intermediation process because of transaction costs, then in balance only a small percentage of saved resources S_t is allotted to investment I_t as follows:

$$I_t = \alpha S_t \qquad (2.9)$$

The amount of saving the financial system absorbs is then $(1-\alpha) S_t$. The higher α is, the lower is the capital accumulation in the economy.

From equations 2.7 and 2.8, the growth rate of the economy at time $t+1$ is Y_{t+1}. This can be expressed as the ratio of gross investment to capital minus depreciation $Y_{t+1} = (I_t / Kt) - \delta$. In the next stage, obtained from equation 2.6, the ratio of output to productivity can substitute for capital, as:

$$Y_{t+1} = A (I_t / Y_t) - \delta \qquad (2.10)$$

When the capital market balance equation (2.9) is used and the gross saving rate S/Y represented by s, the following equation can express the steady-state growth rate:

$$Y = A \alpha s - \delta \qquad (2.11)$$

It would therefore appear from this simple model that the economic growth process may be influenced by stock market development in three ways. The first is by a rise in the saving rate (s), S/Y, or in the investment rate by the use of economic policies that impact directly on the determinants of private saving behaviour. The second way is by routing more saving to investment, circumventing the loss of funds during the process of intermediation by an increase in the fraction α. That is, an increase in α in equation 2.11 increases the growth rate, Y. The final way is by improving capital productivity through a more productive allocation of resources. Hence, savings routed through the stock market are allocated with greater efficiency, with higher economic growth resulting from the higher capital productivity.

2.3. FINANCIAL DEVELOPMENT AND ECONOMIC GROWTH

The link between financial development and economic growth was first acknowledged in the 1950s, when Patrick (1966) asked whether the causation went from financial development to real output or the other way round.

Researchers have examined the relation between the financial and the real sectors from various perspectives and there is great variation in the interpretations of the relationship between the real and the financial sectors. Since the 1950s, theories have developed significantly, shifting from the stance that growth is exogenously determined to one in which economic growth is seen as endogenous and thus institutions and policies are significant.

There have been a number of views of the causal relationship between financial liberalisation and economic growth. McKinnon (1973) and Shaw (1973) first developed the financial liberalisation theory. They argued that the liberalisation of interest rates would increase savings and investment and lead to more rapid economic growth, with increased real interest rates permitting only the most productive projects to continue, hence increasing the efficiency of investment

In the first view, economic growth results in the development of the financial sector and leads to increased need for financial services. This increased need for the financial sector results in its expansion. However, the assumption in this analysis is that development of financial sector is a consequence of overall economic

development and increases directly, with high elasticity between the increase in financial services and the rate of return.

Furthermore, the rapid growth rate of *GDP* would lead to a greater demand for financial assets on the part of the business sector. This in turn would lead to the increase of financial intermediation in financing the business sector expansion. There is also a connection between the demand for financial services, which causes financial development, the rate of growth in output and the general state of the economy, particularly in terms of monetary and physical policies (Patrick 1966; Gurley and Shaw 1967).

In the other view, it is assumed that the demand for financial services is anticipated by their creation. In this theory, financial institutions would promote the transfer of resources and encourage an entrepreneurial response in this sector. With the ability to access financial credit easily, productive investment could fund the sector's expansion. For example, its expansion could be financed by projects with high risk and profits, with high stock market development.

This view concurs with McKinnon and Shaw's (1973) stance that the investment rate is affected positively by financial intermediation. The McKinnon-Shaw model assumes that private investment is positively related to the accumulation of domestic real money balances in developing countries, although it is expected that the real interest rate will have a positive relationship with investment. The basis of this argument is that in developing countries the availability of loan able funds would facilitate the import of the advanced technology required for development. This would also lead to the adoption of advanced technology, thereby generating higher growth. According to McKinnon and Shaw, the crucial factors in financial development are a high interest rate and high savings. Conversely, Pagano (1993) asserts that financial development does not always imply high savings.

Attempting to discover whether a high interest rate and high level of savings are the first stage in the supply-leading phenomena, Lanyi and Saracoglu (1983) carried out a regression analysis on the average growth rates of growth of *GDP* on the real rate of interest for the period 1971-1980. DeGregorio and Guidotti (1995) also examined the relationship between financial development and economic growth and concluded that

the effect of financial intermediation on economic growth appeared to be greater in high-income countries than in low-income ones. In the latter there was a negative correlation between bank credit and growth as the lack of regulation resulted in a delicate financial system.

Giovannini (1983) found that real interest rate was not significant, and argued that in developing countries the relationship between interest rates and savings is unclear and difficult to discern. According to Sundararajan and Thakur (1980), real domestic savings are indirectly affected by the real rate of interest, while a high interest rate may increase capital efficiency and stimulate economic growth. They also found that the real rate of interest had an insignificant effect on real domestic savings. This was also the finding of Watson and Ramlogan (1991).

De Melo and Tybout (1986), in their study of the link between financial liberalisation and investment, concluded that there was an inverse relationship between investment and interest rates, thus refuting McKinnon and Shaw's finding that investment and interest rates were significantly related. According to Hague *et al.* (1990), a high real interest rate affected investment in developing economies negatively.

In addition, if there is a bi-directional causal relationship between financial development and economic growth, financial intermediation and growth rate are both endogenous (*e.g.* Patrick 1966; McKinnon, 1988; Fry 1993; Pagano 1993). Patrick (1996) hypothesised that the interaction of supply-leading and demand-leading may occur. Attempts have been made to establish the direction of causality (Gupta 1984; Jung 1986; Hussein 1995). For instance, Gupta (1984) supported the direction of causality going from financial development to economic growth and used different measurements for financial development, nominal value of *Ml*, *M2*, total domestic credit, total private credit, and total finance. The opposite appears in only 5 countries, and a bi-directional relationship was shown in only 2 countries out of 14.

Jung (1986) made use of 15 annual observations for 56 countries to study the causality between financial development and economic growth, and asserted that the ratio of currency to *M1* would be decreased by more financial services. Hence, there may be a negative correlation between financial development and the ratio of currency to *Ml*. Jung's (1986) finding has been debated as having too small a sample

of countries (15) to carry out a reliable causality test. Moreover, Hussein (1995) employed the standard Granger causality test, which may give ambiguous results because of potential omission of the variable from the model. Further, the study does not take into account the stock market development in the growth process.

The growth models discussed previously do not explicitly model financial intermediation. They suggest that the entire fraction saved from aggregate output is directed to investment, implying that cost-free transfers of savings towards investment may exist (Gross, 2001). These transfers are made more efficient by financial intermediation, which guides them towards an increase in capital accumulation and thus, growth of real output. Pagano (1993) states that the influence of financial intermediation on growth can be taken in the *AK* model as in $Y=AK$, only with the loss of a fraction $1-\lambda$ of savings because of the involvement of financial intermediaries and with only the fraction λ of savings being available for investment $\lambda S_t = I_t$ the steady-state growth rate with constant returns to scale, as in Rebelo (1991).

Banks consider the fraction $1-\lambda$ to be the spread between lending and borrowing rates, while securities brokers and dealers consider it as commissions and fees taking the form of profits from the financial services provided (Pagano, 1993). The transaction cost is represented by this fraction. The more efficiently savings are turned into investment, the fewer the resources that will be lost and the greater the amount of savings that will be conveyed to productive investments (Thiel, 2001).

In sum, three basic ways through which the functions of financial markets affect economic growth can be identified:

(i) Resources are mobilised and allocated to their most efficient use by financial market development.

(ii) Financial market development may alter the savings rate, thereby affecting physical capital accumulation.

(iii) The productivity of capital used in an economy is increased by financial market development.

2.3.1. The Effects of Financial Development on Capital Allocation and Productivity

Financial intermediaries' primary function is to assign funds to projects with the highest productivity margin. They gather, process, and evaluate information to identify profitable investment projects. They also give encouragement to entrepreneurs to invest in technologies which are more productive, although riskier, by providing the risk-sharing function. Greenwood and Jovanovic (1990) studied this route: capital invested in safe, low-yield technologies and that invested in risky, high-yield ones are distinguished in their model. Two types of shock can affect the latter: aggregate shocks that impact all projects belonging to the same sector, and project-specific shocks. Financial intermediaries, who have large portfolios and have processed information, are able to recognise aggregate productive shocks and persuade their customers to choose the most profitable investment projects. Thus, the transfer of savings through financial intermediaries leads to their more efficient allocation, as the higher productivity of capital leads to higher growth. Thiel (2001) argues that efficient allocation of capital may also be achieved in a financial market through offering low financing costs to lucrative investment projects and by offering high capital costs in order to prevent investment projects of lower productivity.

Through the provision of liquidity, financial intermediaries assist the involvement of entrepreneurs who prefer liquid investment in projects which are illiquid but of higher productivity. Financial intermediaries control depositors' liquidity risks and transfer the majority of their savings to investors. The percentage maintained as liquid assets is not more than the total expected withdrawals by depositors in liquidity shocks (Pagano, 1993). Regarding stock markets, selling is also a way of securing liquidity. Portfolio diversification ensures that risk is spread over various unrelated sectors and permits agents to engage a part of their investments in riskier, but more productive, projects. In brief, the ability of financial intermediaries to evaluate information, share risk and provide liquidity provisions affects the capital allocated to productive projects.

2.3.2. The Effects of Financial Development on Saving Rate

Post-Keynesian economists agree with the theory that a country's economic growth can and should be assisted by the development of financial intermediation. However, the financial liberalisation theory is supply-led and assumes that the supply of finance will be used to encourage investment. Post-Keynesian economists hold that the economy of any country is demand-led and, as the economy grows, the increasing demand for financial instruments will lead to the development of the financial sector. However, a problem of the liberalisation argument could be that interest rates do not influence the level of savings but rather, the way they are held (Dow and Earl, 1982).

With an increase in interest rates, although savers will tend to change from keeping cash to financial assets and may indeed tend to increase savings, the principal impact of such a policy will not be a significant increase in savings. Post-Keynesian theory holds that there cannot be an increase in savings without an increase in income and individuals spending a smaller percentage of their income. However, an increase in investment brings an increase in income; therefore, an increase savings can only be brought about by stimulating the demand side of the economy.

In endogenous growth models, growth is affected by savings. Some recent literature on growth has shown that the direction of the relationship is unclear because financial development may decrease savings and hence growth (Horioka and Yin, 2010; Park and Shin, 2009; Horioka and Hagiwara, 2010; Wen, 2009, 2011; and Beck et al, 2012). With the development of financial markets, agents are offered greater protection against liquidity and risks. With greater certainty, savers could choose to decrease their overall savings rate. The introduction of the insurance market lessens the requirement for saving as a safety measure. In an endogenous growth model, the growth rate decreases with this fall in savings; hence, financial development may have a negative effect on growth. Moreover, household borrowings such as consumer credit and mortgage loans may result in a decrease in savings, as current consumption relies more on available resources than on permanent income (Pagano, 1993).

2.4. FINANCIAL SECTOR FUNCTIONS AND GROWTH: THE CHANNELS

Financial markets offer liquidity and allow individuals to allocate their current income to saving and spending, changing the social composition of saving in a

manner that may be favourable to improving capital accumulation. Financial markets promote entrepreneurial specialisation and development, and the implementation of new technologies.

A financial system that functions well has very important functions within the economy. Greenwood and Smith (1997) and Viney (2003) stress that the financial markets are the most significant way of promoting and assigning savings to rival users as they provide financial instruments that have various combinations of the features of risk and return. In addition, according to Goldsmith (1969), the correlation reflects a bi-directional casual relationship, and financial markets increase economic growth by enhancing the efficiency of investment. This argument is extended by McKinnon (1973) and Shaw (1973), who argue that the growth rate of savings and investment are raised by financial markets.

Levine (1997) discusses the fundamental functions and routes by which financial markets and intermediaries may be connected to economic growth and suggests that an efficient financial system may allow a higher level of savings and investment, and accelerate economic growth. To clarify how the financial system may theoretically impact on economic growth, Levine (1997) breaks it down into five functions: savings mobilisation, risk management facilitation, resource allocation, monitoring managers and applying corporate control, and assisting the exchange of goods and services. Khan (2000) offers more detail about these functions, as follows:

(i) Mobilising savings: This occurs when financial markets and institutions pool the saving of various households and make these funds available for lending. This decreases the transaction costs associated with external finance for both companies and households.

(ii) Allocating resources: This is done by determining which investment opportunities are worth considering and assessing the credit worthiness of borrowers at lower cost than the average small investor.

(iii) Risk management: Risk is reduced by spreading investors saving across many different investment opportunities.

(iv) Creating liquidity: Liquidity is created by the allocation of funds to both short-term and long-term investment by the financial system.

(v) Facilitating the exchange of goods and services: Trade is facilitated by extending credit and guaranteeing payments.

(vi) Monitoring managers and applying corporate control: Borrowers are monitored by banks, and equity markets permit shareholders to control managers by voting out inefficient management.

In addition, well-functioning financial systems reduce information and transaction costs, which will affect savings and investment decisions, technological innovation, and the long-run economic growth rate. Levine (1997), using the endogenous growth model theory, studied two channels through which financial markets may influence economic growth: capital accumulation and technological advances. The educational level of the labour force is seen as human capital, while technological innovations reflect scientific development, and can be seen in new production techniques and the creation of innovative goods and services.

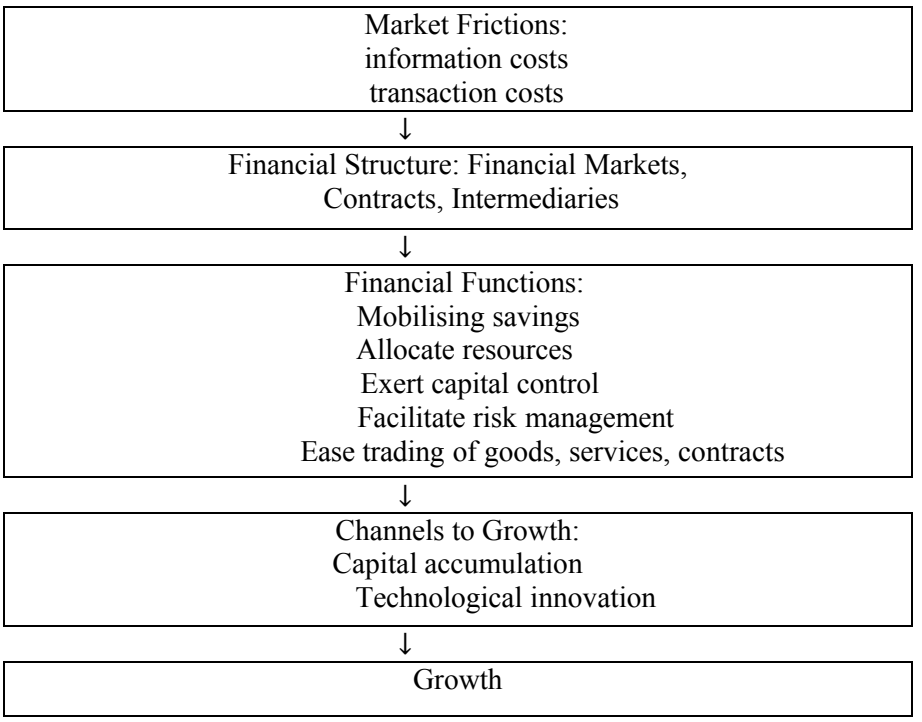
2.5. STOCK MARKET AND ECONOMIC GROWTH

The part played by stock markets in the process of economic growth has been given less attention than many other aspects of the financial sector, with economists having traditionally concentrated on banks. Schumpeter (1912, cited by Levine *et al.,* 2000) and Patrick (1966) claim that the services the banking system provides are necessary for technological progress and economic growth. Others, such as Goldsmith (1969) and McKinnon (1973) offer conceptual descriptions of how economic growth is affected by the financial system. Recent theoretical models have presented the ties between banks and economic activity, as banks can exert an influence on the allocation of resources by saving on the expenses involved in obtaining and processing information about companies and managers. Better banks produce information at lower costs, which has implications for capital allocation and productivity growth (Diamond, 1984; Greenwood and Jovanovic, 1990; King and Levine, 1993,a,b; and Arnold and Walz, 2000).

Over the last two decades more appropriate data has become available, and this has led to an increase in empirical research in this domain. Ghani (1992), King and Levine, (1993,a,b), Degregorio and Giudotti (1995), Demirguc-Kunt and Maximovic, 1998; Rousseau and Wachtel (1998), Beck *et al.* (1999b), Levine *et al.* (2000), and Levine (2000), demonstrate that there is a strong correlation between measures of banking development and economic growth in a wide range of countries. Their view is that a properly-functioning financial system is vital for sustained economic growth.

In the same time, there has also been an increase in theoretical literature, which proposes that well-functioning stock markets can play a significant part in the process of economic development by the performance of certain financial functions, including the diversification of risk, the facilitation of liquidity, the promotion of corporate control and monitoring, the collection and dissemination of information about companies, and transmitting a path for monetary policy. Through changing the quality of these functions, a correctly-functioning stock market can influence a steady state of growth by changing the rate of savings, technological progress, and economic efficiency.

Figure 2.1: A Functional Approach to Finance and Growth



As shown in Figure 2.1, Levine (1997) and Khan (2000) pointed out five basic functions linking finance and growth: mobilizing savings, facilitating risk management, allocating resources, monitoring managers and exerting corporate control and facilitating the exchange of goods and services.

However, there is disagreement as to the signs of the effect of stock market on economic growth, with several theoretical works suggesting that economic growth is in fact slowed by stock market development. In other words, there is disagreement among economists concerning the relationship between stock market development and economic growth and the position of stock markets in emerging economies. There is a view that stock markets in such economies are more harmful than beneficial as they distort capital formulation and the allocation of resources. This is a result of lack of careful regulatory authorities, high transaction costs, insufficient competition, and lack of investors as a result of deficient information flows.

Binswanger (1999) argues that explanations for a negative correlation between financial activities and growth are given in the following hypotheses:

(i) The Crowding-out Hypothesis: Government borrowing increases the demand for funds, resulting in an increase in interest rates. More savings are transferred into financial assets when these offer higher returns than real investment projects; hence, there is less access to funding for real investment. This damages capital formation and has a negative effect on economic growth (Darrat, 2002).

(ii) The Financial Dominance Hypothesis: If speculative financial activities increasingly determine economic bases, such as interest rates and exchange rates, they could erroneously indicate as to the condition of the economy. Hence, the financial sector has increasing dominance over the real sector.

(iii) The Casino Hypothesis: When there are speculative bubbles, economic reality is not accurately signalled by prices in financial markets, particularly stock markets. In this situation, it is the illogical behaviour of speculators that determines prices in financial markets rather than discounting expected future cash flows, which ought to reflect all the information available on the bases. Hence, they become unreliable as stated by Keynes, “intelligence is devoted to anticipating what average opinion

expects the average opinion to be" (Binswanger, 1999). These circumstances will widen the gap between the real and the financial sector and harm the growth process.

(iv) The Short-Term Hypothesis: Financial market prices usually react quickly to information that has an effect on expectations. This leads to greater volatility, leading to short-term losses or profits. Such conditions appeal to short-term speculators as they wish to profit as quickly as they can. Managers will value short-term success in the market when making decisions about the performance of projects. Long-term investment is undervalued by managers as financial markets undervalue it, harming long-term productive investments and hence growth.

(v) The Financial Instability Hypothesis: Minsky (1959) asserted that when the economy is thriving, investors are encouraged to become involved in more speculative activities. The rise in asset prices increases the investors' readiness to finance such activities through commitment to debt, which raises interest rates. Credit is used more frequently to finance speculative activities than real investment projects, which leads to a fragile financial structure. If the returns expected from the speculative activities are less than the debt, the majority of speculators become bankrupt and the economy finishes in a debt deflation where the classic view of a Debt- Deflation theory was suggested by Irving Fisher (1933).

Several empirical estimations suggest that well-functioning banks encourage and accelerate economic growth, but these studies rarely examine stock market development at the same time. Beck and Levine (2002) emphasise that not including stock market development makes it difficult to evaluate whether the positive relationship between bank development and growth holds when controlling for stock market development. The banks and the market each have a separate effect on economic growth and overall financial development for growth, but it is not easy to distinguish the separate effect of stock markets and banks on economic achievement.

On the other hand, stock market development is intended to encourage saving by offering households additional instruments which may be more suitable to their risk preferences and liquidity requirements. Liquid equity markets reduce the risk of investment and make it more attractive as they permit savers to obtain asset equity and to sell it rapidly and inexpensively if they need to access their portfolios. Firms

also have permanent access to capital raised through equity issues. However, according to Levine (1996), stock market liquidity enhances the allocation of capital and improves the prospects of long-term economic growth as it facilitates long-term investment and increases its profitability.

Furthermore, Rousseau and Wachtel (2000) explain why stock market is a significant financial institution even when equity issuance is a comparatively small source of funds. Firstly, the stock market offers investors and entrepreneurs a possible exit mechanism. Secondly, inflows of capital in both foreign direct investment and portfolios can be significant sources of investment funds for emerging markets and economies in transition. Thirdly, the provision of liquidity by organised stock markets encourages both local and overseas investors to transfer their excess from short-run assets to the long-run capital market, where the funds can offer access to capital for companies to finance major projects that benefit from substantive economies of scale. Finally, the stock market provides significant information that enhances the efficiency of financial intermediation in general. For traded firms, the stock market enhances information flow from management to owners and rapidly produces a market assessment of company developments.

Regarding this divergence of opinions on the relationship of stock market development and economic growth, the following sections proceed to a discussion of the stock market functions, and the ways in which these functions can affect economic growth.

2.5.1. Liquidity

Economic activity may be affected by stock markets through their liquidity. Economides and Siow (1988) define liquidity as the ease and speed with which agents can convert assets into purchasing power without large price changes between trades. It is essentially the capability to carry out a transaction without cost. In advanced stock markets, equities are typically more liquid than equities traded on the majority of the less developed stock markets. According to Levine (1997), liquid stock markets are those where it is comparatively cheap to trade equities and where the timing and settlement of these trades is fairly certain.

The connection between liquidity and economic growth comes about due to a long-term commitment of capital being needed for many high-return projects. However, savers do not prefer to have their savings out of their control for long periods of time, and so less investment is liable to take place in high-return projects in the absence of a liquid stock market, or other financial institutions, which promote liquidity for long-term investment. Investment in long-term, highly-productive projects that help economic growth is therefore facilitated by enhanced liquidity.

Much of the theoretical literature has acknowledged the part played by the stock markets in supplying liquidity in the economy. Diamond and Dybvig (1983), Bencivenga and Smith (1991), Bencivenga *et al.* (1995, 1996), Diamond (1996), Fulghieri and Rovelli (1998) and others reveal that liquidity may be directly provided to an economy by a stock market; companies have permanent use of the capital raised by issuing equities while at the same time savers have liquid assets in the form of these equities. Equity claims may be sold by savers on the profits of the illiquid production technology, if they receive a shock. Market participants merely trade on an impersonal stock exchange without verifying whether agents received the shock or not. With liquid stock markets, therefore, equity holders can easily sell their shares, while companies retain permanent access to the capital initially invested. Stock markets diminish liquidity risk through facilitating trade. The lower the cost of stock market transactions the greater will be the investment in illiquid, high-return, long-term projects. Greater stock market liquidity brings more rapid growth, if illiquid projects have sufficiently large externalities. Thus, with a liquid stock market, initial investors can be assured of retaining access to their savings while the investment project is ongoing, as they can sell their shares in the company quickly, confidently, and at low cost.

Moreover, the monitoring of management is indirectly affected by greater stock market liquidity, as the market gives a more accurate reflection of information about a company and thus gains in efficiency, which makes the company's stock price more informative and therefore more useful in monitoring management (Holmstrom and Tirol, 1993). Greater liquidity also facilitates both the accumulation and the sale of positions in a stock for investors. While Bhide (1993) puts forward the opinion that in a liquid market shareholders who disagree with management policies can sell their

shares rather than attempt to coerce management into adopting different policies, while Maung (1998) is of the view that large shareholders require liquidity to build positions. Therefore, with a liquid market, investors who wish the company to alter its policies or who want to acquire the company will be successful.

A liquid stock market can also have an impact on economic growth through the rate of technological innovation. For instance, different production technologies might have a broad range of gestation periods for the conversion of current output into future capital, where long-term technologies have a greater return. However, investors may hesitate to relinquish control of their savings for extended periods of time, but long-term technologies will appear more attractive to them if the cost of exchange ownership claims is reduced with a liquid stock market. Greater liquidity will therefore bring about a move towards long-term, higher-return technologies (Fulghieri and Rovelli, 1998). According to Bencivenga *et al*. (1996), savers would have been more reluctant to invest in the large, long-term projects of the industrial revolution.

Theory shows a lack of clarity regarding the effect of enhanced liquidity on savings rates. Tullio and Pagano (1994) suggest that uncertainty is reduced by greater liquidity, and this may lead to a reduction in savings rates to such an extent that economic growth slows down. Moreover, Bencivenga *et al*. (1995) claim that greater liquidity might lead to redirection of investments away from new capital investments and towards purchasing claims on ongoing projects, which could lead to a sufficient decrease in the rate of real investment to cause growth deceleration. Demirguc-Kunt and Levine (1996b) state that growth can be impeded in three ways by increased liquidity. First, greater stock market liquidity, by increasing the return on investment, may reduce savings rates through the income and substitution effect. If savings drop to a sufficiently low level and if there is an externality attached to capital accumulation, economic growth may slow down due to stock market liquidity. Secondly, greater stock market liquidity, by diminishing the uncertainty involved in investment, may reduce savings rates because of the equivocal effects of uncertainty on savings. Thirdly, stock market liquidity may have a negative impact on corporate governance. Very liquid markets may make it easy for unhappy investors to sell quickly, which may diminish investors' motivation to exercise corporate control by

monitoring managers and company performance. Thus, for those who hold this view, stock market liquidity may in fact act as an obstacle to economic growth. According to Bencivenga and Smith's (1991) model, even when aggregate savings are reduced due to the greater liquidity of stock markets, economic growth increases; this is because the stock market has a dominant effect on investment efficiency.

2.5.2. Facilitating Risk Management

Savers are generally wary of investment risks, and there is almost always more risk involved in high return projects than in low return ones. Stock markets provide mechanisms to trade, pool and diversify risk, and so can allay the risks involved in investment. According to Diamond (1967), stock markets can have an impact on long-term economic growth by changing savings rates and resource allocation. Levine (1991) showed that stock markets could advance economic growth by reducing liquidity and productivity risks, as stock markets permit investors to invest in numerous companies, both domestic and foreign, and so diversify away from quirky productivity shocks and reduce over-dependence on any single sector. This encourages economic growth and augments the resources allocated to enterprises. However, Mauro (1995) demonstrates that by permitting such portfolio diversification, stock markets could reduce precautionary savings, which, in turn, is likely to have a negative effect on economic growth.

By offering risk diversification services, stock markets can also influence technological innovation and increase economic growth. There is risk involved in innovation, but being able to have a diversified portfolio of innovative projects decreases this risk and at the same time encourages investment in innovative projects. King and Levine (1993b) claim that risk diversification which is made possible through stock markets helps innovation and so encourages economic growth, they further maintain that having a diversified portfolio of innovatory technological projects decreases risk and results in higher investment in such technology than if it were not possible to diversify to such an extent. Saint-Paul (1992) links growth to portfolio diversification through the stock market. He demonstrates that enterprises can enhance their productivity by specialisation, although this can lead to a higher risk of sector demand shocks. An increase in growth may be achieved through greater productivity of specialised technologies, which will come about if agents can reduce

risk through investment diversification; this would be made possible by the development of a stock market.

Saint-Paul (1992), Devereux and Smith (1994), Obstfeld (1995), Stulz (1997, 1999), and Bracker *et al.* (1999), among others, demonstrate that the international integration of stock markets offer a means of risk diversification, which can accelerate growth by encouraging investment in projects of higher productivity. This will also permit countries to specialise, as high expected return projects generally involve risk, and if this risk is diminished, there will be greater investment in such projects. Bekaert (1995), Bekaert and Harvey (1995a,b;1998;2000), Kim and Singal (2000), and Bekaert *et al.* (2000a,b) claim that the level of risk will be raised by greater degrees of market segmentation. These circumstances would also have a great impact on the local cost of equities, which could affect growth. Risk can be decreased for the all of the world's stock markets, which would therefore lead to a reduction in the country's cost of capital, as it would allow the diversification of risks which would not be diversifiable in other circumstances.

In addition, Stultz (1997, 1999) highlights certain distortions, which come about in a segmented market. In such a market, local investors can only invest in local equities, which, in general, are not numerous, and are therefore unable to diversify their equity portfolios as investors will be prepared to pay for diversification, new companies will spring up locally to offer this diversification in various industries; however, these companies will not operate efficiently. Companies already in existence may also diversify, shifting from their core activities and accepting projects in order have to greater appeal to investors. In such cases, it can be seen that segmentation results directly in an inefficient allocation of capital, which has a negative impact on economic growth.

With an integrated stock market, investors would have the chance to invest in efficient foreign stock, and so would no longer find any attraction in investing in inefficient domestic companies. Indeed, such companies would find themselves going out of business if economic liberalisation took place simultaneously, as they would be unable to compete with the products and prices of foreign companies. In addition, local producers might reallocate capital from inefficient conglomerate divisions to the divisions that had a comparative advantage (Bekaert and Harvey,

1998). Stock markets with greater integration and better functioning may offer more risk-sharing and a reduction in uncertainty, which can lead to a reduction in precautionary savings, reduce the savings rate, and hence hinder economic growth (Devereux and Smith, 1994). A distinct ambiguity can therefore be seen in the theory as to the impact of greater risk sharing through internationally integrated stock markets on savings rates.

Moreover, it has been suggested in recent theoretical studies that economic growth can be a result of a liberal trade policy facilitated by a reduction in risk through stock markets. For instance, Freeny and Hillman (1998) offer a theory of trade policy as income insurance. They model a two-sector economy with perfectly negative correlated productivity shocks, which determine which sector will be competitive in terms of exports and import. They claim that in the case where there are no financial markets and portfolio diversification is therefore not possible, the competitive import sector can opt to lobby for protection and the reaction of policy makers will react by implementing a tariff. While this tariff raises the price for competitive imported goods, it also leads to a consumption distortion in the economy, which results in a decrease in economic growth. They maintain that, where the financial markets function, special interest groups have no motivation for lobbying for protection, and free trade will succeed, as they will hold a diversified portfolio in both the domestic and international financial markets. Freeny and Hillman (1998) therefore claim that trade liberalisation should come after financial development.

Hargis (2000) offers a theoretical model which demonstrates the way in which international cross-listings can change a segmented local equity market from equilibrium of low liquidity and market capitalisation to an integrated market with high liquidity and market capitalisation. This can come about by changing the motivations of enterprises and individuals to enter into the market. He suggests that the number of participants in a market who buy and trade equity can be increased through the integration of stock markets through international cross-listing, and that liquidity will thus be enhanced. Economic growth can, therefore, be accelerated due to the reduction in companies' costs of raising capital, which would result from market development and the entry of more enterprises and investors.

2.5.3. Transparency of Information and Allocating Resources

Resources may not be allocated to their highest value of optimal use for several reasons. The principal reasons are that the evaluation of companies is both difficult and expensive. Although individual savers hesitate to invest in projects about which they do not have much information, they do not have either the time or the means to obtain such information. As a result, savers may eschew higher return opportunities due to the higher information costs involved.

The existence of stock markets could have an effect on the acquisition and dissemination of information regarding companies (Grossman, 1976, *et al* 1980; Kyle, 1984; Holstrom and Tirole, 1993; and Subrahmnayam and Titman, 1999). Stock markets offer incentives to collect information, and this is reflected in stock prices, thus directing capital to its best use; this is termed the *'prospective'* role of stock prices. In what is termed the *"retrospective"* role, managers are also provided with feedback as to how investors assess their performance (Dow and Gorton, 1997). According to Greenwood and Jovanovic (1990), stock markets encourage better resource and risk allocation through the acquisition and dissemination of information. Kyle (1984) argues that stock markets, which are larger and more liquid, can improve resource allocation by motivating investors to obtain more information about companies. Moreover, Demirguc-Kunt and Maksimovic (1998) claim that stock markets which are well-developed act as direct sources of capital and also as vehicles for ensuring that information about firms' activities is available to investors. They further demonstrate that the presence of developed and active stock markets should facilitate the ability of companies to raise long-term capital.

Stock markets gather and disseminate information through a pricing process, so even investors who do not carry out the expensive procedure of assessing companies, managers and market conditions can, through observing stock prices, gain the relevant and available information gathered by others. According to Stiglitz (1985), information is rapidly revealed in stock markets through publicly posted prices, but this speedy public revelation creates a free-rider problem in that it reduces investors' motivation to expend resources to acquire information on companies, as they can obtain this information through the observation of process. Capiro and Demigurc-Kunt (1997) demonstrate that prices quoted on the stock market, to a certain extent at

least, disclose information that better-informed investors possess. These prices give significant price signals to managers concerning corporate investment decisions (Grossman, 1976; Grossman and Stiglitz, 1980; Diamond and Verrecchia, 1982; Morck *et al*, 2000; and Pagano and Zigales, 2000). Tobin (1982) contends that the most important result of stock prices that reflect new company-specific information is that they permit improved microeconomic capital allocation, and terms this the *'functional*' form of an efficient market. In this case, pricing inefficiencies would give misleading signals to managers and would skew investment decisions. Holstrom and Tirole (1993) and Subrahmnayam and Titman (1999) present models in which information supplied by the stock market improves allocation facility by directing managerial decisions., appears to play an important role in the contribution of stock markets to a country's economic growth. From the above, it would seem that efficiency plays an important part in the contribution of stock markets to the economic growth of a country.

It is a known process that company's equities are traded on the stock market after if goes public. When stock is publicly quoted, only companies whose value is greater than their expenses will be allocated funds, so investors are motivated to evaluate and to collect information on companies; here again the market shows allocation efficiency. Highly-leveraged companies which pay high dividends will have to return regularly to the market in order to raise funds; once more the stock price will be a critical determinant of the amount of capital the company is allocated (Allen, 1993).

Ehrlich *et al.* (1994) offer a framework suggesting that stock markets offer useful business information, which is vital to the generation of the human capital of entrepreneurs or the specific knowledge of companies, which contribute to productivity growth. They demonstrate that investors do their best to obtain information on listed firms daily in order to obtain the best returns in the markets. They then trade the information on, and the aggregate information then becomes publicly available, and is crucial for entrepreneurs to increase their comprehension of the environment of the market. It offers information as to the ways in which how investors assess the current decisions, future plans and managerial performance both their own and those of competitors. It also increases entrepreneurs' knowledge about the operations of efficient enterprises, as well as and their capabilities to develop

more efficient methods of production. Entrepreneurs learn from the information produced by the stock markets and put it into practice it at company level. This becomes entrepreneurs' human capital or companies' specific knowledge, and productivity growth is enhanced by the accumulation of companies' specific knowledge.

2.5.4. Monitoring Managers and Exerting Corporate Control

It is generally held that individual investors are less effective at monitoring managers and exerting corporate control than are stock markets. Stock markets can exert control over managers through the voting mechanism and the takeover mechanism. Ownership structure dictates the capability of individual shareholders to influence managers through their votes. The influence that an individual shareholder can exert on management will not be great in the case of a wide dispersal of share ownership (Stulz, 2000). In addition, a shareholder will not be greatly motivated to pay for the detection of poor management, if he feels that the way he votes will not have much bearing on the results of the vote (Pound, 1988). Nonetheless, it is claimed that even small shareholders can influence management if they join forces and concert their actions. One method of doing this would be by proxy voting, whereby minority shareholders could give other shareholders the authority to act as their voting representatives at the shareholders' meeting.

Stock markets can also exert control over managers through the threat of takeovers. If shareholders are not happy with managers they may sell their shares; the share price will then drop and this leaves the way open for a takeover by another company, who may well proceed to dismiss the management and change the previous policies. In an effective takeover, the company's market value should not vary to any great extent from its fundamental value, as, if it did, the management would alter its strategy or another firm would take it over.

The part played by stock markets in exerting control over managers has been documented in many studies. Knight (1998) contends that a weak management can be disciplined by a well-functioning stock market through the depression of the value of the equity of their company; it thus becomes more probable that the company will be subject to a merger or acquisition. This being the case, poor management is obliged

to improve performance or leave the market before the company descends into insolvency. Diamond and Verracchia (1982), Stein (1988), and Jensen and Murphy (1990) demonstrate that the principal-agent problem may be allayed by trading shares in a stock market where information about companies is reflected efficiently. The cause of the principal-agent problem is frequently the fact that managers profit from decisions affecting their company's value only to the extent of the shares they hold. In the case where a manager does not hold a great deal of the company's equity and his compensation, be it flat or linked to the company's earnings, accounts for the best part of his income, he will have an incentive to take actions which will maximise his compensation, but which may not maximise the company's value and equity value.

Compensating managers with binding contracts that are dependent on long-term performance is one way in which the principal-agent problem may be allayed (Yanagawa, 2000). A satisfactory measure of a company's long-term value is a pre-requisite for such contracts. For instance, current profit can be manipulated, and reflects short-term factors; it is therefore not a good measure for this purpose. Such a measure ought to be unbiased, and not manipulated by either the management or anyone else. Efficient stock markets can provide the mechanism for such a measure. Thus, the stock market price in an efficient market gives a good measure of the company's performance and long-term value (Durnev *et al*., 2001).

Bolton and Thadden (1998) argue that an active stock market facilitates takeovers as a means to acquire control by reducing free-riding. The stock market can also aid advance better corporate control by facilitating takeovers of badly-managed companies, given that takeover are made easier in well-developed stock markets and that poor management is dismissed following the takeover. According to Stulz (2000), well-functioning stock markets that facilitate corporate takeovers can improve economic efficiency and growth.

Nonetheless, the significance of stock markets in corporate control is a matter of contention in the theoretical literature. Kahn and Winton (1998) are of the view that well-functioning stock markets can subvert effective control by a large shareholders by offering them too many incentives to speculate instead of monitoring. According to Bhide (1993) and Subrahmanyam and Titman (1999), well-developed equity

markets encourage more dispersed ownership and this dispersion is an obstacle to effective corporate control.

Moreover, Stiglitz (1985) points out that the efficiency of corporate takeovers as a mechanism for exerting corporate control may be impaired by 'asymmetric information', and gives three additional reasons why takeovers are not an effective control mechanism. First, if a realising company spends a lot of resources to obtain information, other companies will consider the results of this research when realising company bids for shares. This will lead others to bid for shares and the share price will rise. Therefore, the discovery company that expended resources acquiring information, pays more than it would have to pay if 'free-riding' companies could observe its bid. The second reason is the 'public good' nature of takeover that makes takeover mechanisms ineffective. If there is a successful takeover resulting in an increase in market value of a share, then the shareholders who did not sell out will get a free ride, which creates an incentive for existing shareholders not to sell if they think the value of a company will increase following the takeover. Hence, value-increasing takeovers may not succeed as the realising company will have to pay a high price, which will reduce the incentives for discovering company desirous of taking them over. Third, current managers are frequently in a position to take strategic actions that discourage takeovers so they can maintain their positions.

Furthermore, Shleifer and Vishry (1986) claim that resource allocation may be abused in well-developed stock markets that ease takeovers. New owners and managers are not constrained by any implicit contracts between previous managers and stakeholders in the company, which allows them to break such agreements following the takeover and transfer wealth from the company's stakeholders to themselves. The efficiency of resource allocation may suffer as a result of this. In addition, a takeover impels management to focus on providing the shareholders with short-term profits and financial returns (Stulz 2000). Such a policy is a threat to the attempts of corporations to make the investment required for their success in the long-term, and hence is damaging to their efficiency and competitiveness.

2.5.5. Efficient Mobilization of Capital Resources

Stock markets and other financial institutions have a crucial part to play in the mobilisation capital resources to their efficient use (Stulz, 2000; Wargler, 2000). Stock markets combine the small savings of a number of investors to be utilised by enterprising agents with managerial skills who require funds for capital investment on a large scale. Stock markets can facilitate the mobilisation and allocation of capital to effective uses by offering liquidity and risk pooling amenities to both investors and entrepreneurs. Sirri and Tufano (1995) contend that mobilising resources improves resource allocation through the diversification of risk, liquidity and the size of viable firms. It is suggested here that the principal effect of the mobilisation of capital is that of encouraging technological innovation. Technological innovations involving risk are made possible by reducing the burden of risk for capital contributors, entrepreneurs, markets and institutions.

It was Hicks (1967), who striving to explain the origins of the industrial revolution, who first focused on the close links between technological choices and the mobilising capacity of financial markets. He maintains that the adoption of technologies for which large, illiquid capital investments are needed is a crucial aspect of industrial development. The implementation of such technologies is made possible by the risk-sharing opportunities offered by financial markets and institutions. In his view, it was not the invention of any specific new technology which lead to the Industrial Revolution; indeed, he contends that the majority of the technological innovations had been made before the Industrial Revolution began. However, large-scale investment for a lengthy period in an illiquid capital form was needed for the adoption and complete implementation of these technologies, and this was made possible only by financial markets and institutions offering investors liquidity. Hence the choice of production technologies is inextricably linked to the part played by financial markets in capital mobilisation.

Bencivenga *et al*. (1995) and Hermes and Lensink (1999) suggest that economies made on the costs of transactions and information that are connected with multiple bilateral, financial markets can facilitate capital mobilisation and so improve capital accumulation and resource allocation, which has a positive impact on economic growth. Bencivenga and Smith (1991) and Greenwood and Smith (1997) demonstrate

that the array of viable investment projects is expanded by large, liquid and efficient stock markets, which aggregate savings. A stock market that facilitates the mobilisation of capital can have a strong impact on economic growth, as large injections of capital are needed for many useful and beneficial projects**.**

2.5.6. Transmission Path for Monetary Policy

One of the most significant issues facing scholars is the comprehension of how monetary policy influences economic activities. To have an effect on the economy, monetary policy may go through either the 'money' channel or the 'credit' channel. However, both of these routes must pass through a financial market. The stock market is a significant financial market which has often been neglected as a route for monetary transmission mechanisms.

Apart from the traditional channels, the stock market is a significant route through which monetary policy influences economic activity, as Boyle and Peterson (1995), Malliaropolous (1996) and Chami *et al*., (1999) have pointed out. They demonstrate that this mechanism can be provided by the stock markets through the impact of inflation on household equity holding. Monetary policy is a crucial element in determining the rate of inflation. Stockholders react to actual inflation, expected inflation and actions of monetary policy by altering the rate of return they anticipate from their stockholdings. In turn, the managers of companies have the responsibility of creating value for the companies' shareholders, and they respond to change in their stockholders' stock price by altering production conditions. Hence, changes in monetary policy will change stockholders' required rate of return by having an impact on the inflation rate. The stock price fluctuates due to changes in the required rates of return. Managers react to fluctuating stock prices by modifying their investment and production plans, influencing capital productivity in the economy and thus having an effect on economic growth. This path therefore suggests that price level is the proper target of monetary policy.

Another instance of how monetary policy can affect economic growth *via* the stock market mechanism is when monetary policy lowers short-term interest rates, leading to a decrease in the return to holding money and a rise in the demand for other assets (Cheung and Ng, 1998). The shares issued by companies to finance their investment

projects figure amongst these assets. With the increased demand and rise in price of their shares, companies become aware of the present net value of their other investment projects, and raise finance for them by issuing more shares. In this case, money being an asset which takes the place of shares is a unique characteristic of stock markets.

2.6. REVIEW OF THEORETICAL MODELS ON THE LINKAGE BETWEEN ECONOMICS GROWTH AND STOCK MARKET

As demonstrated above, there is a great deal of theoretical literature which stresses the part played by financial markets, particularly stock markets, in encouraging economic growth. However, a number of studies have presented direct models of the part played by financial markets in economic development: Greenwood and Jovanovic (1990), Bencivenga and Smith (1991), Greenwald and Stiglitz (1986), Saint-Paul (1992), Subrahmanyam and Titman (1999), Boyd and Smith (1998), Levine (1991), and King and Levine (1993a). These models connect the steady-state growth rate of per capita output with the financial system. More precisely, the majority of these models link the literature of endogenous growth, associated with the work of Romer (1986) and Lucas (1988), which constructs models in which agents make decisions that completely determine the steady-state growth rate of the economy, and that of the financial structure, associated with the work of Diamond and Dybvig (1983) and Diamond (1984), which construct models in which financial contracts appear as the best responses to the informational and risk features of an economy.

In their model, Greenwood and Jovanovic (1990) stress the international and risk sharing roles of financial markets in the amelioration the mobilising of capital to the best use and so achieving growth. Their model has the asset of safe, low-yield technology, as well as that of a risky high-yield one, with an aggregate and a project-specific shock having an effect on the return on the latter. Agents can obtain a higher return through financial markets than they could if they invested individually, as they gather information that allows them to construe the aggregate productivity shock and project-specific risk can be better diversified because of the sizeable portfolios they hold. Capital is therefore allocated more efficiently by financial markets and there is an increase in growth due to the resulting productivity of capital. It should be pointed

out that in this model increased participation in financial markets is triggered by higher growth, resulting in the expansion of financial institutions.. Hence, their model presents a two-way causality between financial development and growth.

In Bencivenga and Smith's (1991) model appears a bank that removes liquidity risk and invests more efficiently by pooling the resources of the economy. Here, individuals are permitted to pool liquidity risks through the bank and this can encourage higher growth by moving the composition of savings towards greater capital accumulation and by decreasing unnecessary capital liquidation. Funds are channelled through banks to entrepreneurs from risk-averse savers. These entrepreneurs then invest in productive capital and therefore provide liquidity to the savers by permitting them to hold bank deposits, rather than other liquid and unproductive assets. These funds then become available for investment in capital accumulation and thus decrease the requirement for the self-financing of investment.

Greenwald and Stiglitz's (1986) theoretical model examines how companies' long-term productivity growth is affected by imperfections in the financial market. The model highlights the failures of companies in selling equity securities, which assist companies by diversifying the risk of real investment. Specifically, they contend that failures in stock markets curtail the capabilities of companies to diversify their operational risks, and so result in a decrease in the level of such operations as another method of risk management. They demonstrate that stock market imperfections will have a negative effect on the rate of productivity growth due to the curtailment of the companies training and other instruction, as well as direct investment in productivity improvements.

In Saint-Paul's (1992) model, there is interaction between the financial markets and the technological choices of the company, due to the fact that financial markets permit technologies which are more productive, although riskier, and technological choice has an impact on the viability of financial markets. Specialised production factors are at greater risk due to the greater division of labour which is required for productivity growth. Financial markets allow this division of labour, by permitting agents to hedge against the risk by holding diversified portfolios, The Saint-Paul model therefore stresses that financial markets promote growth by enabling a greater division of labour, which implies specialised and productive technology, which is

also risky. Technology would not be so specialised in the absence of financial markets.

In Subrahmanyam and Titman's (1999) model, they stress how decisions to go public offer significant insights into the development of financial markets and how the actions of the government can improve economic efficiency through a effect on the stock market. They demonstrate that, as liquidity and the information generated in a stock market both depend on the number of participants in the stock market, the size of the stock market. Also determines if it is preferable for a company to be being privately rather than publicly financed. The information generated in the stock market is less accurate when there are only a small number of companies in the market, and this in turn reduces the advantage of being publicly financed. With the expansion of the stock market comes an improvement in the information conveyed by stock prices, and hence the incentive for firms to go public.

Subrahmanyam and Titman (1999) demonstrate that by going public, companies can generate positive externalities through enlarging both the stock market's size and its informational efficiency. Due to these externalities, there can be a path dependency in the development of financial markets. Specifically, their assumption is that an economy can have both a 'bad' equilibrium in which most firms remain private, and a 'good' equilibrium, in which the majority of firms are publicly traded in the stock market, and there are better resources allocation and greater company values. They contend that more publicly traded stocks enhance the attraction for individuals to open brokerage accounts and become stock market investors. When there is a strong influence of serendipitous information on production choices, these additional investors enhance the process of the capital allocation, offering a greater incentive for individuals to become active investors. This creates a momentum that can shift the economy from the bad equilibrium to the good equilibrium.

Boyd and Smith (1998) have developed an endogenous growth model in which issuing debt and equity finances capital formulation. They investigate an economy in which investments are made by a group of agents who need external financing, and in which their financial decisions rely on the amount of information the investor requires monitoring the management. Boyd and Smith (1998) propose two types of technology available to investors: the first one (debt) yielding a return which is freely

observable only by the initiating investor, while the second (equity) yields a return which is publicly observable Their conclusion is that as an economy progresses along a growth path and accumulates capital, the relative price of capital drops, and as a result, as the economy grows, monitoring costs will increase. Investors will therefore be inclined to use observable capital production technology more intensively as the economy grows, and so there will be an increase in volume of equity market activities, and a drop in the debt/equity ratio. Boyd and Smiths' analysis suggests that there is a bi-directional relationship between the development of the stock market and the growth of the economy, and so the banking sector and the stock market, become complementary sources of finance in the long term.

It is Levine (1991) who has made the most significant contribution to the theoretical literature of stock market development and economic growth. In order to explain the part that financial market development plays in economic growth, his work constructs an endogenous growth model in which the stock market appears to allocate risk, and explores how markets change investment incentives in ways that alter the rates of steady-state growth. He shows that stock markets speed up growth by enabling the capability to trade ownership of companies without disrupting the productive process within firms and by permitting agents to diversify portfolios. If stock markets were not present, lenders would be confronted by liquidity constraints which would oblige companies to repay loans, thus forcing them to liquidate, fully or partially, the assets which they possess. As these include capital assets, which are the embodiment of a company's technology, this will lower the productivity of the company. Levine further elucidates the impact of tax policies on growth both directly by changing investment incentives, and indirectly by altering the incentives behind financial contracts.

Levine's model, like that of Bencivenga and Smith (1991), employs the Diamond and Dybvig (1983) structure of preference to create liquidity risk, as well as including productivity shocks that create production risk. Liquidity and productivity risks provide motivation for the formation of stock markets. Productivity risk lowers welfare and deters agents from investing in companies. The stock market permits investors to invest in a great number of companies, and to diversify away from idiosyncratic productivity shocks. This raises welfare, the percentage of resources

invested in firms, and the steady-state growth rate of the economy. In Levine's model, the stock market pushes up the growth rate by increasing companies' productivity or by ameliorating resource allocation. Stock markets increase company efficiency, through the physical capital investment, because they obviate the premature liquidation of company capital. Rather than liquidating capital, agents that receive liquidity shocks sell their shares to agents that value period three consumption. As a result, more capital is kept in companies for two periods, which increases the rate of physical capital accumulation. Stock markets also influence growth by increasing the proportion of resources allocated to companies. If agents are sufficiently risk averse, the proportion of resources dedicated to companies is higher with stock markets. By permitting companies to diversify productivity risk, stock markets motivate risk-averse agents to invest more in companies. Stock markets also decrease the liquidity risk associated with company investment; as agents that receive liquidity shocks can sell their shares for more than the liquidation value of the company price. In addition, by increasing the efficiency of a company, stock markets also increase the return on company investment. Therefore, the appearance of stock markets for the management of productivity and liquidity risk promotes growth by attracting resources to companies which are socially productive.

King and Levine (1993a) developed a model in which innovation activities act as an engine of growth. A high growth rate of productivity is the result of a higher rate of successful innovations. In this model, financial markets appear in two different forms, the first being where the intermediaries act like venture capital firms, in that they assess, finance and monitor the risky and costly innovations. The second form is like the stock market, in that the current value of the innovation is revealed in the stock market, and selling the equity shares on the market can diversify the risk associated with innovation. Therefore, King and Levine (1993a) argue, greater development of the financial market can enhance the potential for successful innovations.

2.7. FISCAL POLECY AND ECONOMEC GROWTH.

In this section, relevant literature on the association between government expenditure and economic growth are discussed. Barro (1990) initiated a new line of enquiry into the effect of fiscal policy (government expenditure) on economic growth. Jones et al.

(1993), Stokey and Rebelo (1995) and Mendoza et al. (1997), among others, extended the exploration of the impact of endogenous growth models for fiscal policy. In this respect, the effect of government activity on the orientation of economic growth was highlighted by Barro and Sala (1992), Easterly and Rebelo (1993) and Brons, de Groot and Nijkamp (1999). In the same vein, Dar Atul and AmirKhalkhali (2002) emphasised the importance of fiscal policy in forecasting future economic growth in the endogenous growth models.

A number of researchers have attempted empirically to investigate the influence of fiscal policy on economic growth. For example, Laudau (1983), using a sample of 96 countries, studied the way in which government expenditure influenced economic growth and found that growth of real output was negatively affected by government expenditure. Erkin (1988) developed a new framework for New Zealand to examine the relationship between government expenditure and economic growth. According to the empirical findings, higher government expenditure does not have a negative effect on consumption, but rather increases private investment, thus accelerating economic growth.

The differential effects of several types of expenditures on economic growth for a sample of 58 countries were examined by Donald and Shuanglin (1993). Their findings suggested that while government expenditures on defence and education have a positive effect on economic growth, expenditure on welfare has an insignificant negative effect on economic growth. Oyinlola (1993) investigated the link between the defence sector and economic development in Nigeria, finding that defence expenditure had a positive effect on economic growth. Devarajan, Swaroop and Zou (1996) examined the connection between the components of government expenditure and economic growth for several developing countries. The regression results revealed that while capital expenditure has a significant negative relation to the growth of real *GDP* per capita, frequent expenditure is positively related to it.
For Nigeria, Akpan (2005) using a disaggregated approach, attempted to identify the features, such as capital, administrative, recurrent, transfers, and social, community and economic service, of government expenditure which improve growth, and those that do not. He did not find any significant relation between the features of government expenditure and economic growth.

Komain and Brahmasrene (2007), using the Granger causality test, studied the link between government expenditure and economic growth for Thailand, and found no co-integration between government expenditure and economic growth. Liu, Hsu, and Younis (2008) studied the causal relationship between *GDP* and government expenditure for the USA, using data for the period 1947-2002. The causality results showed growth of *GDP* is caused by total government expenditure. Conversely, expansion of government expenditure is not caused by growth of *GDP*. Further, the estimation results suggested that public expenditure increases economic growth. Judging from the causality test, the conclusion was drawn that Wagner's law has less influence than Keynesian hypothesis. Ranjan and Sharma (2008) studied the effect of government development expenditure on economic growth for India during the period 1950-2007. They found a significant positive effect of government expenditure on economic growth, as well as the existence of co-integration among the variables.

In Saudi Arabia. It was suggested by Al-Yousif (2000) that there was a positive relationship between government spending and economic growth. In another Saudi study, Abdullah (2000) also examined the relationship between government expenditure and economic growth and found that the size of government has a strong bearing on economic performance. He recommended that the government raise its expenditure on social and economic activities, and infrastructure. Moreover, in order to advance economic growth, the private sector should be supported and promoted by the government. Ageli (2012) studied the connection between government expenditure and economic growth for Saudi Arabia for the period 1968-2010. The study found that increased government expenditure was a salient feature of the Saudi Arabian economy during this period. The author suggests that, while this may be due in part to the requirement for economic development, it may also be attributed to the government's desire to political stability.

The preceding discussion evidences the positive impact of fiscal policy on economic growth, which constituted the foundation of Keynesian understanding, but also through empirical studies, as mentioned above, this is verified and recognised by neo-classical economics. The fiscal policy-induced economic growth can articulate its growth impact through various paths and dimensions. In other words, fiscal policy expansion can induce further economic growth, and this increased growth may have

spillover impact in the economy by inducing other factors, sectors and instruments to contribute to the accelerated economic growth. For example, fiscal policy induced growth, for example, can expand the stock market operations due to increased transactions and better performance of the economy, as the listed firm are expected to benefit from the observed economic growth due to fiscal policy expansion; thus, stock market value and volume as a result increases leading to further economic growth. It is, however, important to also consider that this might reverse if the economy goes into recession leading to contraction in fiscal policy instruments.

2.8. REVIEW OF THE EMPIRICAL STUDIES RELATED TO ARAB COUNTRIES

After presenting and discussing the theoretical issues in the preceeding sections, this section aims to review the empirical studies related to Arab countries in relation to stock market and economic growth linkage.

It should be noted that there are few studies dealing with Arab financial markets. Darrat (1999) investigates the hypothesis of supply-leading, which proposes that the supply of financial services is increased prior to the demand for them by the presence of efficient financial markets in the real sector of the economy. Darrat (1999) conducted an empirical investigation of the link between financial deepening and economic growth in Saudi Arabia, the United Arab Emirates and Turkey. Through the use of Granger Causality tests within an error correction framework, the results implied that the economic stimulus of more efficient and developed financial markets in Saudi Arabia and Turkey will only become over time, as the economies expand and mature in the long term. Hence, while financial deepening may well affect some sectors of the economy, it is unlikely to affect all of them.

Maghyereh (2001) evaluated the effect on economic growth of stock market development, taking the case of Jordan and using macro- and micro-level data sets. The study aimed specifically to find answers to a number of questions, such as whether economic growth in Jordan was influenced by stock market development and how significant the stock market is to the Jordanian economy. Further, Maghyereh (2001) aimed to determine whether economic growth generated elsewhere had any effect on the stock market in Jordan or if it was a two-way causation, and the extent to

which stock market development is influential in the financial structure choices of Jordanian firms. In addition, the study sought to answer the question as to whether the stock market was a complement to or a substitute for the banking sector in the provision of financial services to the Jordanian economy. This study found that economic growth was significantly affected by stock market development and that this effect stayed strong even after banking sector and other control variables were controlled for. Further, it found that evidence did not support the view the stock market was a highly significant sector in terms of Jordan's economic development, despite there being considerable evidence that there was a stable, long-term equilibrium relationship between the development of the stock market and that of the economy. Moreover, the study concluded that link between stock market development and economic growth in Jordan was bi-directional. In addition, the micro-level tests carried out in this study imply that stock market development had a statistically significantly and economically large effect on the growth of companies. More specifically, the evidence indicated that with greater development in the stock market, companies that did not make heavy use of equity finance grow slowly than those that did. A further finding was that the development of the stock market had a significant and positive relation to companies' debt-to-equity ratio. In sum, all the findings described in this study support the view that in Jordan, the stock market is a complement to rather than a substitute for the banking sector in the provision of financial services to the Jordanian economy.

Al-Tamimi *et al.* (2001) used co-integration tests, Granger Causality tests, and the impulse response function to examine the causal relationship between financial development and economic growth for eight Arab countries: Algeria, Bahrain, Egypt, Jordan, Kuwait, Morocco, Saudi Arabia, and Syria. Using the vector auto regression (VAR) model, they investigated causality tests from financial development to real GDP and the reverse causality. The empirical results indicated that financial development and real GDP growth were strongly interrelated in the long term. However, in the short term, the Granger Causality tests and the impulse response functions showed that the interrelation was weak.

Al-Awad and Harb (2003) consider the relationship between financial deepening and economic growth for ten emerging Middle Eastern economies (Algeria, Egypt, Iran,

Jordan, Kuwait, Morocco, Saudi Arabia, Syria, Tunisia and Turkey) using novel methods of panel cointegration together with more widely-used time series methodologies, i.e. Johansen's Cointegration, Granger Causality tests, and the variance decompositions. They offered empirical evidence, suggested by the Johansen's cointegration tests and the panel that there may be a positive relationship at some levels between financial development and economic growth. However, the Granger Causality tests for panel data and the variance decompositions tests for time series data showed that this relationship was vary in the short term. This concurs with the argument of Lucas (1988) that the financial sector does not play an important part in real economic growth, and that the role of financial factors in economic development is often exaggerated by economists.

Omran and Bolbol (2003) built a growth equation to capture the relationship between Foreign Direct Investment (*FDI*) and different indicators of financial development in the context of Arab countries, using averaged five-year cross- sectional data for the period 1975-1999. The growth accounting framework of the Cobb-Douglas production function formed the basis for the estimation model. They found that economic growth positively influenced by *FDI*, depending on local conditions and absorptive capacities, with financial development being one of the most important capacities. In addition, the attraction of more *FDI* could be facilitated if the stock market development of these countries was more robust and supported by an active economic policy.

On the micro-level, Omet and Mashharawe (2003) examined the general importance of the stock market, and, more specifically, the operational efficiency of the Amman Securities Market (*ASM*). The empirical results showed that large transaction costs may push corporations to cross-list their stocks in more liquid and developed markets, thereby hindering the development of the domestic market.

Abu-sharia (2005) used a comprehensive theoretical framework to examine the links between stock market development and economic growth. It offered an evaluation on a macro-economic level of stock market development indicators for the Arab countries compared to the East Asia-Pacific countries and the *G-7* economies. Sophisticated panel data econometric techniques were applied in the empirical work and three different econometric methods of *OLS*, *2SLS* and *GMM* estimators were

used. The estimation results were then compared with the East Asia-Pacific countries and the *G-7* economies, for the period 1980- 2002. The most significant finding was that Arab stock markets did not have a significant impact on economic growth because of the lack of transparency and illiquidity that restrict the effectiveness of these markets in the economy. Conversely, the results from the East Asia-Pacific countries and the *G-7* economies indicated that economic growth is significantly affected by and has a positive correlation with, stock market development.

2.9. CONCLUSION

The debate over the determinants of economic growth can be traced backed to the Classics. Over the many decades, a number of theoretical frameworks and models have been developed in response to this particular questions. With the development of financial and capital markets, the growth impact of these markets has also been considered, which has attracted many researches. A number of theoretical model and empirical studies evidenced that there is a positive nexus between stock market developments and economic growth, while others negates such a relation even theoretically.

In the aforementioned theoretical studies which connect financial market development and economic growth, there is an emphasis on three channels: the encouragement of physical capital accumulation, better mobilising of capital and greater productivity growth through the facilitation of risky technological advances, and the prompting of real economic efficiency with which resources are utilised. However, they still need more studies to offer a comprehensive framework of the various functions of stock markets with relationships which can be tested empirically.

The empirical literature carries a large body of studies focusing on empirical testing of the mentioned models with case studies. A great number of these studies produced positive relationships between financial development in general and stock market development in particular and economic growth in the case of various countries in various periods. It is the aim of this study to repeat such an empirical investigation in the case of Saudi Arabia in the proceeding chapters.

CHAPTER 3

SAUDI ECONOMY: DEVELOPMENTS AND TRENDS

3.1. INTRODUCTION

In the early 20th century, the main source of Saudi Arabia's income came from pilgrims to the holy cities of Makkah and Medina. At that time, the country was classified as a poor or less-developed country. The majority of the population were employed in traditional activities mainly trade.

The first petroleum concession was granted to a British company to explore for petroleum in the Eastern province of the Saudi Arabia in early 1930s. However, they did not strike oil and let the concession go after a few years. It was not until 1938 that oil was discovered in commercial quantities (Knauerhase, 1974) by the Standard Oil Company of California. However, it was not until after the Second World War that oil production in the country began to develop steadily. In fact, the economy of Saudi Arabia since 1945 has been closely linked with the level of oil production and the fluctuation of oil prices (Wilson, 1997), and also the current development is a result of the contribution of oil since then.

The discovery of oil, hence, resulted in the beginning of a new era of economic development in Saudi Arabia. In 1948, due to the increase in oil production and the income from it, the first national budget was made. Price fluctuations in the international oil market had an impact on revenue in the 1950s, but by 1960, oil production once more began to increase, which led to a high economic growth rate for the overall economy.

In the late 1960s, political upheaval in the Middle East had an unfavourable effect on the Saudi economy. In responding to this, the First Five Year Plan began in the country in 1970, while before this there had been no formal programme to develop the economy. Since then eight development plans have been implemented and the ninth plan covering 2010 – 2015 is now in operation. These plans set specific targets and give the government an overall framework for expenditure, with the aim of developing an integrated and stable economy.

It is, hence, the aim of this chapter to provide an overview of the developments in Saudi economy with the objective of contextualising the main study. In the following sections, developments and trends in the economy is presented beside presenting the developments in the financial system. In doing so, the five years plans are examined initially and their outcomes are presented.

3.2. THE FIVE YEAR DEVELOPMENT PLANS

Over the past three decades, economic planning in the Kingdom has played a vital part in driving economic and social development. The aims of the Five Year Development Plans have been to promote economic, social and regional development in Saudi Arabia. Hence, the plans have been guided by several broad long-term goals. These include diversifying the economy and reducing dependence on oil revenues, raising the standard of living, developing the regions, promoting the role of the private sector, strengthening ties with other countries, developing the physical infrastructure, and developing human resources. Over the years, each plan has had its own specific focus, according to the stage of development in Saudi Arabia and the resources at the government's disposal at the time (Ministry of Economy and Planning, Fifth Development Plan, 1990 1995).

The five year development plans in Saudi Arabia can be divided into two main periods on the basis of the particular business environment covered by this study, which examines the relationship between the stock market and economic growth. The first period was prior to the setting up of an official stock market in 1985 from 1970 to 1985. The second main period runs from 1985 when the Saudi government launched an official stock market, and the present day. The following sections will describe these stages in detail.

3.2.1. The five year development Plans from 1970 – 1985

The First Development Plan (1970-75) was the first official approach to economic development in the Kingdom. This plan has a budget of *SR*. 41.3 billion was set for this plan, of which almost half was allocated to capital projects. The aims of this plan were basically to promote the steady growth of the economy, particularly the infrastructure, and to develop government services and economic management. New programmes of administration also formed part of the plan. In addition, the First Plan

stressed the long-term goals of the development of the country's human capital by investing considerable sums in education and training (Moliver and Abbondante, 1980).

The Second Development Plan (1975-80) took into account the fact that circumstances in 1975 had changed somewhat in that Saudi Arabia's wealth had increased. This plan had a budget of *SR*. 498 billion for the development of the physical infrastructure and to develop investment in the social and production fields.

In 1976, the Ministry of Industry and Electricity, the Royal Commission for Jubail and Yanbu and the Saudi Arabian Basic Industries Corporation (*SABIC*) were all established. These were part of the Second Plan to guide and aid industrial development and to accomplish the long-term objective of diversifying the economy (Ministry of Planning, Fifth Development Plan, 1990 -1995).

The Third Plan (1980-1985), with a budget of *SR*. 783 billion, moved from prioritising the infrastructure by focusing on the development of the manufacturing, mining and agricultural sectors of the economy. The essential objectives of this plan were the promotion of structural change in the economy by stressing resource development and growth in the production sector, to improve economic and administrative efficiency, and to encourage Saudi subjects' participation in the development process.

The Third Plan assisted the diversification of the economy, which was one of the strategic goals of the development process. For instance, in the course of the plan, considerable substantial growth in the agricultural sector took place.

The rapid pace of economic progress throughout the Second and Third Plan was associated with a huge rise in the number of foreign workers. This drew the Saudi government's attention to the importance of developing Saudi human capital and of reducing dependence on foreign workers (Ministry of Planning, 1990; Al Rehaily, 1992).

The Fourth Plan strengthened the strategy of diversification begun in the Third Plan, and concentrating on restructuring the economy and promoting the involvement of the private sector. Therefore, there was an even greater stress laid on the policy and

institutional features of development. There were some new aims in the Fourth Plan, which are as follows:

(i) The promotion of the rapid development of the private sector as the key component in accomplishing the diversification of the economy and making the public sector more efficient in economic terms;

(ii) To finish the infrastructure projects required for the long-term development of the Saudi economy, society and human capital;

(iii) To focus on enhancing quality by developing the services and amenities built in the course of the previous development plans.

The original budget intended to achieve these aims was *SR* 1,000 billion. However, when the price of oil fell soon after the inception of the Fourth Plan, government revenues fell short of their expected levels. Hence, it was necessary to reduce spending on projects laid out in the plan: government spending was reduced by approximately one-fifth. This decrease in government spending, as well as the private sector's lack of confidence in the economic future of the country, did not permit the accomplishment of the plan's growth targets (Ministry of Economy and Planning, Fifth Development Plan 1990-95).

The Fifth Development Plan began in January 1990, which could be considered as the start of a second stage of planning in the Kingdom. Since the completion of the previous four development plans, it was felt that the physical and institutional basis of a modern economy had been constructed. A broad range of social services had been established throughout the country, and the foundations for a diversified, productive economy had been laid in the sectors of industry, agriculture, mining and financial services.

Furthermore, to take the achievements of the first four plans further, the Fifth Plan, as well as its objective to complete the infrastructure projects required to achieve overall development, saw the addition of the following aims.

(i) To diversify the economic base of Saudi Arabia through the further development of the industrial and agricultural sectors a reduction in reliance on the production and export of crude oil as the principal source of the country's income;

(ii) To further promote the participation of the private sector in the country's economic development;

(iv) To achieve equitable in all the country's regions of the Kingdom and to encourage economic and social cooperation among the Gulf Co operation Council (*GCC*) countries (Ministry of Economy Planning, Fifth Plan 1990- 95,).

It was also suggested that an automated and supervised domestic stock market be created in order to enlarge the ways in which investment could flow in Saudi Arabia.

The Sixth Development Plan came into being after the Gulf War, which had global repercussions. There had also been negative developments in the international oil market. The Sixth Plan attempted to achieve its objectives by encouraging the private sector in order to continue economic diversification. It had three main objectives (Ministry of Economy and Planning, Seventh Development Plan, 2000- 2005):

(i) to develop human resources through education and training at all levels;

(ii) to increase efficiency in the private and public sectors to diversify the economy and reduce government spending;

(iii) to encourage investment in the private sector and to begin privatisation programmes.

This development plan was undertaken when the global economy was in a state of upheaval and this had a considerable effect upon it implementation. The economy had grown in the years between 1994 and 1997, but in 1998 oil prices fell by almost 40% and this had an adverse impact upon the government' spending power. Hence, in 1999 the government took steps to reduce spending, attempt to obtain income from the non-oil sectors, and to make effort to raise oil prices on the global markets. By taking these steps, the government was able to limit the damage to the Saudi economy caused by the fall in oil prices.

In spite of these reversals, the Sixth Development Plan was a success overall, particularly in terms of the development of a robust private sector. In addition, the Saudization policy made considerable progress and more jobs were created for Saudi national, although there was still a great reliance on foreign workers. Furthermore, investment was made in education and training, as well as in the health sector.

The inflation rate of just over 2% annually, considerably below that of the majority of countries at that time, was maintained throughout the Sixth Year Development Plan, as was the value of the Saudi currency, the riyal.

Among the priorities of the Sixth Development Plan were the continued improvement of the defence capabilities of the country, the strengthening of the national identity and the development of the private sector to assist in reducing government spending. In addition, there was continuing emphasis on developing human capital and expanding the infrastructure, which was necessary due to the rapid growth of the population.

During the Sixth Development Plan the Resolution of the Council of Ministers No. 60 was issued. This concerned the development of the private sector and stated that "expanding the private sector's participation in the national economy and enabling it to undertake its role in investment and financing should be in line with the national development plans and that this process shall be positive for both the government and private sector".

Moreover, an attempt was made to develop the capital markets, the stock market in particular, which resulted in there being 74 listed companies in 1998, compared to 56 eight years previously. In the same period, market capitalisation rose from *SR* 97 billion to *SR* 190 billion.

The Seventh Development Plan (Ministry of Economy and Planning, Eighth Development Plan 2000 – 2005) resulted in the growth of the economy, which in turn led to higher per capita income and more job opportunities. External trade and the trade surplus also increased. All this was the result of increased investment by the government and the private sector, as well as the steps taken by the government to improve the investment environment and in spite of the adverse regional and international economic and political circumstances.

The Seventh Development Plan prioritised human resource development and job creation through the provision of education and training and also stressed the development of knowledge and technical skills with the aim of permitting Saudi workers to take advantage of advances in technology.

In addition, the plan implemented the privatisation policy with the aim of promoting Saudi and foreign investment, creating employment opportunities and increasing productivity and competitiveness. Another priority of the plan was to improve public services through the development of regulations and to make government agencies more efficient through restructuring. Moreover, the plan attempted to adjust to developments in the global economy and take into consideration their potential effect on Saudi Arabia in order to respond to them appropriately. As part of the plan, a national scientific and technological base was also built in a joint effort between the public and private sectors, to foster innovation and creativity. Emphasis was also placed on improving efficiency to optimise the use of resources.

The Seventh Development Plan, hence, saw increased productivity, increased diversification of sources of national revenue and a greater involvement of the private sector in the economy, which implied that it fulfilled its expectations. Thus, the achievements of the plan include the following:

(i) The value of Gross Domestic Product (*GDP*) rose from around *SR* 603.6 billion in 1999 to around *SR* 714.9 billion five years later in 2004. Average annual real growth rate was 3.4% per during the same period, which was a little higher than the average annual growth rate of 3.16% which was the goal of the plan, and considerably higher than the annual growth rate of 1.11% achieved by the Sixth Plan. *GDP* was increased through the use of modern technology, greater efficiency in using resources and improvements in management and organisational techniques.

(ii) The total value added of all economic sectors, apart from that of crude oil, increased in constant 1999 prices from about *SR* 433.2 billion in 1999 to about *SR* 525.3 billion five years later. The share of non-oil sectors in the *GDP* rose from 71.7% in 1999 to 73.5% in 2004, with a real growth rate of 4.1%. The non-oil sector performed well because of the increase in the nongovernmental services sectors,

which experienced an average real annual growth rate of 4.6%. These sectors also provided more employment opportunities.

(iii) The non-oil sectors differed in their performance, although the average growth rate was 3.9%. For instance, the transport and communications sector was restructured and this, together with privatisation and increased productivity, saw an annual growth rate of 5.6%, 1.8% higher than the target of the plan.

(iv) Similarly, the community and personal services sector had an average growth rate of 5% per annum. In addition, because of an increase in training and qualifications, it was possible for many Saudis to replace expatriate workers, leading to improved productivity.

(v) The contribution of the private sector to real *GDP* increased from *SR* 316.4 billion in 1999 to around *SR* 390.2 billion four years later, with an average growth rate of 4.3% per annum. Hence, the share of the private sector in *GDP* rose from 52.4% to around 54.6% which helped to improve the strategic economic prospects of the country.

(vi) The government paid great attention to the stock market, as it played an important part in promoting the privatisation programme and in providing finance for the development of the economy. It developed further in 2003 when the Capital Market Law was passed. This established the regulatory framework of the market and made its operation and trading processes more efficient, as well as aligning it with international best practice.

(vii) The Capital Market Law of 2003 established the Securities and Exchange Commission (*SEC*), which reports directly to the Prime Minister and the Saudi Securities and Exchange Market, which has the legal status of a joint-stock company for the trading of securities in Saudi Arabia. In addition, it established the Securities Deposit Centre, which has the authorisation to carry out operations connected to depositing, transferring, settling, clearing and registering Saudi securities traded on the stock market. A Securities Dispute Settlement Committee and an Appeals Panel were also set up.

During the first four years of the Seventh Development Plan, the Saudi stock market gave a good performance, and in 2003 it took first place in the Arab stock markets listed in the Arab Monetary Fund (*AMF*) database, in terms of the value and number of traded shares, as well as in terms of the market capitalisation. The AMF reported that the value of the Saudi stock market value was *SR* 589.9 billion compared to an average of around SR 120.8 billion for all the Arab countries listed in the database, and around 43.5% of the total market value of all Arab stock market shares were accounted for the market value of Saudi shares.

In addition, in 2003 the share turnover ratio in the Saudi stock market averaged 101.1%, while the average for the other Arab stock markets listed in the *AMF* database was 32.1%.

Moreover, the Saudi stock market also led the other Arab stock markets in that its market depth indicator (the ratio of the market value of shares issued to the country's *GDP*) in 2003 was 73.4%, while that of other Arab stock markets was 62.6%.

It was considered by many that the Saudi stock market had the potential to outstrip the other stock markets in the Middle East in terms of size and activity particularly, as the Saudi government had launched a privatisation programme and the infrastructure of the market was completed.

Nonetheless, in spite of its good performance, the infrastructure of the Saudi stock market required further development. In addition, there was a requirement for investment banks and financial intermediaries with expertise in primary and secondary market activities. Moreover, there was still a lack of firms specialising in the underwriting of share issues, coverage and so forth.

In addition, concerning the investment instruments being traded, trading concentrated in ordinary shares, because the market lacked securities issued by private firms and the volume of shares issued was limited. Issued shares were often held by individuals and agencies who did not offer them for trading, for a number of reasons. In 2004, the government held a 44% stake in listed companies, with a market value of *SR* 263 billion.

During the Eighth Development Plan (Ministry of Economy and Planning, Ninth Development Plan, 2005 – 2010), the Saudi economy had positive growth rates, as shown by a number of economic indicators, in particular *GDP*, capital accumulation, foreign trade and balance of payments, manpower development, contribution of the private sector, and monetary and fiscal performance.

Throughout the period of the Eighth Development Plan, there were significant improvements in the international economy, and this increased the probability of achieving the principal aims and objectives of the plan. Oil prices continued to increase until halfway through the fourth year of the plan (2008) when the global economy underwent a financial crisis that resulted in worldwide recession and a rapid drop in the prices of oil and the prices of many goods and raw materials, which had raised sharply a short time previously.

Regarding the local economic situation, the government continued its attempts to develop the business environment and increase the contribution of the private sector, as well as developing basic infrastructure and industrial and technological zones. All these efforts contributed to raising the rates of investment, employment in a number of economic sectors and activities, thus increasing production and enhancing the quality of life.

The Saudi economy continued to improve during the period of the Eighth Plan. *GDP* at constant 1999 prices rose from around *SR*722.2 billion in 2004 to approximately *SR*855.8 billion in 2009, representing an average annual growth rate of 3.5%. This was less than the 4.6% rate aimed at in the Plan, but almost equal to the rate attained during the Seventh Development Plan (approximately 3.7%. However, this is a commendable performance taking into account the circumstances which arose from the global financial crisis. Average per capita real *GDP* improved considerably, from around *SR*43,700 in 2004 to around *SR*46,200 in 2009, representing an overall increase of 5.7%.

The increase in real *GDP* during the Eighth Development Plan can be attributed to the high level of investment, which improved productivity in a number of sectors. The annual growth rate of investment under the plan was around 11.2%, which resulted in

the average ratio of investment to real *GDP* rising to around 28.1%, from 21.1% in 2004.

Due to the external factors that had an effect on the volume of oil production, particularly in the last two years of the plan, the real domestic product of the oil-and-gas sector fell by about 0.2% per annum, which was lower than the rate of 2.7% aimed at in the plan. The product of the sector rose by an annual rate of 24.1% in the first three years of the plan because of oil prices increasing to record levels during that period. However, the last two years of the plan saw a decrease in oil prices, which led to a considerable deceleration in growth rates. Thus, the domestic product of the sector at current prices rose by 15.5% over the period of the plan overall.

The oil and gas sector accounted for 4.3% of the total investments during the period of the Eighth Plan. These had an average annual value of about *SR*10 billion, representing an increase of around 129.3% from the value of investments in 2004. Significantly, this sector has high capital intensity and high labour productivity. Throughout the period of the Plan, the average value of capital invested per worker in the sector was approximately *SR*1.8 million, and average worker productivity was about *SR*2.8 million.

During Eighth Plan period, the non-oil sectors reached an average annual growth rate of about 4.7%, with the value added by these sectors growing, at constant 1999 prices, from approximately *SR*523.8 billion in 2004 to around *SR*659.7 billion in 2009. Thus, their contribution to the *GDP* rose from around 72.5% in 2004 to around 77.1% five years later. This strong performance demonstrates the effectiveness of the attempts made to diversify the economy's production base.

Under the Eighth Plan, over 95% of investments were made in the non-oil sectors; the annual average value of these was *SR* 218.8 billion. This represented an increase of around 47.8% on comparable investments in 2004. In spite of the varying conditions of the non-oil sectors and their different performance levels during the Eighth Plan, they all had in common a robust direct link between the growth of investment rate and the growth of value added rate. Both production and service sectors with high rates of investment growth saw the greatest increase in value added

The part played by the private sector in production and service activities of the national economy expanded considerably during the Eighth Plan. As a result, there was an improvement in gross fixed capital formation, contributions to *GDP*, development of non-oil exports, job opportunities for Saudi nationals and diversification of the economy.

During the Eighth Plan, the value of the real *GDP* of the private sector rose from approximately *SR*376.7 billion in 2004 to around *SR*491.2 billion five years later. Consequently, the contribution of the private sector to the real *GDP* rose from 52.2% to 57.4%. In addition, the real value of investments made by the sector grew from approximately *SR*117.7 billion to around *SR*190.9 billion, representing an annual growth rate of just over 10.2%.

Public revenues rose by around 12.7% to an average of approximately *SR*745.5 billion per annum during the first four years of the Eighth Plan. This represents a rise of 90% from 2004. Public expenditures also rose continuously during this period, reaching an annual average of around *SR* 431.5 billion over the first four years representing a rise of around 51.3% from 2004. The budget of the final year of the plan (2009) was the largest in the history of Saudi Arabia in terms of the allocation of expenditure, which amounted to *SR*475 billion.

During the Eighth Plan, the budget for the development sectors was *SR*863.9 billion, a rise of around 78% from the budget expenditure on these sectors under the previous plan. The development of human resources received 55.6% of the total expenditure on development sectors, compared to 18% for the healthcare sector, 14.2% for the infrastructure sector and 12.2% for the economic resources sector. The allocation of 18% to the healthcare sector demonstrates the government's concern for the improvement of the quality and range of the health services available to Saudis.

The Saudi government gave a great deal of support to the national financial market in view of its significance in promoting the private sector through financing its development and offering investment opportunities for both Saudi and foreign capital as well as the growth of Saudi firms. Throughout the Eighth Development Plan the Capital Market Authority devoted itself to the preparation, development and issue of the regulations required to regulate the market. Among these were the Real Estate

Investment Funds Regulation, the Corporate Governance Regulation, and the Investment Funds Regulation, all issued in 2006; the Mergers and Acquisitions regulation, issued in 2007.

Between 2005 and 2008, the Saudi stock market saw the entrance of investors from twenty foreign countries. This came in the form of establishing securities businesses, portfolio management, the provision of advice to investors, and by buying and selling hares on investors' behalf, and involved direct investment as well as partnerships with Saudi capital In 2008, it was estimated that foreign capital in the Saudi stock market took a 22.4%, representing a value of around *SR*2.55 billion. The remaining 77.6% belonged to Saudi firm and individuals and had a value of around *SR* 8.85 billion.

Overall, throughout the Eighth Development Plan, the Saudi stock market performed well. The number of companies listed in the market increased from 73 in 2004 to 127 four years later, representing an increase of around 74%. Furthermore, the number of traded shares rose from 10,298 million at the end of 2004 to 58,727 million at the end of 2008, with their value increasing in the same period from *SR* 1,773.9 to *SR* 1,962.9 billion.

Although the Saudi stock market was extremely active, the combined index of stock price fell from 8,206.2 points at the end of 2004 to 4,803 points four years later. In the same period, the market value of issued shares also fell from around *SR* 1,149 billion to around *SR* 924 billion. This was due to the global financial crisis, pressures of speculation and market attempts at self-correction.

By the end of 2008, in comparison to the fifteen stock markets listed in the Arab Monetary Fund's database, the market value of issued shares of the Saudi stock market was just over six and a half time that of the average market value of issued shares in the other Arab stock markets. The Saudi stock market took first place, ahead of all the other Arab markets. The total value of shares traded in the Saudi stock market was just over 110% of the total value of shares traded in these other markets. It should be noted that the efficiency of the Saudi stock market was demonstrated buy the fact that the average share turnover was 212.3%, compared to an average of around 61.8% in other Arab markets. Moreover, the degree of market depth was

around 53% for the Saudi market, making it 1.6% higher than the average for the other Arab markets.

3.3. INDICATORS OF SAUDI ECONOMIC GROWTH

Among the long-term aims of economic growth to reinforce the economy are the reduction of a dependence on oil and the building up of the part played by the private sector.

The Saudi economy has always pursued free market principles in the planning of its development, thus ensuring that the private sector would remain the major driver of economic activity. However, in the first three plans, the increase in oil revenues gave the government main responsibility for directing and encouraging economic development. The majority of infrastructure projects had been completed by the start of the 6th plan, and the private sector was encouraged to take part in economic development by the government. Fluctuating oil revenues compelled the government to decrease and restructure expenditure by offering the private sector a key part in the general development process. In addition, the government formulated policies to increase the contribution of the private sector through the provision of such incentives as:

(i) Interest-free loans offered by a number of different development funds;

(ii) The exemption of raw materials and machinery for manufacturing from customs duty;

(iii) Priority, guaranteed purchase by the government at a very advantageous rate;

(iv) Locations for agricultural and industrial projects offered free or for a nominal sum.

Due to these government initiatives, the part played by the private sector has grown progressively.

3.3.1. Developments and Trends in the *GDP*

As can be seen from tables 3.1, 3.2 and 3.3 show that the *GDP* at constant prices of 1999 (excluding import duties) rose by 3.8 percent to *SR* 858799 million in 2010 compared to a growth of 0.1 percent in the previous year. This was attributed to a

rise of 4.4 percent in the non-oil sector in comparison to 3.5 percent in the previous year. Private sector growth was 3.7 percent during 2010 as opposed to 2.7 percent in the previous year, while the public sector grew by 5.9 percent in comparison to 5.2 percent in the previous year. Moreover, the oil sector's growth increased by 2.1 percent compared to -7.6 percent in the previous year.

Table 3.1. Gross Domestic Product By Sector (at constant prices, 1999 = 100)

(Million Riyals)

Year	Non-Oil			Oil Sector	GDP
	Private Sector	Government Sector	Sub total		
1985	208543	103,617	312160	92,525	404,685
1986	190879	103,125	294004	131,162	425,166
1987	190081	102,568	292649	116,103	408,752
1988	193481	102,942	296423	140,769	437,192
1989	196827	105,445	302272	136,966	439,238
1990	197041	109,108	306149	170,076	476,225
1991	200866	112,222	313088	207,911	520,999
1992	208908	119,709	328617	214,109	542,726
1993	212868	122,568	335436	207,491	542,927
1994	215719	124,191	339910	207,889	547,799
1995	217644	125,346	342990	206,972	549,963
1996	211879	127,274	355671	211,879	567,550
1997	208724	135,008	373713	208,724	582,438
1998	215357	137,905	382796	215,357	598,154
1999	198988	139,767	394967	198,988	593,955
2000	212652	144,148	410585	212,652	623,237
2001	276254	148,646	424900	204,365	629,265
2002	287667	152,992	440660	189,112	629,772
2003	298970	157,668	456638	221,545	678,183
2004	314924	162,516	477440	236,459	713,899
2005	333307	169,034	502341	251,191	753,532
2006	353696	174,272	527968	249,281	777,249
2007	373075	179,513	552588	240,224	792,813
2008	390081	186,169	576250	250,227	826,478
2009	400535	195822	596357	231245	827602
2010	415384	207399	622747	236052	858799

Source: Central Department of Statistics & Information, Ministry of Economy and Planning

Table 3.2. Average Annual Growth Rates of GDP (at constant prices (1999 = 100)
(Million Riyals)

Year	Non-Oil			Oil Sector %	GDP %
	Private Sector %	Government Sector %	Sub total %		
1985	2.7-	7.3	0.4	17.5-	4.4-
1986	8.5-	0.5-	5.8-	41.8	5.1
1987	0.4-	0.5-	0.5-	11.5-	3.9-
1988	1.8	0.4	1.3	21.2	7.0
1989	1.7	2.4	2.0	2.7-	0.5
1990	0.1	3.5	1.3	24.2	8.4
1991	1.9	2.9	2.3	22.2	9.4
1992	4.0	6.7	5.0	3.0	4.2
1993	1.9	2.4	2.1	3.1-	0.0
1994	1.3	1.3	1.3	0.2	0.9
1995	0.9	0.9	0.9	0.4-	0.4
1996	4.9	1.5	3.7	2.4	3.2
1997	4.5	6.1	5.1	1.5-	2.6
1998	2.6	2.1	2.4	3.2	2.7
1999	4.2	1.4	3.2	7.6-	0.7-
2000	4.4	3.1	4.0	6.9	4.9
2001	3.7	3.1	3.5	3.9-	1.0
2002	4.1	2.9	3.7	7.5-	0.1
2003	3.9	3.1	3.6	17.2	7.7
2004	5.3	3.1	4.6	6.7	5.3
2005	5.8	4.0	5.2	6.2	5.6
2006	6.1	3.1	5.1	0.8-	3.1
2007	5.5	3.0	4.7	3.6-	2.0
2008	4.6	3.7	4.3	4.2	4.2
2009	2.7	5.2	3.5	7.6-	0.1
2010	3.7	5.9	4.4	2.1	3.8

Source: Central Department of Statistics & Information, Ministry of Economy and Planning

The private sector's contribution to total *GDP*, at 1999 constant prices, equalled 57.2 percent in 2010 in comparison to 57.1 percent in the previous year, while the public sector's contribution was 18.6 percent as opposed to 18.2 percent in the previous year. The oil sector contributed 23.1 percent in 2010 compared to 23.5 percent in the preceding year.

Table 3.3. Percentage Distribution of Gross Domestic Product by Non-oil and Oil Sectors, in Producers' Values, at 1999 Constant Prices

Year	Non-Oil			Oil Sector	GDP
	Private Sector	Government Sector	Sub total		
1985	60.0	21.2	81.2	17.8	99.0
1986	53.3	20.3	73.6	25.5	99.2
1987	55.2	221.0	76.2	22.9	99.1
1988	51.9	19.4	71.4	26.5	97.9
1989	52.4	20.0	72.4	25.9	98.3
1990	48.9	19.1	68.1	30.3	98.4
1991	45.5	18.0	63.5	35.2	98.6
1992	45.5	18.2	63.6	34.6	98.2
1993	46.4	18.5	64.9	33.3	98.2
1994	46.9	18.5	65.3	33.1	98.4
1995	46.8	18.9	65.7	32.9	98.6
1996	47.7	18.5	66.2	32.3	98.5
1997	48.3	19.2	67.5	31.0	98.5
1998	48.2	19.0	67.2	31.2	98.4
1999	50.4	19.3	69.7	28.7	98.4
2000	40.1	19.0	69.1	29.3	98.5
2001	51.7	19.3	71.0	27.9	98.9
2002	53.6	19.8	73.4	25.5	98.8
2003	52.0	18.9	70.8	28.1	98.9
2004	52.2	18.3	70.5	28.4	98.9
2005	52.3	17.9	70.2	28.7	98.9
2006	53.7	17.7	71.3	27.5	98.8
2007	55.3	17.7	73.0	25.8	98.8
2008	55.6	17.4	73.0	25.8	98.8
2009	57.1	18.2	75.3	23.5	98.8
2010	57.2	18.6	75.7	23.1	98.8

Source: Central Department of Statistics & Information, Ministry of Economy and Planning

3.3.2. *GDP* according to type of economic activity

The details of the non-oil *GDP* (at constant prices of 1999) by major economic activities show that all economic activities saw their performances grow, at varying rates, in 2009. Transport, storage and telecommunications activity saw growth at a rate of 6.9 percent compared to a growth rate of 12.2 percent in the previous year. However, the agriculture, forestry and fishing activity recorded the lowest growth rate of 0.6 percent, a slight fall from 0.7 percent in the preceding year. The public utilities activity (electricity, gas and water) recorded a growth of 6.8 percent compared to 6.7

percent in the preceding year. The wholesale and retail trade, restaurants and hotels activity, and the manufacturing activity (including oil refining) rose by 2.5 percent and 2.3 percent, respectively, in comparison to 6.5 percent and 6.0 percent, respectively in the preceding year.

Table 3.4a
Percentage Distribution of Gross Domestic Product
Million Riyals (1999 = 100)

Years	Agriculture, Forestry & Fishing	Mining and Quarrying		Manufacturing		Electricity, Gas and Water	Construction
		Crude Petroleum & Natural Gas	Other	Petroleum Refining	Other		
1985	17865	72649	1657	12868	22697	3624	39489
1986	20551	109475	1611	15378	22061	3820	34612
1987	23919	94378	1575	15547	21987	4046	33629
1988	26498	118496	1593	16295	22645	4390	31951
1989	28356	115888	1648	15110	23547	4509	31784
1990	29150	146733	1648	17392	23168	4564	31483
1991	29991	185760	1725	16029	24663	4925	32255
1992	31796	191176	1720	16781	25406	5219	31706
1993	32912	184155	1802	17007	26765	5736	32477
1994	32157	184186	1946	17094	29025	6362	34140
1995	32476	183599	2149	16400	32912	6649	37021
1996	32371	185913	2213	18612	37656	6938	39666
1997	33354	183332	2345	17921	40918	7138	39610
1998	33676	189476	2440	18101	42090	7511	40406
1999	34443	173102	2464	18021	44779	8174	39437
2000	35789	185735	2517	18660	47134	8561	41755
2001	35992	177388	2550	18515	50186	9515	42123
2002	36454	162311	250	18063	53019	9955	43181
2003	36751	192452	2603	19914	56227	10569	4550
2004	37874	205088	2654	21634	59680	11259	48517
2005	38338	218648	2726	22332	64608	11866	50832
2006	38748	216195	2798	22170	70212	12629	54559
2007	39466	207257	2884	21549	76128	13142	56799
2008	39731	216104	2962	22354	81154	14018	576629
2009	39536	197655	3036	21615	83485	14973	57982
2010	39986	201723	3109	21875	87639	115867	60120
Average % share	4.6	23.2	0.4	2.5	10.1	1.8	6.9

Source: Central Department of Statistics & Information, Ministry of Economy and Planning

The construction and building sectors grew by 4.7 percent compared to growth of 1.5 percent in the previous year, while growth in the finance, insurance, real estate and

business services activity was 3.7 percent compared to 2.4 percent in the previous year.

Table 3.4(b)
Gross Domestic Product By Type of Economic Activity
(Million Riyals (1999 = 100)

Years	Wholesale & Retail Trade, Restaurants and Hotels	Transport, Storage & Communication	Finance, Insurance, Real Estate & Business Services:		Community, Social & Personal Services	Gross Domestic Product (GDP)
			Ownership of Dwellings	Other		
1985	30633	21666	53722	27787	17604	404685
1986	32354	21076	44483	24405	16891	425166
1987	31791	20568	42551	24864	16687	408752
1988	31475	20774	42500	26104	17217	437192
1989	31160	20880	42500	26937	17482	439238
1990	31535	21492	41193	27298	17648	476224
1991	33019	22363	41491	25541	17597	520998
1992	34520	26803	41060	28039	17830	542726
1993	35462	28858	39409	28164	18353	542928
1994	35745	29342	38230	28477	18935	547799
1995	35157	24472	37871	27390	19100	549963
1996	35505	24840	40795	27298	19511	567549
1997	38073	26152	42092	28262	20218	582438
1998	42394	27186	40682	29338	20620	598154
1999	45992	27893	42221	31603	21377	593955
2000	48183	29015	43176	33369	22478	623237
2001	50079	31277	44080	35033	23481	629265
2002	52210	33455	4515	37445	24792	629772
2003	54204	35046	46080	38713	25552	678182
2004	5683	37863	47924	40566	26754	713899
2005	59385	41145	50012	44164	28106	753532
2006	62989	45160	51706	46833	29502	777249
2007	66893	49766	52822	49498	30297	792813
2008	71212	55822	53951	50829	31028	826478
2009	72992	59862	54639	53292	32267	827602
2010*	76232	63007	55500	52903	34271	858799
Average %Share	8.8	7.3	6.4	6.2	3.6	98.08

Source: Central Department of Statistics & Information, Ministry of Economy and Planning

Tables 3.4a and 3.4b show the average percentage of contribution to *GDP* according to type of sector during the period covered. Agriculture, Forestry and Fishing contributed to *GDP* by 4.6%; manufacturing contributed 2.5% while petroleum refining 10.1. The contribution of the electricity, gas and water sector was 1.8%, and

that of construction 6.9%, while the wholesale and retail trade, restaurants and hotels sector contributed 8.8% and transport, storage and communication, 7.3%. In the finance, insurance, real estate and business services sector, ownership of dwellings contributed 6.4% and other 6.2%, with community, social and personal services contributing 3.6%. However, it can be seen that the mining and quarrying contributed the highest percentage, with 23.3% from crude petroleum and natural gas as well as 0.4% from other.

3.3.3. Gross fixed capital (*GFC*)

Table 3.5 below shows the gross fixed capital formation by type of capital goods for the period 1985-2009. It should be noted that data for 2010 had not yet been made available at time of writing. It can be seen that the gross fixed capital formation was *SR* 381,098 million in 2009, in comparison to *SR* 395,961 million in 2008, representing a decrease. The non-oil *GFC* in 2009 *SR* 342,903 million and in 2008 it was *SR* 348,011. The non-oil *GFC* comprised the government non-oil *GFC* and the private sector *GFC*, which in 2009 were *SR* 342,903 million and *SR* 119,663 million and in 2008, *SR* 109,882 million and *SR* 171,928 million, respectively. However, the oil *GFC* was *SR* 55,061 million in 2009, a fall from *SR* 66,201 million the previous year.

Table 3.5.:Gross Fixed Capital Formation by type of Capital Goods (At purchasers' values current price -Million Riyals)

Year	All Capital Goods				Change in Stock	Gross Fixed Capital Formation (1)
	Non-Oil					
	TOTAL	Govt.	Private Sector	Oil Sector		
1985	76313	25184	35236	8302	-3141	73172
1986	66114	27402	31047	8927	-10032	56112
1987	65202	24029	31643	6753	-14797	50405
1988	69518	26285	32590	1247	2581	59436
1989	60409	26285	32,590	1534	3,039	63,448
1990	74803	42491	28078	4234	-17,350	57,453
1991	86510	45201	36804	4505	-4840	81,670
1992	93975	32289	54686	7000	11004	104,979
1993	98450	30029	60421	8000	12883	111,333
1994	84207	23969	52084	8154	6876	91083
1995	93555	25168	53619	14768	2268	95823
1996	102848	12914	81,98	8536	4058	106906
1997	109241	16102	83846	9293	3836	113077
1998	112959	12437	89056	11466	9596	122555
1999	118196	1958	92091	13147	9421	127617
2000	123324	16353	92953	14018	8903	132227
2001	126095	17508	94347	14240	3497	129593
2002	128066	18121	97459	12486	11043	139109
2003	148098	23291	103676	21131	11375	159471
2004	156347	30386	109040	16921	23809	180156
2005	195632	54940	118461	22231	20055	215687
2006	233064	58741	129943	44380	17037	250101
2007	295400	84042	146405	64954	13965	309365
2008	348011	109882	171928	66201	47950	395961
2009	342903	119663	168180	55061	38195	381098

Source: Central Department of Statistics and Information, Ministry of Economy and Planning

3.4. THE FINANCIAL INSTITUTIONS IN SAUDI ARABIA

There are several major financial institutions in Saudi Arabia, all of them influential to varying degrees. The following section provides a brief overview of these.

3.4.1. The Saudi Arabian Monetary Agency (*SAMA*)

The central bank of the Kingdom of Saudi Arabia, the Saudi Arabian Monetary Agency (*SAMA*) was established in 1952. According to its constitutions, its functions include:

- Issuing the national currency, the Saudi Riyal;
- Acting as banker to the government;
- Supervising commercial banks;
- Managing Saudi Arabia's foreign exchange reserves;
- Developing monetary policy to promote price and exchange rate stability;
- Promoting the growth and ensuring the reliability of the financial system.

SAMA was established as the Central Bank of Saudi Arabia on October 4, 1952., which aims at that time included reinforcing and stabilising Saudi Arabia's currency, centralising government incomings and outgoings, investing the national resources, and controlling payments authorised by the government budget. In 1957, *SAMA's* responsibilities grew to include issuing bank notes after obtaining the approval of the Ministers Council. Its responsibilities were extended still further in 1966 to encompass the authorisation and monitoring of Saudi commercial banks and moneychangers within the framework of the banking control law introduced that same year. Among *SAMA's* responsibilities under this law are the regulation of foreign exchange, deposits made by banks with *SAMA* and with foreign banks, and the approval of any expansion.

In 1984, *SAMA* was given control of the capital market in Saudi Arabia and became the legislative authority for the regulation of general and operational rules. *SAMA* circulated the rules and regulations for the control and supervision of the Saudi Stock market to commercial banks, which were responsible for all share-trading activities. Moreover, *SAMA* contributed to the development of the financial system through the implementation of several automated systems. The automated clearing system was introduced in 1987 and this speeded up cheque clearance to one or two days. The automated system was further improved in 1994, and permitted cheques to be cleared on the same day. *SAMA* set up a national payment system known as the Saudi Payments Network (*SPAN*) in April 1990. The system linked all the automated teller machines (*ATMs*) operated by banks, allowing *SPAN* card holders to withdraw cash

and make immediate payments for purchases. The *SPAN* is also linked to international payment networks. Moreover, in 1990, *SAMA* introduced the Electronic Share Information System (*ESIS*), which provides an unlimited, continuous order-driven market, with up-dated prices, volumes, and company information. In order to modernise the payments and settlement system still further, in May 1997, *SAMA* introduced an electronic funds transfer system known as the Saudi Arabian Riyal Inter-bank Express (*SARIE*). This allows banks to make and receive payments directly from their accounts with *SAMA* on a real-time basis and to credit the beneficiary's account with a transfer of funds on a same-day basis. In addition, the system provides a fully automated linkage between all clearing systems in Saudi Arabia, including *SPAN*, *ESIS*, and the electronic clearing system. The risk involved in monetary transfers has been greatly minimised with the implementation of the *SARIE* system, and, moreover, banks' operating costs have also decreased (SAMA, 1990, 1998).

Regarding monetary policy, in 2010 *SAMA* maintained its accommodative attitude by reducing the Repo rate to 2.0 from 5.5%, the reverse repo rate from to 0.25% from 2.0%, and the reverse requirement on demand deposits to 7% from 13%. However, *SAMA* did not change the requirement on time and savings deposits, which remained at 4%. In addition, domestic liquidity continued to increase, concomitant with the growth in domestic economic activity (SAMA, 2010). A number of factors led to this growth in domestic liquidity. Among these were the government's expansionary fiscal policies, adopted with the aim of advancing the economy, and the accommodative position taken by *SAMA* in its monetary policy to encourage banks to increase their lending to the domestic private sector.

During 2010, there was a rise of 5% in broad money (*M3*), comprising currency outside banks and all types of bank deposits. This rose by *SR* 51.4 billion, 5%, to reach a record level of *SR* 1.1 trillion, although growth was less accelerated than it had been in the previous year, when it had risen by 10.7%. Bank deposits, representing 91.2% of M3, rose by *SR* 44.3 billion, a rise of 4.7%, although this was lower than the rise of 11.2% in 2009. Currency outside banks rose by 8.1% to *SR* 7.1 billion, in comparison to a rise of 6.5% in 2009.

In 2010, monetary base rose by *SR* 6.3 billion (2.5%) in comparison to an increase of *SR* 68.3 billion in the previous year. The money multiplier rose to 4.24 in 2010 from 4.14 in 2009 because of the fall in the ration of bank reserves to bank deposits to 16.2% in 2010 from 17.0% in 2009. Also in 2010, the Saudi Interbank Offered Rate (*SIBOR*) on Riyal deposits fell to its lowest level due to *SAMA's* maintenance of the Reverse Repo rate at a low level.

In terms of the public debt, this fell to *SR* 167 billion in 2010 from *SR* 225 billion in 2009 as a result of the rise in oil revenues leading to an increase in the government budget surplus, some of which was used to repay the public debt. No public debt instruments were issued in 2010 and the ratio of public debt to *GDP* fell to 10.2% at the end of 2010 from 16% at the end of 2009.

Regarding exchange rate developments, *SAMA* maintained the official peg of the Saudi Riyal and its exchange rate to the U.S. dollar at *SR* 3.75 to the dollar in 2010 (SAMA, 2010).

3.4.2-Commercial Banks

In 2010 commercial banks held their strong financial position and faced the effects of the financial crisis that had so disrupted the banking system in industrialised countries. Saudi banks were able to hold this strong position due to fiscal measures taken to encourage economic activity, the government's guarantee to safeguard depositors' money, measure taken by *SAMA* to improve risk management systems at commercial banks and banks' efficient management of their financial resources. A rise in the general activity of the banks and the improvement of their financial position in 2010 bore witness to their good performance. The total assets of commercial banks rose by 3.3% and their claims on the domestic private sector, which had been dormant in 2009, rose by 5.7%. Bank deposits rose by 4.7%, which may be attributed to several factors, in particular the increase in net domestic government expenditure. Capital and reserves rose by 8.8%, although profits fell by 2.6%. Moreover, there was a considerable expansion in the operation and utilisation of modern banking technology, such as phone and Internet banking, in commercial banks in 2010, allowing them to serve the domestic economy and their customers by the provision of these modern banking services. At the end of 2010 there were 21

commercial banks operating in Saudi Arabia, including branches of foreign banks such as the National Bank of Kuwait, Muscat Bank, Deutsche Bank, J, P. Morgan Bank and the National Bank of Bahrain. The number of bank branches increased to 1591, an increase of 72 from 2009 (SAMA, 2010).

3.4.3. Specialised Credit Institutions (*SCIs*)

According to SAMA (2010) specialised credit institutions distributed a total of *SR* 396.6 billion in loans from their inauguration up to the end of 2010. Their total assets the end of 2010 were *SR* 379.8 billion, a rise of *SR* 21.6 billion (6%) from 2009. The provision of loans by the specialised credit institutions contributed to achievement the development goals in Saudi Arabia.

The Saudi Industrial Development Fund (*SIDF*) provided loans amounting to *SR* 6.5 billion in 2010, an increase of 39.6% from the previous year. There was also a 70.3% rise in loan repayments, to *SR* 2.6 billion. From its initiation up to the end of 2010, the *SDF* had distributed a total of *SR* 59.4 billion. The amount of total outstanding loans was *SR* 24.8 billion at the end of 2010, an increase of 28.5% from 2009 (SAMA, 2010).

Regarding **the Real Estate Development Fund (*REDF*)**, the total amount of loans distributed by the *REDF* from its inception up to the end of 2010 was *SR* 153.7 billion, with the total of loans outstanding at the end of 2010 standing at *SR* 24.8 billion, an increase of 18.5% from 2009. In 2010, the *REDF* provided loans to finance construction of owner-occupied dwellings amounting to *SR* 6.8 billion, an increase of 27.9% from the previous year. Loan repayments also increased in 2010, by 53.7% to *SR* 5.9 billion (SAMA, 2010).

In the case of **Agricultural Development Fund (*ADF*)**, in 2010 there was a 3.1% increase in the total loans distributed by the *ADF* to *SR* 621.9 million, compared to *SR*603.0 million at the end of 2009. There was also a rise in loan repayments of 11.8% to *SR* 720.7 million at the end of 2010. However, in 2010 total outstanding loans fell by 1.0% from the previous year, to *SR* 9.4 billion. The total amount of loans disbursed by the *ADF* from its inception up to the end of 2010 was SR 41.8 billion (SAMA, 2010).

Public Investment Fund (*PIF*) has provided loans amounting to *SR* 111.2 billion from its inauguration up to the end of 2010, during which period repayments totalled *SR* 60.3 billion. At the end of 2010, total outstanding loans stood at *SR* 50.9 billion, an increase of 20.7% form 2009. In addition, in 2010 total disbursed loans fell by 39.7% from the previous year, to *SR* 9.3 billion. Loan repayments totalled SR 1.0 billion, a fall of 50.0% form 2009. The total contribution of the *PIF* to domestic, Arab and bilateral companies came to *SR* 3.2 billion in 2010. From the inception of the *PIF* up to the end of 2010, the total contributions of the PIF amounted to *SR* 65.4 billion, an increase of 5.1% from the previous year (SAMA, 2010).

Saudi Credit and Savings Bank (*SCSB*), from its inception up to the end of 2010, the *SCSB* has disbursed a total of *SR* 30.0 billion in loans. The amount of outstanding loans came to *SR* 14.6 billion at the end of 2010, an increase of 3% form 2009. IN 2010, the SCSB provided loans amounting to *SR* 4.4 billion, a fall of 33.7% from the previous year. However, loan repayment rose by 7.0% from the previous year, to *SR* 3.5 billion.

Domestic Soft Loan Program(*DSLP*) was established in 1971 by the Ministry of Finance, with the objective of initiating a direct domestic soft loan program to assist the private sector in the establishment of economic development projects. Under this program, loans are provided to establish hotels, medical centres, press projects, dispensaries and private educational and training projects. Since the program's inception up to the end of 2010, 569 loans of this nature, with a total value of *SR* 7521 million, have been granted. In 2010, actual loans disbursed amounted to *SR* 6.484 million, an increase of 4.8% from the end of the previous year. At the end of 2010, actual repayment amounted to *SR* 4305 million, representing an increase of 3.8% over the end of 2009. Total outstanding loans also increased by 6.9% over the end of the previous year, to *SR* 2,179 million. Forty loans were approved in 2010, including three loans of *SR* 13.0 million each to set up hotels and resorts, twenty-one loans of *SR* 257 million for health-related projects and sixteen loans of *SR* 164 million for private educational and training projects. Hence, the total of loans distributed in 2010 amounted to *SR* 297 million (SAMA, 2010).

3.4. CONCLUSION

The discussion and presentation so far indicates that Saudi Arabia, similar to other developing nations, have ups-and-downs in its economic performance. Considering that it is the largest Arab economy in the Middle East and the Gulf region, Saudi Arabia remains an essential economy and its strength and difficulties, therefore, affects the entire region.

Over the years, considering 1950s, Saudi Arabia has shown an excellent performance. However, considering the amount of oil revenues, perhaps a better and dynamic economy could have been achieved with an efficient public finances and macroeconomic management.

In its economic diversity and development, financial sector has now plays more important role as compared to twenty years ago, as rather than choosing the comfortable system of depositing the Saudi monies on American Treasury Bills, the Saudi investors do take actual risk and invest heavily within the region and beyond through which they contribute to the financial development but also economic growth. An important part of the financial development is the increasing role and depth of stock exchange which is discussed in the following chapter.

CHAPTER 4

SAUDI STOCK MARKET: HISTORY, DEVELOPMENTS AND TRENDS

4.1. AN HISTORICAL INTRODUCTION TO THE SAUDI STOCK MARKET

The discovery of oil in Saudi Arabia in 1938 had a significant impact on changing the economic and social features of the country. Since then, the economy of Saudi Arabia has continued to be extremely dependent on oil revenues. The contribution of the oil sector accounted for 57.2% of *GDP* in 2010 (MEP, 2010). This role of oil in the Saudi economy has varied from year to year according to the price of oil, but has always had a considerable effect on economic indicators. The flow of oil revenues and the increase in the government's financial surpluses, which fluctuates with world oil prices, have enhanced the need for outlets for investment and economic diversification. Considering the liquidity and accumulated capital in the country, one of the most important strategy in the acceleration of economic growth for the Saudi economy is the establishment of an advanced financial market, specifically a stock market, which can deploy and invest financial surpluses and to gather individual savings to bring them into the economy in order to facilitate and support growth.

To meet this challenge, the government amended a number of laws and regulations to facilitate and regulate the growth and performance of the financial sector specifically stock market since 1990s. The most significant legislation is that of the Capital Market System in 2003, which aims to provide a legal and regulatory framework for the implementation of all activities related to the financial market, such as the sale and purchase of stocks, bonds and securities and trading and investment funds. Comprehensive reforms of the financial sector have been underway with the intention of developing, extending and increasing access to financial markets and improving financial services. All this enhances economic diversification, accelerates growth and supports employment opportunities. Furthermore, the financial system has developed resulting in positive developments in increased efficiency. In addition, a significant improvement in the quality of services provided by financial institutions has been

achieved. It is held that the Saudi capital market, with the potential capabilities that it possesses, can make an essential contribution to economic growth.

The Saudi stock market, according to the widely held view, was launched in 1935 when the Arab Automobile Company went public and began to trade its shares (Aljaser, 2002). However, some researchers are of the opinion that the stock market began with the issuance of the Companies' System in 1965, as this included legislation and regulation of constituent companies, the underwriting and trading of shares and the organisation of corporate performance and disclosure requirements for investments (Alhamedi and Alkhalaf, 2009). The number of joint stock companies in early 1970s gradually increased to reach fifty companies by the mid-eighties, with the existence of market systems and an increase in oil income and the expansion of programmes of privatisation of government companies and families firms. In this period until the regular market was established, shares were traded by the offices which had not experienced in the work of financial intermediation.

The Saudi stock market remained informal until the early 1980s, when the government launched a rapid development programme and reformed the market, which was formally regulated in 1984, and in 1985 the Saudi Shares Registration Company was established. Moreover, in the past decade the government has been implementing an ambitious programme and extensive reforms to improve the operation of the stock market and to make it more effective in the economic growth process.

The aim of this chapter is to review the stock market from its formal initiation in 1985 up to 2010, through which the historical development of the Saudi stock market will be reviewed. Both legislation and regulation through a descriptive presentation together with graphical and statistical analyses are used, to investigate the behaviour of the market.

4.2. DEVELOPMENT OF STOCK MARKET LEGISLATION AND REGULATION IN SAUDI ARABIA

The Saudi stock market has gone through several stages of development in terms of regulation and legislation. This development can be divided into two important phases in the history of Saudi stock market. Each stage has its own characteristics in

terms of legislative and regulatory frameworks. Firstly, the issuance of the Ministerial Committee and the Executive Committee to oversee the stock market; and secondly, the issuance of the financial market and the composition of the Saudi Capital Market Authority.

In an chronological order of the stock market developments, in 1983 the Ministerial Committee was formed, consisting of the Minister of Finance and Minister of Trade and the Governor of the Saudi Arabian Monetary Agency, to take over the development of regulatory legislation for the Saudi stock market.

In 1984, from the Ministerial Committee emerged the Supervisory Committee of the Stock Market, comprising the Undersecretary of the Ministry of Finance the Deputy Minister of Trade and the Deputy Governor of *SAMA*. This Committee was given the responsibility of the important work of encouraging the registration of shares by Saudi companies and carrying out tasks concerning the settlement and clearing of trades.

In 1985, *SAMA* made a requirement for Saudi companies to register shares to solve the problem of delays in the transfer of ownership of shares after the completion of the trading process and to increase confidence in the market and provide greater fairness and protection for investors. They also managed the records of shareholders of listed companies in the stock market and ended the clearing of payment systems in *SAMA*.

In 1987, the Ministerial Committee decided to open a central stock trading hall, in which all the intermediaries (banks) could meet. This decision was result of the difficulties involving the mechanism of trading stocks through Saudi banks, particularly when the shares had been traded at one time with two different prices. In addition, there was a delay in completing the procedures of ownership transfers. Trading in these halls lasted only a few days because of the weakness of a number of the transactions, the amount and value of shares traded and the number of companies that were trading. Therefore, banks gave up trading in the halls and returned to the trading mechanism of the central units in local banks.

In 1990, the Electronic Securities Information System (*ESIS*) was introduced to offer the possibility of automated trading for all stocks through local banks. The problems

faced by banks in executing orders of purchase and sale through the central trading units, such as lack of clarity and transparency in trading operations, inefficiency of transfer of ownership of shares and the lack of success of the experiment of gathering intermediaries in one trading hall led *SAMA* to create the new ESIS system. ESIS is a complete electronic system that carries out trading and settlement of the shares of companies in the *SAMA* linked an electronic terminal ends with central trading units in commercial banks and providing adequate information for traders of listed companies in the market. The most important qualities that distinguish the ESS system are transparency in the provision of information, fairness and equality and the protection of the rights of sellers and buyers.

In 1997, the conditions of disclosure requirements were issued in order to provide greater protection for investors and raise the level of transparency and reform in the market. For example, this attempted to prevent a situation in which some parties had inside information of unexpected events, which had an effect on share prices and was therefore unfair to those parties who were unaware of this information. Therefore, it was stipulated that the chairman of the board of directors of the shareholding company, its managing director, or his representative must disclose important events and information that affected stock prices either directly or indirectly. All information, statements and reports have to reflect the reality of the company's situation. In addition, there are some particular conditions, which determine the trading in shares of the company by the members of its board of directors, directors, and senior staff.

In 1998, conditions and requirements for inclusion in ESIS were issued, where none had previously been in force. Previously, it had sufficed to set up a company or transfer a registered company to a joint-stock company. After removal of the formal ban contained that is in the Saudi companies system and disclosure of the budget, and profit and loss account for two fiscal years. These conditions and requirements corresponded to the increase in the number of companies and privatisation programmes. This legislation allows two types of companies to be included in the Saudi Stock Market: (i) Equity firms offered for subscription at their founding; (ii) Equity firms with limited underwriting on the founders (closed).

In 2001 a new generation of trading systems and settlements (*Tadawul*) was implemented. These were characterised by real-time adjustments of *T* + *D*, where *T* denotes the number of times of treading and D symbolizes the day which enabled investors to buy and sell several times a day according the *T*+*D* systems.

4.2.1. Capital Market Law (*CML*)

In 2003, the Capital Market Law (*CML*) was issued with the aim of restructuring the financial market on the basis of new and sophisticated system to promote investor confidence and provide more clarity, transparency and fairness in dealing within the market. The *Tadawul* system focused on identifying the roles of the supervisory and regulatory institutions, the new bath in the financial market and its mission statement, as well as the separation of the regulatory and supervisory role from the executive role. Furthermore, the *CMA* licensed new market intermediaries and regulated the offering of securities. The law also established the Saudi Arabian Stock Exchange, which became the exclusive securities market for the Kingdom. The equity market witnessed continued growth between 2003 and 2010, setting several new records. To achieve these objectives, institutions new to the market have been created, including:

(i) The Capital Market Authority (*CMA*), which is the supervisory and regulatory organization of the financial market.

(ii) The Saudi Stock Market (*SSM*), which is concerned with the operational functions of the market.

(iii) The Commission for the Settlement of Disputes and Financial Management, which is a specialised committee to adjudicate in disputes that fall within the provisions of the Capital Market Law and to implementing the rules, regulations and instructions of the market.

(iv) The Committee of Appeal, which reviews the complaints and lawsuits resulting from decisions made by the commission adjudication of disputes in the financial. (CMA, Annual Report, 2009,2010).

4.2.2. The Capital Market Authority (*CMA*)

In 2003, the Capital Market Authority (*CMA*) was established under the Capital Market Law (*CML*) to supervise and control the parties coming under its authority.

The *CMA* is a government body that has financial and administrative independence and reports directly to the Prime Minister. The Authority is responsible for the development of the regulation of the Saudi capital market, and with issuing regulations, rules and instructions necessary for the application of the provisions of the Capital Market Law (*CML*).

The Capital Market Law (*CML*) sets out the principal functions of the *CMA*. The most important of these are the following:

(i) Regulation and development of the capital market;

(ii) Development and improvement of the practices of parties engaged in securities trading;

(ii) Protection of investors in securities from unjust and unsafe practices, such as fraud, deceit, manipulation or insider trading;

(iv) Assurance of fairness, efficiency and transparency in securities transactions;

(v) Development of controls that allay the risks involved in securities transactions;

(vi) Regulation and monitoring of the issuance of and trading in securities;

(vii) Regulation and monitoring of business activities of parties subject to the supervision of the *CMA*;

(viii)Regulation and monitoring of the full disclosure of information relating to securities and their issuers, and specification and provision of that ought to be disclosed by participants in the market to shareholders and to the general public (CMA, Annual Report, 2009).

The parties subject to the *CMA's* Supervision:

(i) The Saudi Stock Exchange Co. (*Tadawul*): Article 20 of the Capital Market Law (*CML*) states "a market shall be established in the Kingdom of Saudi Arabia for trading in securities which shall be known as the 'Saudi Stock Exchange', and shall have the legal status of a joint-stock company in accordance with the provisions of this Law. This Exchange shall be the sole entity authorised to carry out trading in

securities in the Kingdom and to be responsible for all matters relating to the operations of the Exchange" (CML, Annual Report, 2006)

(ii) Authorised Persons: As the name suggests, these are persons authorised by the *CMA* to conduct securities business. Only those in possession of a valid *CMA* licence are permitted to conduct securities business.

(iii) Listed Companies: Listed companies are companies whose securities are traded on the Saudi capital market.

(iv) Traders: Traders act as representatives of the general public who trade securities on the Saudi capital market.

4.2.3. Saudi Stock Market (*SSM*)

In 2007, the SSM or Saudi Stock Market Company (*Tadawul*) was established under the Capital Market Law (*CML*) to provide depository and trading services in Saudi Arabia. It is involved in opening bank accounts at banks and the depository, the deposit of certificates in investment portfolios, the transfer of share ownership, and the distribution of inherited shares, in addition to trading, clearing, and the settlement of shares in Saudi Arabia.

The company's headquarters are Riyadh, Saudi Arabia. Although founded in 2001, under the Capital Market Law 2007/3/19, it was established as a Saudi stock market company with a juridical personality and independent financial disclosure with a capital of SAR 200 million. All its shares have been subscribed by the Public Investment Fund under the Ministry of Finance. In addition, the Company's Articles refer to the possibility of the company's trading part of its shares for public subscription at any time determined by the Extraordinary General Assembly of the company (the Public Investment Fund).

Tadawul's aim is to create a rapid, efficient and transparent Saudi stock market. Announcements and market prices are always issued immediately for investors, banks and third party vendors. Moreover, issuers can enter financial information and announcements directly online. The *Tadawul* website makes all such information available, meaning that all participants on the Saudi stock market have the same access to this information. The electronic order routing from various bank branches

also facilitates the provision of equal services for all, no matter what their geographical location, and also maintains trade execution priorities.

In 2009, the Saudi stock market joined the World Federation of Exchanges (*WFE*) with full membership during the annual conference in Vancouver, Canada from 5 to 10/10/2009 (Tadawul Magazine, 2009). As a result of this membership, the Saudi stock market is obliged to fulfil the criteria of the WFE in terms of:

(i) educating investors in the market;

(ii) keeping all the financial rights of and obligations to all shareholders registered in the market;

(iii) ensuring the safety and security markets as a savings channel for individuals;

(iv) guaranteeing full clarity, transparency and safety of trade in the stock market;

(v) applying a set of technical systems to obtain efficiency in the market;

(vi) ensuring justice and equality of treatment, and;

(vii) application of the rules of issue and listing, in addition to ensuring the completion of litigation settlements according to regulations and specific time periods.

The Federation of Exchanges is eager to ensure that the permanent members do what they must to ensure the safety of operations and the timeliness of completion (CML, Annual Report, 2009)

At the same time, the stock markets union underscores the need to review its market operations on a regular basis and intervene when necessary in order to achieve an appropriate level of transparency, justice and equality.

4.2.4. Corporate Governance

On 12th November, 2006, the *CMA* passed the Corporate Governance Regulations, which put forward the rules and standards governing the management of companies listed on the capital market, with the aim of ensuring conformity to best corporate governance practices, thus protecting shareholders; and stakeholders' rights. The *CMA* wishes to achieve a number of aims that will assist in best corporate governance

practices being applied to listed companies. Some of the main aims are described below.

The *CMA* aims to enhance listed companies' awareness of the Corporate Governance Regulations and the appropriate practices of good governance, as well as to increase investors' awareness of sound governance. In addition, they wish to reinforce the concepts of fairness, responsibility and transparency. Another aim is to support communication with professional international and domestic institutions and institutional investors regarding corporate governance, in view of the crucial contribution of such communication to the development of corporate governance practices in Saudi Arabia.

Further, the *CMA* aims to encourage the development of clear and effective procedures for the management and supervision of corporate governance practices in listed companies which ensure protection for investors in the capital market. Another objective is the promotion of the self-adoption of good practices of corporate governance and encouraging the concept of such governance in listed companies through regular communication with these companies. Appropriate instruments should also be developed and employed in order to ensure that the regulatory requirements of corporate governance are effectively implemented.

Moreover, the *CMA* also aims to examine the reports of boards of directors of listed companies in order to ensure that full disclosure has been made in compliance with regulatory requirements. They also aim to monitor listed companies' adherence to the implementation of mandatory provisions of the Corporate Governance Regulations and disclosure of the implemented provisions, in addition to those that have not been implemented and the reasons for this non-implementation, in accordance with the requirements of the Corporate Governance Regulations. Other objectives are to track any changes in the details or profiles of the members of boards of directors and senior executives and their relatives in listed companies and to attend general assemblies of listed companies in order to ensure that best corporate governance practices are being implemented (CMA, 2010).

4.3. STOCK MARKET INDICATORS: STATISTICAL ANALYSIS

The statistical analysis is utilised in this section to highlight the stock market behaviour, which has demonstrated important changes in stock market indicators during the period under study, *i.e.* from the formal launch of the Saudi stock market in 1985 up to 2010. This period could be divided into two stages: The first stage, from 1985 to 1999 was characterised by relative stability in price fluctuations in accordance with the general index of stock prices derived from statistical reports to SAMA and The Saudi Stock Exchange Co. (*Tadawul*). During the period in question, the index value ranged between 650 and 2028 points. The second stage, from 2000 to 2010, witnessed a rapid increase in share prices that began in early 2003 and reached its highest level by in February 2006. However, during 2006, the Saudi stock market suffered a major crash, during which the stock price index collapsed and lost 65% of its value.

4.3.1. Sector Present in the Saudi Stock Market

The range of Saudi stock sectors has expanded over the years and the number of listed companies on the stock market has increased considerably, from 75 in 2000 to

Table 4.1. Sectors Present in the Saudi Stock Market

Saudi Stock Sectors of the Market After 5/4/2008	Saudi Stock Sectors of the Market before 5/4/2008
1-Banks & Financial Services Sector 2-Petrochemical Industries Sector 3-Cement Sector 4-Retail Sector 5-Energy & Utilities Sector 6-Agriculture & Food Industries Sector 7-TeleCommunication & Information 8-Technology Sector 9-Insurance Sector 10-Multi-Investment Sector 11-Industrial Investment Sector 12-Building & Construction Sector 13-Real Estate Development Sector 14-Transport Sector 15-Media and Publishing Sector 16-Hotel & Tourism Sector	1-Banking 2-Industry 3-Cement 4-Services 5-Electricity 6-Telecommunication 7-Insurance 8-Agriculture

Source: Tadawul, Capital Market Authority & Saudi Arabian Monetary Agency Capital Market

146 in 2010. With the issuance of the Capital Market Law in 2008, eight new sectors were included in the stock market in addition to the existing eight sectors. The *CMA* published the list of the offers of securities and the listing rules and an increase in the programmes of privatisation of a large number of family companies and closed companies led to them becoming listed companies in the market. As shown in table 4.1, at the same time as the steady increase in the number of shares, the number of listed companies in the stock market and the diversity of corporate activities provided a good alternative for investment and risk diversification.

According to *Tadawul* (2009), the number of issued shares of listed companies in the stock market in 2009 went up to 41.22 billion, up 4% from 2008, with the number of listed shares also increasing considerably from 7,873 million to 39,503 million.

In terms of volume of shares traded the annual report of *Tadawul* and *SAMA* (2009) showed that the Petrochemical Industries was the most active sector in 2009, with 10.98 billion shares traded, representing 19.15% of the total volume traded during that year. This was followed by the Banks & Financial Services, with a volume of 8.90 billion shares representing 15.52% of the total shares traded in 2009 and the Insurance sector with 5.58 billion shares traded, or 9.74% of the total shares traded in 2009. The Petrochemical Industries as a sector also took first place in terms of value of shares traded in 2009, with *SR* 299.90 billion or 23.73% of the total value traded. Next came the Insurance sector, with *SR* 201.11 billion (15.91%) and then the Banks & Financial Services sector, with *SR* 149.42 billion (11.82%). The Insurance sector was the most active sector in terms of number of transactions during 2009, with 8.58 million trades, that representing 23.55% of the total transactions made during that year. This was followed by the Petrochemical Industries, with 5.93 million trades (16.28%) and the Agriculture & Food Industries sector with 3.47 million trades (9.51%).

The most active sector regarding number of transactions during 2010 was the Insurance sector, with 4.90 million trades, representing 25.10% of the total trades of that year. Next came the Petrochemical Industries with 3.87 million trades (19.79% of the total) and then the Industrial Investment sector (1.78 million trades or 9.10% of the total). Concerning value of shares traded in 2010, the Petrochemical Industries took first place, with *SR* 287.30, which was 37.84% of the total value traded. In

second place was followed by the Banks & Financial Services sector, with *SR* 98.73 billion or 13.01% of the total, followed by the Insurance sector, with *SR* 90.35 billion or 11.90% of the total. Furthermore, the Petrochemical Industries sector was also the most active sector regarding volume of shares traded in 2010, with 9.51 billion shares traded, representing 28.80% of the total volume traded during the year. The Banks & Financial Services sector came next with 5.87 billion shares traded, making 17.79% of the total, followed by the Insurance sector, with 3.11 billion shares traded or 9.42% of the total (Tadawul, 2010).

4-3.2. Number of Shares Traded

There were 56685 million shares traded in 2009, a fall of around 5% from the 59682 million shares traded during 2008. Table 4-2 and Figure 4-2 show the total number of shares traded. However, in 2010, 33255 million shares were traded, a fall of 42.2% from the previous year.

Figure 4.1. and Figure 4.2. depicts the trends and developments in the number of shared traded in the *Tadawul* over the years.

The number of shares traded increased rapidly during the period between 1985 and 1994 from 4 to 152 million before it falling declined sharply in 1995 to 117 million, a decrease of 23%. This was followed by a gradual increase to 528 million shares in 1999.

As can be seen from Table 4.2, and Figure 4.3, the volume traded during 2000 was 555 million shares, an increase of 5.1% from the previous year. There was then a steady rise between 2003 and 2006, when it reached 68,515 billion. In 2007, there was a 15/6% fall to 57,829 million, followed by a 3.2% rise to 59,682 million in 2008, but by the end of 2009, this had fallen by 5% to 56,685 million shares traded and there was a further steep fall in 2010, with 33,255 million shares traded. The notable departure from the trend in 2006 can be accounted for by the fact that in 2005 trading shares were further divided and hence an inflated number of shares were produced.

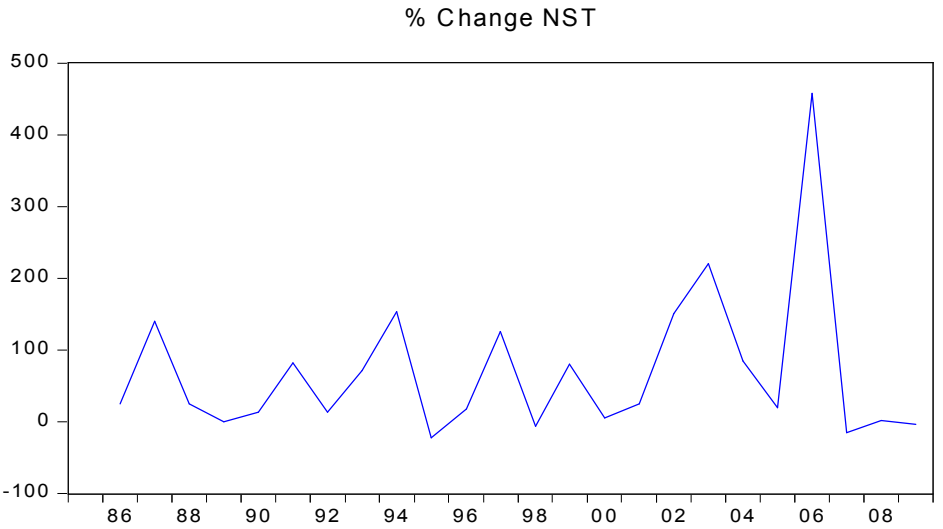
Table 4.2. Number of Shares Traded

End of Period	Number of shares Traded (Million)	% Change
1985	4	
1986	5	25%
1987	12	140%
1988	15	25%
1989	15	0
1990	17	13.3%
1991	31	82.4%
1992	35	12.9%
1993	60	71.4%
1994	152	153.3%
1995	117	-23.0%
1996	138	17.9%
1997	312	126.1%
1998	293	-6.1%
1999	528	80.2%
2000	555	5.1%
2001	692	24.7%
2002	1736	150.9%
2003	5566	220.6%
2004	10298	85.0%
2005	12281	19.3%
2006	68515*	457.9%
2007	57829	-15.6%
2008	59682	3.2%
2009	56685	-5.0%
2010	33255	-42.2%

Note: (*) As from April 2006, a share was split into five shares. The data for January, February, March and April 2006 have been revised to exclude the effect of the split of the nominal value of the shares of the companies listed on the market to become Rls 10 per share instead of Rls 50 in April 2006.

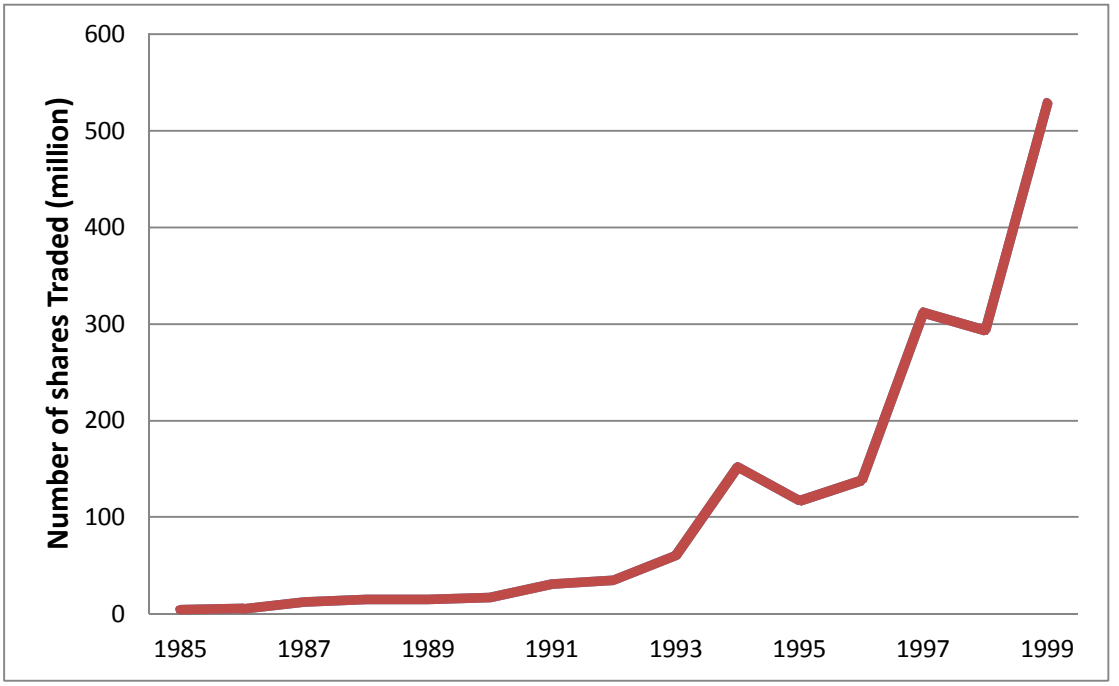
Source: The Annual Report of the Saudi Capital Market (Tadawul), 2009,2010; and Saudi Arabian Monetary Agency Capital Market — 46th Annual Report

Figure 4.1.Number of Shares Traded



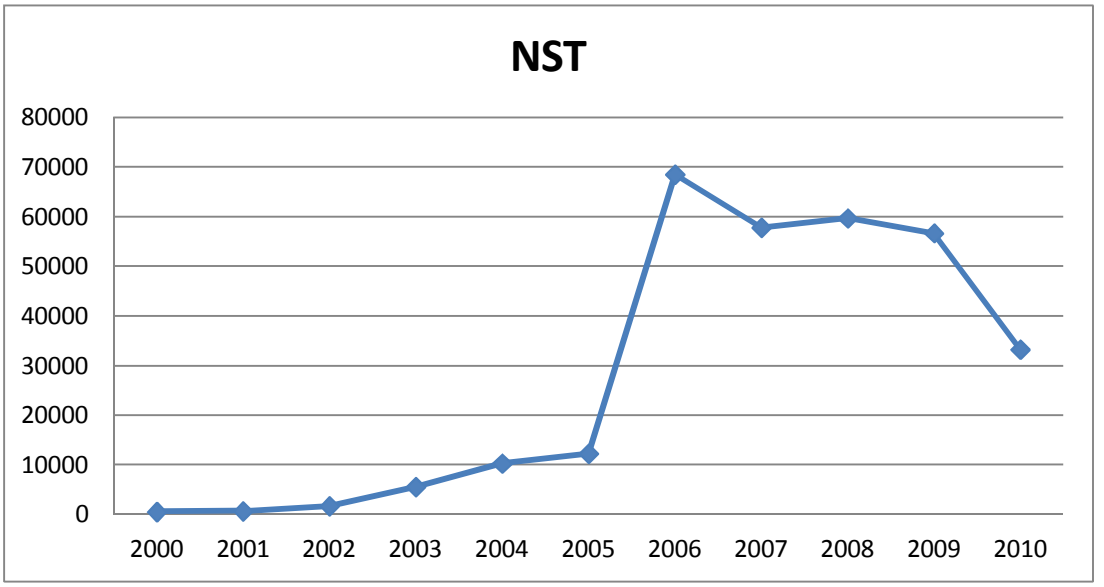
Source: The Annual Report of the Saudi Capital Market (Tadawul), 2009,2010; and Saudi Arabian Monetary Agency Capital Market — 46th Annual Report

Figure 4.2. Number of Shares Traded (Million)(1985-1999)



Source: The Annual Report of the Saudi Capital Market (Tadawul), 2009,2010; and Saudi Arabian Monetary Agency Capital Market — 46th Annual Report

Figure 4.3. Number of Shares Traded (Million)(2000-2010)



Source: The Annual Report of the Saudi Capital Market (Tadawul), 2009,2010; and Saudi Arabian Monetary Agency Capital Market — 46th Annual Report

4.3.3. Value of Shares Traded

The total Value of Shares Traded in 2009 was *SR* 1,264,012 million, a fall of 35.6% from the *SR* 1,962,945 million of the previous years. In 2010, the Value of Shares Traded fell by a further 39.94%, to *SR* 759,184 million. As can be seen from Table 4.3 and Figure 4.5, in the first stage from 1985 to 1999 the value of shares traded rose steadily from *SR* 760 million in 1985 to *SR* 24871 million in 1994. However, in 1995 it fell to *SR* 23227 million, a decrease of 6.6%, before rapidly rising by 144.4% from RS 25397 million in 1996 to *SR* 62060 million in 1997.

In 1999, the value of shares traded was *SR* 56578 million, a rise of 9.3% compared from the *SR* 51510 million of 1998, but a fall of 17% from 1997. The total value of shares traded in 2003 was *SR* 5,965 billion, compared with RS 134 billion in 2002, representing a rise of 346%.

The total value of shares traded during 2002 was *SR*133.8 billion, an increase of 60% from the *SR* 83.6 billion in 2001. The total value of shares traded in 2006 was *SR* 5.26 trillion, an increase of 27.14% from *SR* 4.14 trillion in 2005. However, from this peak in 2006, the value of shares traded began a sharp and rapid decline, falling by

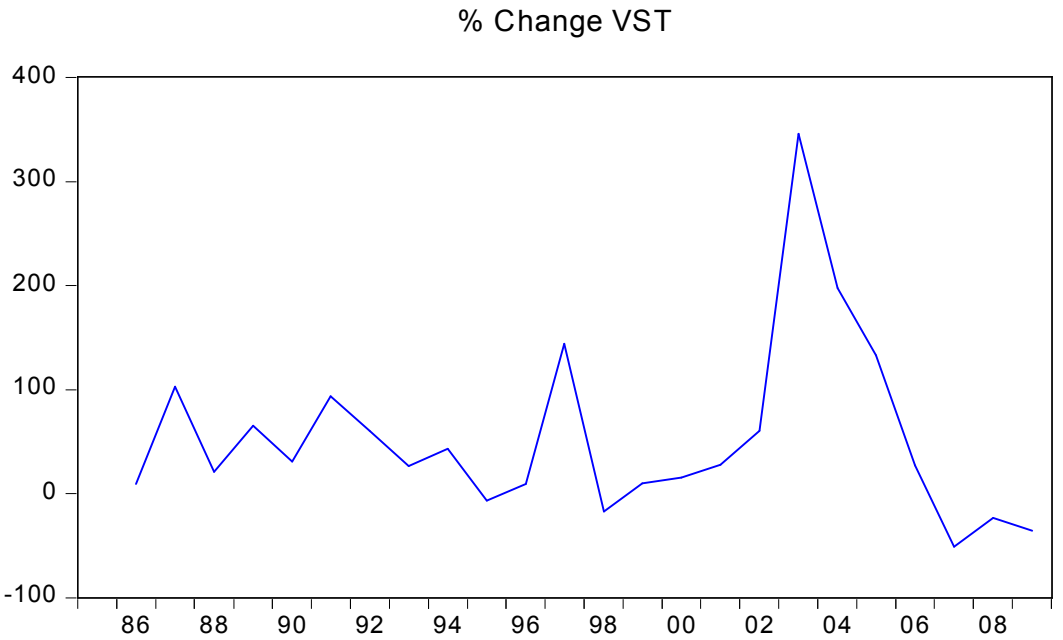
51.4% in 2007, by 23.3% in 2008, by 35.6% in 2009 and finally, by 39.94% in 2010, with *SR* 75,9184.

Table 4.3.Value of Shares Traded

End of Period	*Value of Shares Traded (Million RLs)*	*% Change*
1985	760	
1986	831	9.3%
1987	1686	102.9%
1988	2037	20.8%
1989	3364	65.1%
1990	4403	30.9%
1991	8527	48.4%
1992	13699	60.7%
1993	17360	26.0%
1994	24871	30.2%
1995	23227	-6.6%
1996	25397	9.3%
1997	62060	144.4%
1998	51510	-17.0%
1999	56578	9.8%
2000	65292	15.4%
2001	83602	28.0%
2002	133787	60.0%
2003	596510	345.9%
2004	1773858	197.4%
2005	4138695	57.1%
2006	5261851	11.2%
2007	2557712	-51.4%
2008	1962945	-23.3%
2009	1264012	-35.6%
2010	759184	-39.94%

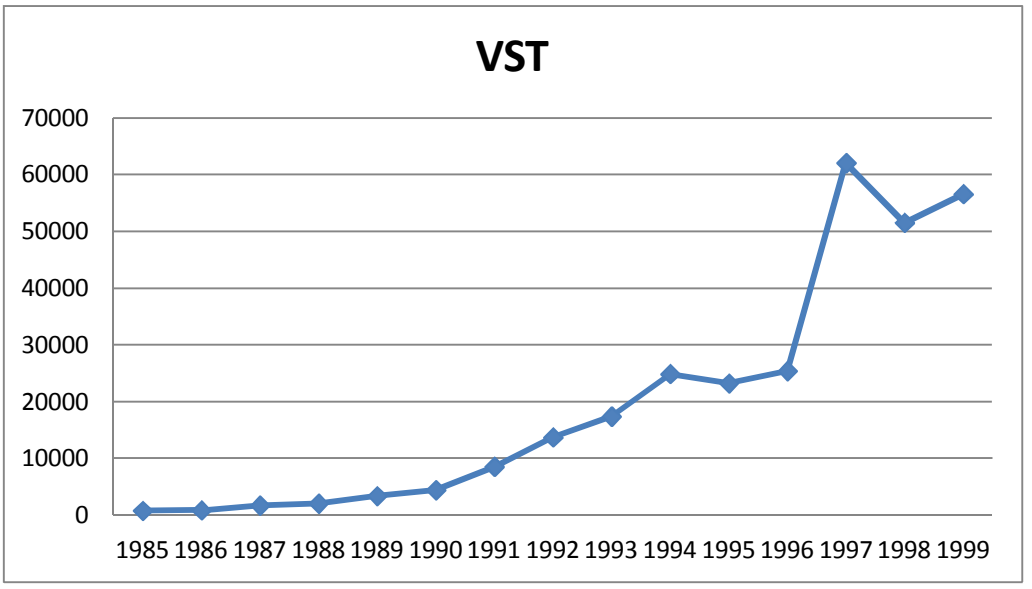
Source: The Annual Report of the Saudi Capital Market (Tadawul), 2009,2010; and Saudi Arabian Monetary Agency Capital Market — 46th Annual Report

Figure 4.4. Value of Shares Traded



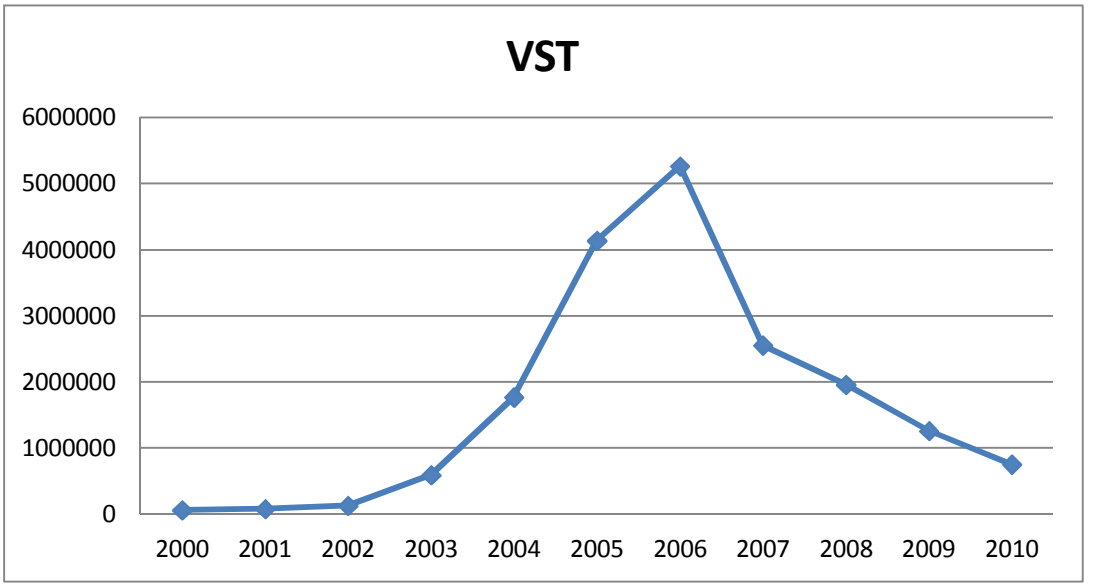
Source: The Annual Report of the Saudi Capital Market (Tadawul), 2009,2010; and Saudi Arabian Monetary Agency Capital Market — 46th Annual Report

Figure 4.5. Value of Shares Traded (Million SAR)(1985-1999)



Source: The Annual Report of the Saudi Capital Market (Tadawul), 2009,2010; and Saudi Arabian Monetary Agency Capital Market — 46th Annual Report

Figure 4.6. Value of Shares Traded (Million SAR)(2000-2010)



Source: The Annual Report of the Saudi Capital Market (Tadawul), 2009,2010; and Saudi Arabian Monetary Agency Capital Market — 46th Annual Report

4.3.4. Market Value of Shares

The Saudi market is the largest in the Middle East and one of the most important markets in the world. The market value of the Saudi market was *SR* 67 billion in 1985, which had risen to *SR* 2438 billion by the end of 2005 to settle at 1196. In 2009 there was a rise of 22.7% from 2008, when it was *SR* 924 billion, a fall of 52.5% from2007. In 2010, it rose by 10.86% compared with the previous year.

In the first stage from 1985 to 1999, as shown in Table 4.4 and Figure 4.8, the market value of shares gradually rose from *SR* 67 billion in 1985 to *SR* 107 billion in 1989, an increase of 24.4%. The exception was 1986, when it fell by 6% from the previous year, to *SR*63 billion. In 1990 it also fell 9.3% to *SR* 97 billion, before rapidly rising to *RS* 181 billion in 1991 and *SR* 206 billion in 1992, increasing from the previous years by 46.4% and 13.8% respectively.

In 1993 and 1994 the market value fell to *SR* 198 billion and *SR* 145 billion, decreasing by 3.9% and 26.8% respectively. In 1995, the market value shares rose gradually from *SR* 153 billion, a rise of 5.5% and rose again in 1999, this time by

43.1% from the previous year, to *SR* 229 billion. In contrast, in 1998, the market value share fell to *SR*160 billion, a decrease of 28.3% from *SR* 223 billion in 1987.

At the start of the second stage (2000 to 2009), as Table 4.4 and Figure 4.9 show, the market value rose until the end of 2005 to *SR* 2,438 billion from *SR*255 billion in 2000, an increase of 856.1%. In 2000, it had risen from the previous year's *SR* 229 billion to reached *SR* 255 billion, an increase of 11.4%.

Table 4.4. Market Value Shares (Billion SR)

End of Period	Market Value of Shares	% Change
1985	67	
1986	63	-6.3
1987	73	15.9%
1988	86	17.8%
1989	107	-24.4%
1990	97	-0.1%
1991	181	0.9%
1992	206	13.8%
1993	198	-3.9%
1994	145	-26.8%
1995	153	0.1%
1996	172	12.4%
1997	223	29.7%
1998	160	-28.3%
1999	229	43.1%
2000	255	11.4%
2001	275	7.8%
2002	281	2.4%
2003	590	110%
2004	1149	94.7%
2005	2438	112.2%
2006	1226	-49.7%
2007	1946	58.7%
2008	924	-110.6%
2009	1196	29.4%
2010	1325	10.86%

Source: The Annual Report of the Saudi Capital Market (Tadawul), 2009,2010; and Saudi Arabian Monetary Agency Capital Market — 46th Annual Report

Moreover, during 2003 the total market value shares rose sharply to *SR* 590 billion, an increase of 110% compared with 2.2% in 2002 after the privatisation of the Saudi Telecom Company. In 2004 and 2005 the market value rose sharply to *SR* 1,149 billion and *SR* 2438 billion, a rise of 48.7% and 112.2% respectively.

The total value of shares traded during 2002 was *SR*133.8 billion, an increase of 60% from the *SR* 83.6 billion in 2001. The total value of shares traded in 2006 was *SR* 5.26 trillion, an increase of 27.14% from *SR* 4.14 trillion in 2005. However, at the end of 2008, the impact of the collapse of the market led to a sharp fall from 2007 to *SR* 924 billion, a decrease 52.5%. By the end of 2009, market capitalisation had reached *SR* 1196 billion, a rise of 22.7% from 2008.

In comparing the market value of shares with the size of the economy in Saudi Arabia, it can be seen that the value of the market was a part of *GDP* until 2003. Between 1985 and 2002, the average ratio of the market value of *GDP* did not exceed 31%, and then in 2003 it rose to 73%, and a year later the market value exceeded the *GDP* for the first time, with a ratio of 122%, which rose to 210% in 2005, decreasing again to 94% at the end of 2006. After the stock market crash in 2006, the share market increased once again to *SR*1946 billion in 2007, before another sharp fall to *SR* 924 billion in 2008. However, in 2009, it rose again to *SR* 1196 billion and 2010 saw another rise to *SR* 1325 billion.

Figure 4.7. Market Value of Shares (Billion SAR)

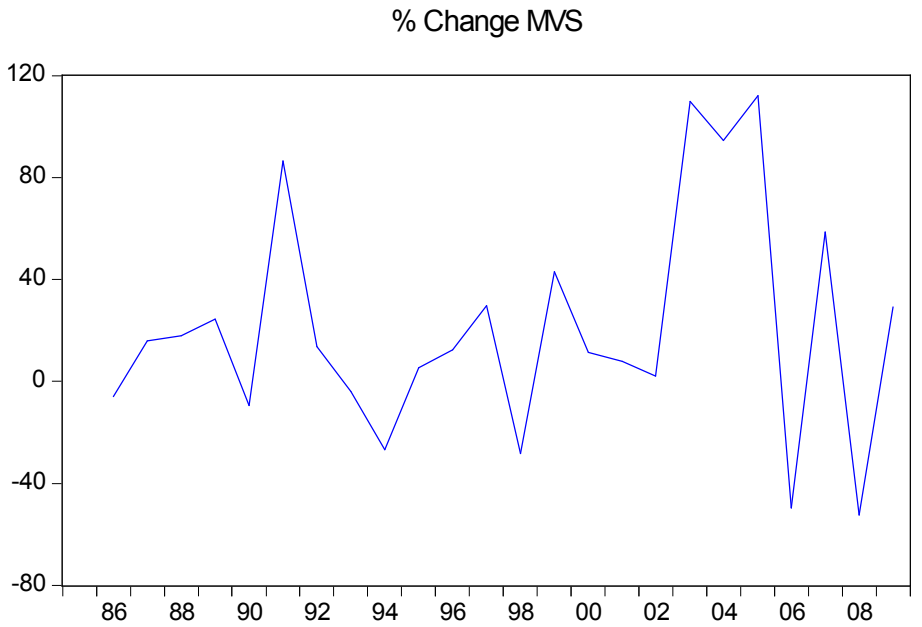
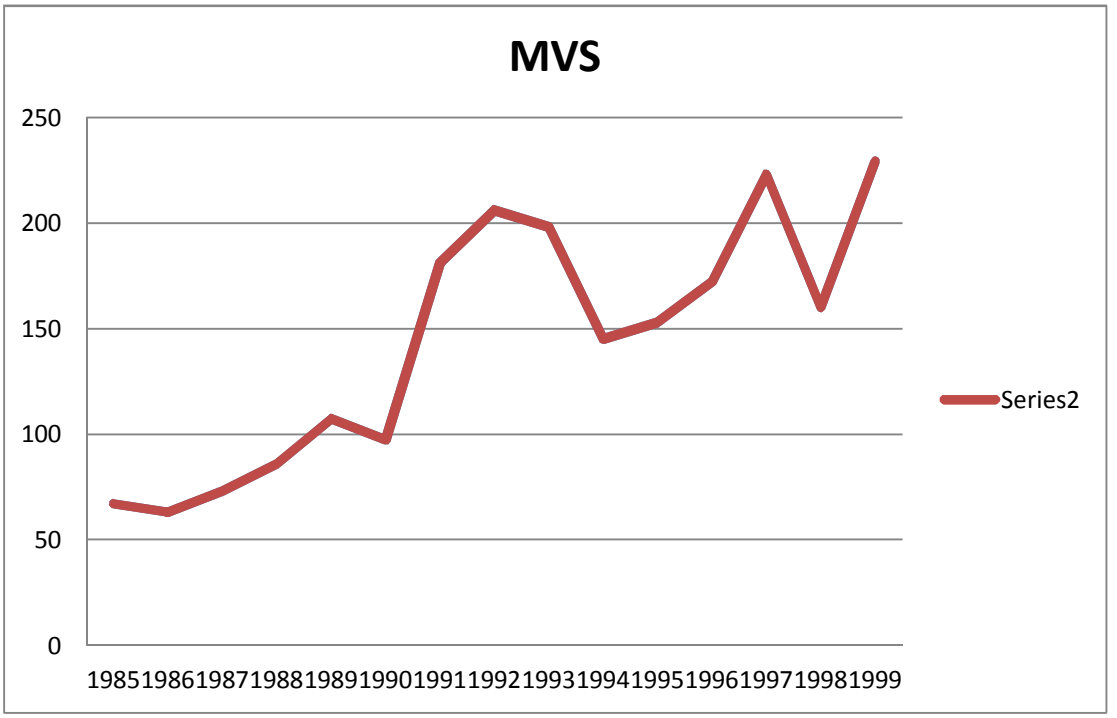
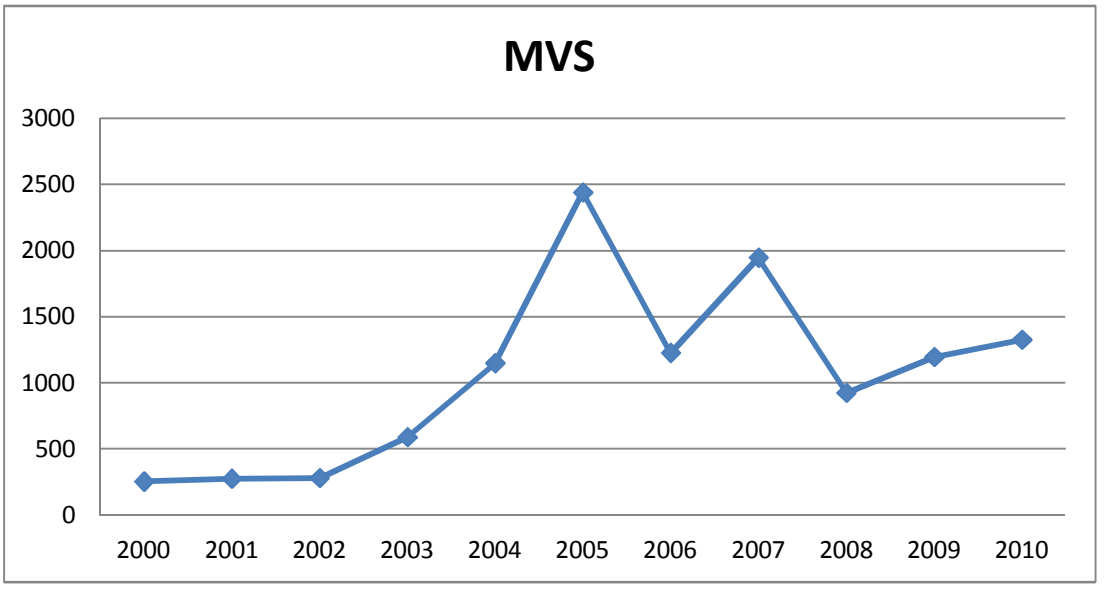


Figure 4.8. Market Value of Shares (Billion SAR)(1985-1999)



Source: The Annual Report of the Saudi Capital Market (Tadawul), 2009,2010; and Saudi Arabian Monetary Agency Capital Market — 46th Annual Report

Figure 4.9. Market Value of Shares (Billion SAR)(2000-2010)



Source: The Annual Report of the Saudi Capital Market (Tadawul), 2009,2010; and Saudi Arabian Monetary Agency Capital Market — 46th Annual Report

4.3.5. Trends in the Number of Transactions

Table 4.5, and Figure 4.10 show that the number of transactions during the period between 1985 and 2009 changed considerably, rising from 7,842 to 36,458,326, an increase of 464.8% and 4,649.11 times.

The number of transaction at the end of the year 2009 reached 36,458,326, a fall of 30.1 % from 2008, when there were 52,135,929. 2010 saw a further fall of 46.42%, to 19,536,143.

Table 4.5. Number of Transaction

End of Period	Number of Transactions	% Change
1985	7842	
1986	10833	38.1%
1987	23267	114.8%
1988	41960	80.3%
1989	110030	162.2%
1990	85298	-22.5%
1991	90559	6.7%
1992	272075	200.4%
1993	319582	17.5%
1994	357180	11.8%
1995	291742	-18.3%
1996	283759	-2.7%
1997	460056	62.1%
1998	376617	-18.1%
1999	438226	16.4%
2000	498135	13.7%
2001	605035	21.5%
2002	1033669	70.8%
2003	3763403	264.1%
2004	13319523	254.0%
2005	46607951	250.0%
2006	96095920	106.2%
2007	65665550	-31.7%
2008	52135929	-20.6%
2009	36458326	-30.1%
2010	19536143	-46.42%

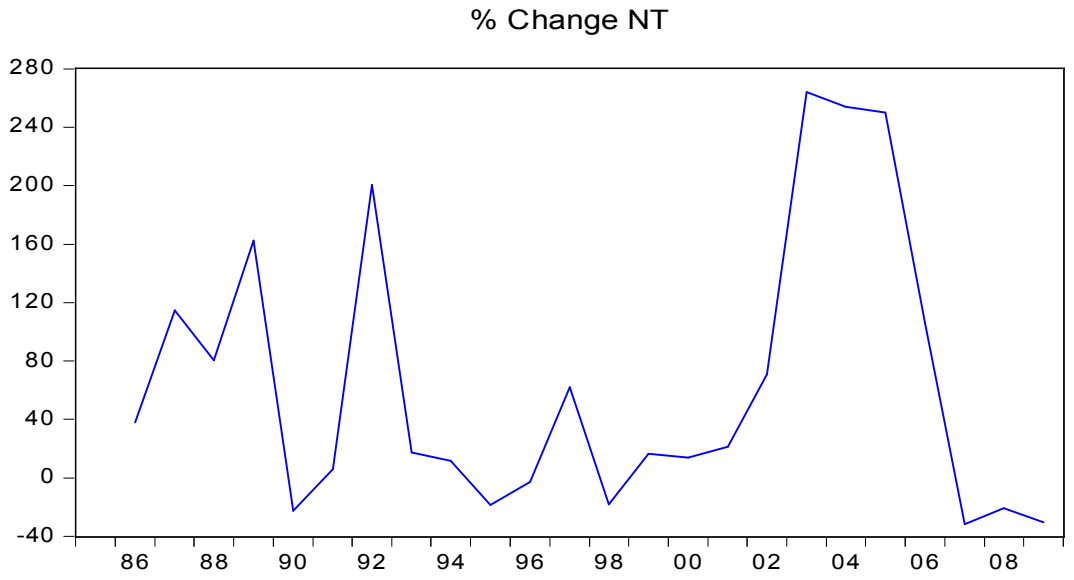
Source: The Annual Report of the Saudi Capital Market (Tadawul), 2009,2010; and Saudi Arabian Monetary Agency Capital Market — 46th Annual Report

In the first stage from 1985 to 1999, as can be seen from Table 4.5 and Figure 4.11, the number of transactions rose steadily from 7,842 in 1985 to 110,030 in 1989. In 1989, there was an increase of 162.2% from 1988.

However, the number of transactions was characterised by fluctuations between 1990 and 1999. During this period, it fell to 85,298 in 1990, a decreasing of 22.5%, and then rose rapidly to 90,559 in 1991, an increase of 6.7%. 1992 saw a dramatic jump of 200.4% from the previous year, up to 272075. In 1993 and 1994 the number of transactions rose to 319,582 and 357,180, increases of 17.5% and 11.8% respectively. However, in 1995 and 1996 the number of transactions fell to 291,742 and 283,759, decreases of 18.3% and 2.7% from 1994 and 1995 respectively.

The number of transactions rose to 460,056 in 1997, a rise of 62.1% from 1996. It then fell to 376,617 in 1998, a decrease of 18.1% from 1987. 1999 saw the beginning of a steady rise. Between 1999 and 2006, the number of transactions increased from 438,226 to 96,095,920, with the latter figure being the highest since 1985. At the beginning of the second stage (2000 to 2009), as Table 4.5 and Figure 4.12 depict, the number of transactions increased up to the end of 2006 from 498,135 in 2000 to 96,095,920 in 2006, a rise of 19.2 % from 2000 and of 106.2% from the previous year.

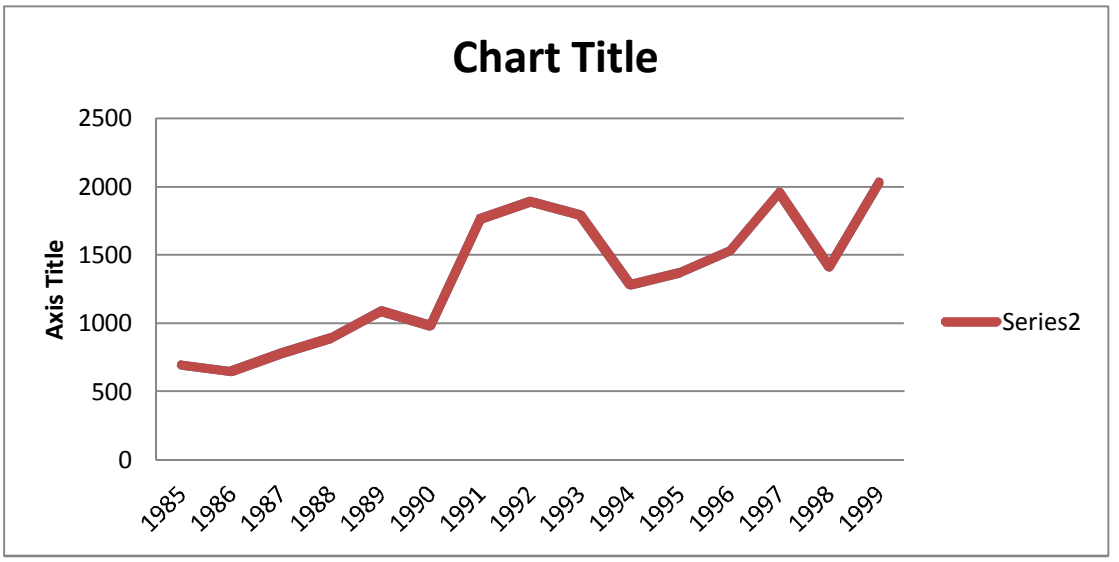
Figure 4.10. Number of Transactions



Source: The Annual Report of the Saudi Capital Market (Tadawul), 2009,2010; and Saudi Arabian Monetary Agency Capital Market — 46th Annual Report

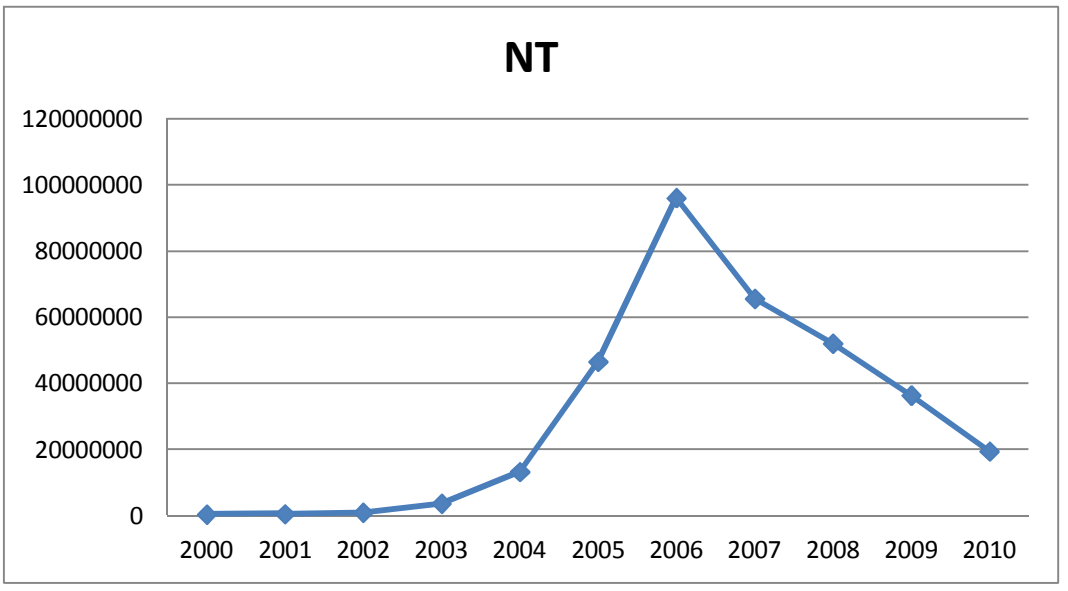
Moreover, between 2000 and 2002 the number of transaction rose steadily to 498,135 in 2000, 605,035 in 2001 and 1,033,669 in 2002, an increase of 13.7%, 21.5% and 70.8% compared to the previous years, respectively. In addition, between 2003 and 2006, the total the number of transactions rose sharply from 3,763,403 to 96,095,920, a rise of 264.1% and 106.2% compared to the previous years, respectively.

Figure 4.11. Number of Transactions (1985-1999)



Source: The Annual Report of the Saudi Capital Market (Tadawul), 2009,2010; and Saudi Arabian Monetary Agency Capital Market — 46th Annual Report

Figure 4.12. Number of Transactions (2000-2010)



Source: The Annual Report of the Saudi Capital Market (Tadawul), 2009,2010; and Saudi Arabian Monetary Agency Capital Market — 46th Annual Report

In addition, the number of transactions were 13,319,523 and 46,607,951, rising by 254.0% and 250.0% compared to the previous years, respectively. Furthermore, as expected due to the retroactive effect of the crisis at the end of 2007, the number of transactions fell to 65,665,550, a decrease of 31.7% from the previous year.

At the end of 2008 and 2009 the impact of the collapse of market still represented a sharp decreased to 52,135,929, decreasing by 20.6% compared to the previous. The number of transaction at the end of the year 2009 reached 36,458,326, decreasing by 30.1% as compared to the previous year. The fall continued in 2010, with a decrease of 46.42% from 2009, to 19,536,143.

4.3.6. General Index

The performance of the Saudi stock market has been characterised by fluctuation and volatility since the official start of market activities in 1985. From the base rate of 1,000 points in 1985, it rose to reach 1,888 points at the end of 1992 then began to decline, closing at 1,282 points in 1994.

As can be seen from table 4.6 and Figure 4.14, the index began to fall gradually, reaching the lowest level since its establishment at 646.03 points in 1986. However, it then rose steadily, apart from during the time of the Gulf crisis in 1990 when it fell to a value of 979.8 points. The index reached a record level of 1,765.24 points in 1991 but then decreased sharply during 1993 and 1994 due to the worldwide economic recession, falling to 1,282.9 points in 1994.

Between 1995 and 1999 the index price rose from 1,367.6 points to 2,028.53 points, apart from in 1998 when there was a decrease to 1,413.13, a fall of 27.8% compared to 1997. Despite fluctuations in the index between 1985 and 2000, growth rates continued to be high. The results show the sharp rise in share prices began in early 2003, reaching their highest level by the end of February 2006. With the high rate of growth beginning in 2003, there began what was known as a stock boom due to increasing confidence in the Saudi market and the entry of a large number of investors. On 17/11/2005, it closed at16,094.7 points, which can be attributed to high growth in the domestic economy, in addition to rising oil prices and money supply.

Table 4.6. Trends in the General Index

End of Period	General Index (1985=1000)	% Change
1985	690.88	
1986	646.03	-6.5%
1987	780.64	20.9%
1988	892	14.4%
1989	1086.83	21.7%
1990	979.8	-9.8%
1991	1765.24	80.2%
1992	1888.65	7.0%
1993	1793.3	-5.3%
1994	1282.9	-28.5%
1995	1367.6	6.6%
1996	1531	11.95%
1997	1957.8	27.9%
1998	1413.13	-27.8%
1999	2028.53	43,5%
2000	2258.29	11.3%
2001	2430.11	7.1%
2002	2518.08	3.6%
2003	4437.58	76.2%
2004	8206.23	85.0%
2005	16712.64	103.7%
2006	7933.29	-52.5
2007	11175.96	40.9%
2008	4802.99	-57.0%
2009	6121.76	27.5%
2010	6620.75	8.15%

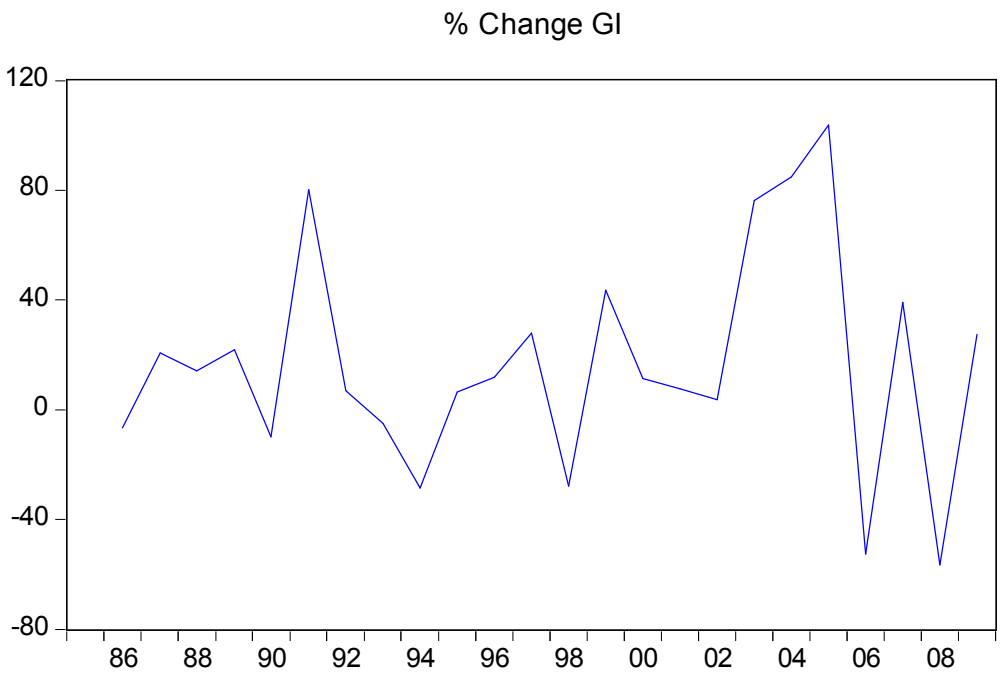
Source: The Annual Report of the Saudi Capital Market (Tadawul), 2009,2010; and Saudi Arabian Monetary Agency Capital Market — 46th Annual Report

In 2006 the Saudi Stock Market collapsed and the price index lost more than 13,000 points, falling by 65% from its highest level. For the first time in the history of the Saudi stock market, this crisis had an effect on the income and savings of large number of the population.

As result of the stability of indicators of the market and the economy there was no sudden occurrence resulting in plunge in share prices. Therefore, the question which arouses debate is why stocks lost in this way? It has been suggested that there may have been manipulation behind the scenes.

At the end of 2009, the *Tadawul* All Share Index (*TASI*) closed at a level of 6,121.76 points, as against 4,802.99 points for the previous year, having gained 1,318.77 points (27.46%). The highest close level for the index (*TASI*) during the year was 6,568.47 points as of the 24th of October. In 2010, the close level for the TASI also rose slightly, by 8.15%, closing at 6,620.75 points.

Figure 4.13. Trends in the General Index (1985=1000)



Source: The Annual Report of the Saudi Capital Market (Tadawul), 2009,2010; and Saudi Arabian Monetary Agency Capital Market — 46th Annual Report

Figure 4.14. Trends in General Index (1985=1000) (1985-1999)

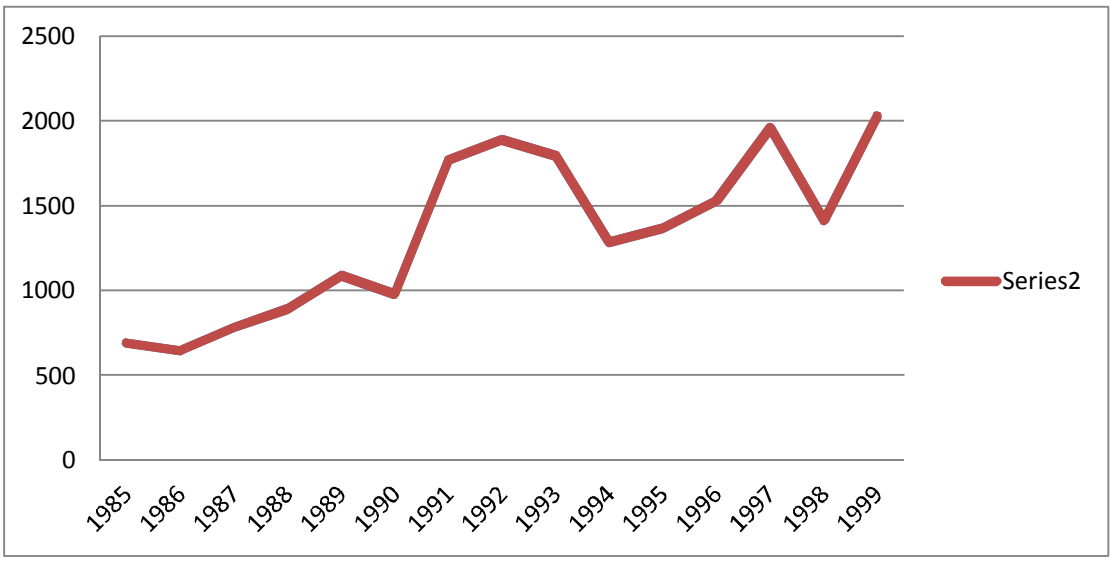
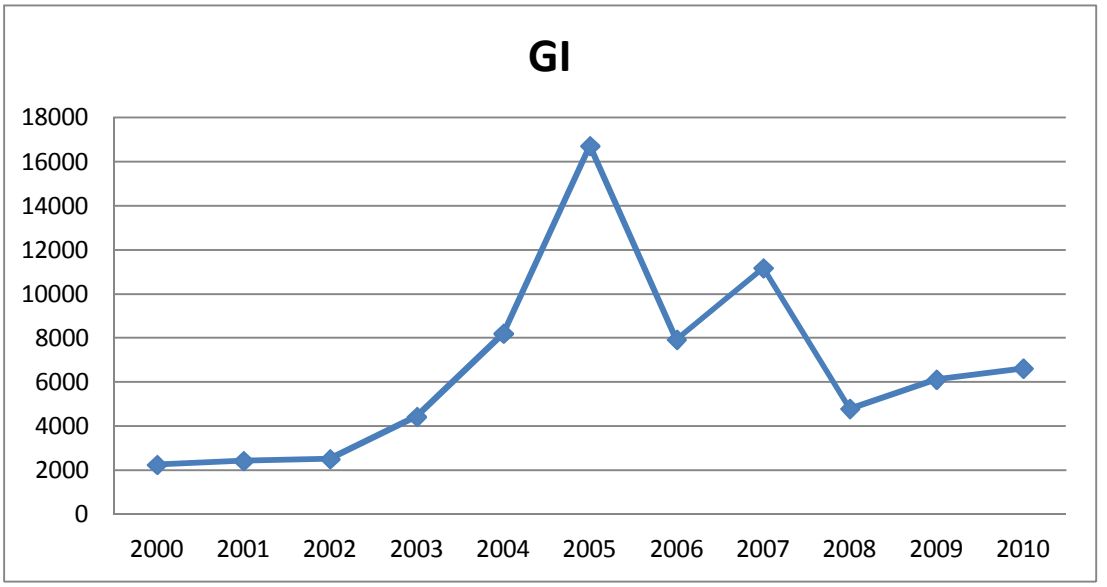


Figure 4.15. Trends in General Index (1985=1000) (2000-2010)



Source: The Annual Report of the Saudi Capital Market (Tadawul), 2009,2010; and Saudi Arabian Monetary Agency Capital Market — 46th Annual Report

4.3.7. Securities Offering

Applications for offerings of securities, acquisition and capital reduction must be approved by the *CMA*, in addition to private placement notifications in 2009 and 2010. In comparison to 2009, the total number of *CMA*-approved securities operations rose by 11.5%, to 107, of which 7 were IPOs. In addition, private placement notifications rose by 45.3% in 2010 in comparison to the previous year, with 93 received by the *CMA*. Moreover, there were a number of other securities operations in 2010, with one debt instrument issued, on offering of rights issues, four issues of bonus shares and one corporate capital reduction.

Among the most important indicators of securities offerings by type were that the total amounts of securities offerings in 2010 were *SR* 30.3 billion in comparison to *SR* 30.9 billion in 2009. In addition, while the total amounts of public offerings were *SR*3.9 billion in 2009, they fell slightly in 2010, to *SR* 3.8 billion. There was also a fall in the total amounts of debt instruments in 2010, as these stood at *SR* 7 billion, as opposed to *SR* 7.7 billion in 2009. However, the total amount of private placements rose to *SR* 19.1 billion in 2010, an increase of 6.7% from 2009 (CMA, 2009, 2010).

4.3.8 Subscription Channels

There was evidence of the use of new subscription channels by individual subscribers to IPOs in 2010. For instance, *ATMs*, phone banking and Internet banking channels were used by 51.7%, 20.7% and 19.6% of subscribers respectively, while only 8.1% used bank branches to process their applications. While the use of phone and Internet banking declined slightly from 2009, the use of *ATMs* rose from 47.3%.

Regarding amounts collected through subscription channels, the total amount collected through all subscription channels in 2010 was *SR* 6.7 billion. Amounts subscribed through *ATMs* accounted for 44.8% of the total, with *SR* 3.0 billion, followed by phone banking (20.9%), Internet banking (23.9%) and then bank branches (10.4%) (CMA, 2009, 2010).

4.3.9. Debt Instruments

In 2009, the *CMA* introduced a market for trading Sukuk and bonds. This was a part of its ongoing attempts to offer new investment vehicles and funding channels. Several automated services were offered, such as listing Sukuk and bonds, routing orders, executing transactions, settlement, price data dissemination, custody and registration and so forth. Sukuk and bonds are traded through authorised persons on the market through investment portfolios assigned for share trading.

In 2009, Sukuk were offered by two companies: the Saudi Electricity Co. and the Saudi Holland Bank, with a total amount of *SR*7 billion and *SR*725 million, respectively. However, in 2010, only the Saudi Electricity Co. issued Sukuk with *SR* 7 billion. In 2009 and 2010, the total traded volume of Sukuk was *SR* 461 million, with 125 transmissions executed. The Saudi Electricity Co. had the highest number of executed transmission, with 58, and the highest trading value, *SR* 325.6 million (CMA, 2010; Tadawul, 2010).

4.3.10 .Swap Agreements

In 2008, the *CMA* issued a resolution allowing authorised persons to engage in swap agreements with non-resident foreign investors, either individuals or financial institutions. The *CMA* had two primary aims in doing this, the first of which was to

deepen the capital market further and to promote its efficiency. The second aim was encourage foreign investors to engage in the Saudi capital market, thereby reinforcing the openness indicator for foreign direct investments in the market. In 2010, the total volume of swap agreements was *SR* 24.8 billion, a rise of 26% on 2009. The percentage of investments made by financial institutions fell slightly in 2010 to 99.89% of total swap agreements, in comparison to 99.97% in 2009 (CMA, 2010).

4.3.11. Investment Funds

The *CMA* has set the standards and conditions for the activities of investment funds and has the authority to regulate their activities, set the regulations, rules and instructions needed for their establishment, offer and manage units and apply rules of transparency and disclosure to them. In this regard the *CMA* has issued two regulations – the investment Funds Regulation and the Real Estate Investment Funds Regulations.

In comparison to 2009, the number of investment funds in 2010 rose by one, to 267, with an increase of 0.04%. However, there was an increase of 166.7% in the number of investment funds in capital protected funds, to 8 funds at the end of 2010 from 3 in 2009. In 2010, there was also a 2% rise from 2009 in the number of funds investing in equities, to 154. These accounted for 57.7% of the total investment funds in 2010. However, the number of money market funds and funds of funds fell by 8.2% and 10% respectively in 2010 (CMA, 2010).

Concerning the volume of investment fund assets under management, this rose by 5.7% to *SR* 94.7 billion from *SR* 89.6 billion in 2009. There was also a 6.4% rise in the volume of assets under management of money market funds, to *SR* 58 billion at the end of 2010, representing 61.3% of total assets under management. Regarding equity funds, there was also an increase, of 4.2% to *SR* 31 billion at the end of 2010, representing 32.7% of total assets under management. However, in 2010 there was a fall in the volume of assets of real estate funds and balanced funds of 30.4% and 20.9% respectively in comparison to the previous year.

In terms of equity funds investments in 2010, most were concentrated in local equity funds, with a value of *SR*19.1 billion at the end of 2010, representing 61.6% of assets volume, in comparison to *SR* 18.5 billion in 2009. In 2010 there was also a rise, of

10.2%, in the volume of investment in other international equities funds to *SR* 5.2 billion, which constituted 16.9% of the total assets of equity funds in that year. Furthermore, data depicts that the volume of assets in the *GCC*, Asian, US and European equities funds increased in 2010, by 0.1%, 2.2%, 8.3% and 5.8%, respectively.

Regarding local equities funds, these were mainly concentrated in the petrochemical industries, with *SR* 5.6 billion, representing 29.3%, and the banks and financial services sector, with *SR* 4.7 billion, or 24.7%. In investments volume of local equity funds, the hotel and tourism sector was the least active, with 0.0002%. The highest increase in assets volume, up 305.8% in 2010 from 2009, was seen in the energy and utilities sector.

Regarding the number of investors, at 319,823, the total number of investors fell by 10.2% in 2010 compared to 2009. While investors in equity funds comprised the largest proportion (77.5%) of total investors in investment funds in 2010, the numbers were 24,771, representing a fall of 9.9% compared to 2009. The steepest drop was of 48.3% in the number of investors in other funds. Indeed, in 2010 there was increasing only in the number of investors in capital protected funds, which rose from 124 in 2009 to 940 in 2010, an increase of 658.1% (CMA, 2009, 2010).

4.3.12 Exchange Traded Funds (*ETFs*)

In order to offer investors more financial products that sustain market diversity and hence to develop the capital market, the *CMA* Board approved the mechanism of exchange traded funds (*ETFs*), permitting non-resident foreign investors to trade their units on the Saudi Stock Exchange. The first *ETF* was listed and traded under the *ETFs* market segment on 28th March, 2010. In 2010, two Falcom-managed *ETFs* were approved by the *CMA* to be offered and traded on the Saudi Stock Exchange. These were the Falcom Saudi Equity *ETF* and the Falcom Petrochemical *ETF*.

In terms of the volume of assets in these two *ETFs*, it stood at *SR* 74.2 million, with Falcom Saudi Equity accounting for the largest proportion (69.3%) of total assets volume, with *SR* 51.4 million. Falcom Saudi Equity *ETF* also accounted for the largest number of investors with 549 out of a total number of 592, representing 92.7% (CMA, 2010).

4.4. CONCLUSION

This chapter aims to present the developments and trends in the Saudi Stock Market through a historical overview. For this, initially the infrastructure related discussion presented to identify the regulative and legal changes to pave the way for the development of the stock market.

In the third part of the chapter, descriptive analysis in the form of tables and figures utilised to present the developments and trends in various variables related to stock market. The developments and trends in the market have been successful with an increasing trend. However, the 2006 crash marked the development of the stock market, which will continue to be remembered. Since then, with further regulation of the market, a healthier development and trend has been observed. This is despite the current global financial crisis.

The descriptive data and exposition presented in this chapter are subjected to further scrutiny through systematic econometric analysis in Chapter 6. In addition, to give further meaning to the developments and trends, the opinions of some of the stake holders were consulted through an interview schedule; and the analysis of this is presented in Chapter 7.

CHAPTER 5

ECONOMETRIC MODELLING AND ESTIMATION METHOD

5.1. INTRODUCTION

The impact of financial development and in particular of stock market on economic growth is discussed in Chapter 2, where also empirical studies are surveyed. This chapter aims to present the modelling and estimation related issues for the relationship between stock market and economic growth in the case of Saudi Arabia.

The connection between stock market development and economic growth has been a significant issue of dispute in the new growth theory, as discussed in Chapter 2.

It should be noted that a number of important studies have modelled the role of financial markets in economic development including Greenwood and Jovanovic (1990), Bencivenga and Smith (1991), Greenwald and Stiglitz (1989), Saint-Paul (1992), Subrahmanyam and Titman (1999), Boyd and Smith (1998), Levine (1991) and King and Levine (1993a). The models proposed by these studies associate the financial system with the steady-state growth rate of per capita output. In particularly, the majority of these models expand and connect two literatures. The first is the endogenous growth literature (*e.g.* Romer, 1986; Lucas, 1988) in the models of which the economy's steady-state growth rate is fully determined by decisions made by agents. The second is the financial structure (*e.g.* Diamond and Dybvig, 1983; and Diamond, 1984), in which the optimal responses to the informational and risk characteristics of an economy appear to be financial contracts.

However, Levine and Zervos (1993), Atje and Jovanovic (1993), Levine and Zervos (1998), and Beck and Levine (2003) found that stock market development and economic growth strongly associated. They argued that stock markets do not offer the same services as those provided by banks. This concurs with Levine and Zervos (1995) and Demirguc-Kunt (1994), who held that stock markets can promote economic development considerably. According to Greenwood and Smith (1997), large stock markets can reduce the cost of savings mobilisation, which in turn facilitates investment in productive technologies. Bencivenga *et al* (1996) and Levine (1991) maintain that stock market liquidity is vital for growth. In a similar vein,

Holmstrom and Tirole (1993) argue that liquid stock markets can increase incentives for investors to obtain information about companies and enhance corporate governance. However, Greenwood and Jovanovic (1990) and King and Levine (1993) take the view that a new stock exchange can contribute to economic growth by collecting information about companies' prospects, and by so doing, direct capital to investment with returns.

Consistent with Levine (1991) and Benchivenga (1996) they stressed the positive role played by liquidity provided by stock exchanges in the magnitude of new real asset investments through common stock financing. Greenwood and Smith (1996) illustrate that stock markets plays an important role in reducing the cost of mobilizing savings and facilitating investments.

Levine and Zervos (1998), in their notable empirical study, were among the first to examine the issue as to whether stock markets are merely potential casinos or major drivers of economic growth. In their view, different measures of stock market development can partly explain the variation in economic growth. They found a positive and significant association between stock market development and long-run growth (Levine and Zervos, 1998).

Pagano (1993) uses the simplest endogenous growth model in an attempt to understand the way in which stock market development can be linked to economic growth. This model illustrates the basic framework of this association, and is given by equation (2.11).

In the endogenous growth framework, economic growth can be driven by stock market development through improvements in the distribution of resources among the most profitable investment projects and then augmenting the yield of capital. The fractions of savings are raised by an efficient stock market, through the routing of more saving to investment and lowering the costs of the financial intermediation process. Moreover, stock market development has an effect on the saving rate, offering households another instrument that could better satisfy their risk preferences and liquidity requirements. It is clear from this short analysis that two positive effects of stock market development on economic growth arise from the efficient distribution of investment resources and the more efficient use of the existing resources.

5.2. DATA AND DEFINING THE VARIABLES

This study investigates the long-run connection between stock market development and economic growth in Saudi Arabia with annual data over 1985- 2010 using tests of time series techniques. The data set is assembled through various Saudi Arabian sources.

5.2.1. Independent Variables

Stock Market Capitalisation to *GDP* ratio, namely, *MCR* is employed to measure stock market development (see: Rajan and Zingales 1998; Rousseau and Wachtel 2000; and Arestis et al., 2001). A positive link is expected between stock market size that associated with the market ability to allocate capital and manage risk. However, the problem with using stock market capitalisation is that it shows the total of listed capital, but not the growth of listed capital (Rajan and Zingales 2000). Further, large markets may not always be active and small, but productive companies may be prevented from being listed on the exchange by taxes (Demirguc-Kunt and Levine, 1996).

The most widely-used complementary measures of stock market size are market turnover, *TR* (see: Demirguc-Kunt adn Levine 1996; Levine and Zervos 1996; Rousseau and Wachtel 2000; Beck and Levine 2002) and total value of shares traded *VST* (see: Atje and Jovanovic 1993; Levine and Zervos 1996; Rousseau and Wachtel 2000). The Turnover Ratio, *TR*, shows the trading volume of the stock market in relation to its size and measures stock market liquidity. An increase in liquidity is a positive sign in emerging markets, as it shows the significance and the credibility of the available information. In addition, it shows low transactions costs, which facilitate fund transfers and increase the number of companies and traded shares, thus promoting growth (Rousseau and Wachtel, 2000).

Stock market activity can be measured by value of shares traded to *GDP* ratio, namely *VSTR*, which measures trading volume in relation to the size of the economy. As the product of market price and the number of shares traded, it comprises elements of both liquidity and size (Beck and Levine, 2002).

Number of Listed Companies, or *NLC*, is also used to measure of stock market development. A rise in the number of listed companies implies rapid stock market development. This measure also shows the industry concentration, where a few firms are dominant in the economy. This may lead to lower competitive pressure, therefore decreasing growth rates (Rajan and Zingales, 2000). However, this measure is of no assistance in the Saudi stock market as there are few listed companies and in this situation turnover ratio**,** *TR*, number of shares traded, *NST*, and Number of Transactions, *NT*, may be preferable.

The five selected alternative proxies for stock market development in Saudi Stock Market are the following:

Market Capitalisation Ratio (*MCR*): This is calculated by dividing the value of listed companies (market capitalisation) by *GDP*. It gives a measure of the size of the stock market in relation to the size of the economy and is a useful measure of the relative size of the stock market in the economy.

Number of Shares Traded (*NST*): This specifies the number of all shares traded listed in the stock exchange at any given point in time and also serves as a measure of stock market size.

Value of Share Traded Ratio (*VSTR*): This gives the total value of shares traded during the period. Total value traded divided by *GDP* gives a measure of the liquidity in the market. Market liquidity measures the ease with which securities can be bought and sold. This indicator complements the market capitalisation ratio and indicates whether market size corresponds to trading activity.

General Index (*GI*) of Share Price: This indicator is a measure of stock volatility and also indirectly measures the development of stock market in general.

Number of Transactions (*NT*): This is used to measure the extent of market development in a high institutional and regulatory framework. The extent of a market's development is greatly affected by the regulatory system and a technology that is important to indicate how well a market functions in reality. Very low benefits of risk diversification in markets are indicated by a very high degree of institutional and regulatory framework.

5.2.2. Presenting the Summary Statistics

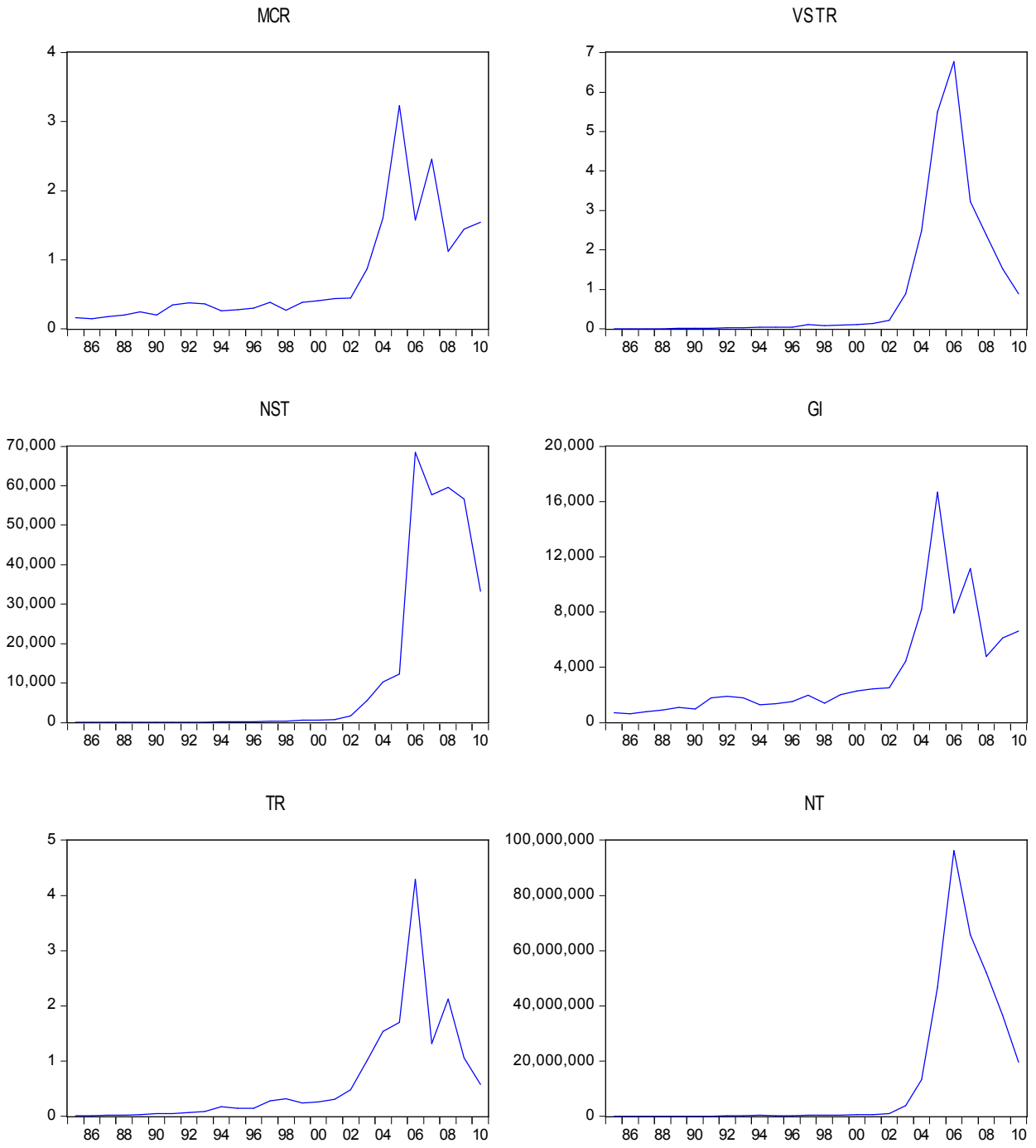
This section provides summary statistics in table 5.1, which is used in the econometrics estimations in Chapter 6.

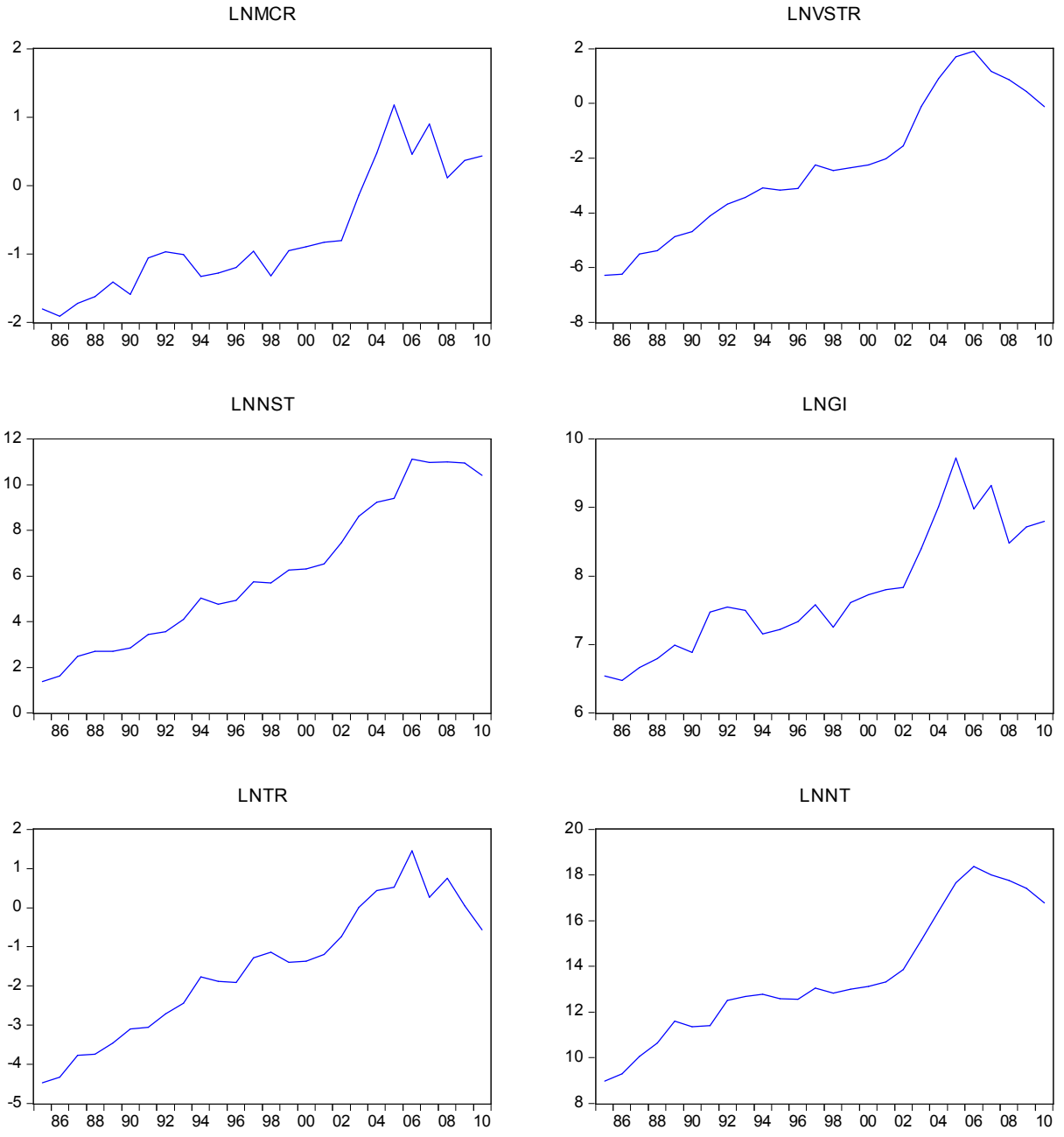
Table 5.1. Summary Statistics of Annual Data over 1985-2010

Statistics	***MCR***	***VSTR***	***NST***	***GI***	***NT***
Mean	0.740572	0.946636	11878.00	3589.308	13034177
Median	0.381219	0.090686	302.5000	1923.225	407421.5
Maximum	3.235430	6.769840	68515.00	16712.64	96095920
Minimum	0.148177	0.001878	4.000000	646.0300	7842.000
Std. Dev.	0.789154	1.776718	22399.50	3852.762	25238766
Skewness	1.741112	2.160423	1.666359	1.944597	2.008418
Kurtosis	5.361264	6.785547	4.055472	6.494847	6.117196
Jarque-Bera	19.17657	35.75008	13.23945	29.61811	28.00621
Probability	0.000069	0.000000	0.001334	0.000000	0.000001
Sum	19.25486	24.61254	308828.0	93322.01	3.39E+08
Sum Sq. Dev.	15.56909	78.91819	1.25E+10	3.71E+08	1.59E+16
Observations	26	26	26	26	26
Statistics	***LNMCR***	***LNVSTR***	***LNNST***	***LNGI***	***LNNT***
Mean	-0.726133	-2.294621	6.125812	7.761171	13.58264
Median	-0.964390	-2.401628	5.711588	7.561597	12.91474
Maximum	1.174162	1.912477	11.13481	9.723921	18.38086
Minimum	-1.909345	-6.277546	1.386294	6.470846	8.967249
Std. Dev.	0.891959	2.493432	3.198508	0.900547	2.775455
Skewness	0.679042	0.148822	0.269419	0.544733	0.328104
Kurtosis	2.235958	1.935976	1.780007	2.306923	2.084432
Jarque-Bera	2.630500	1.322466	1.926958	1.806231	1.374615
Probability	0.268407	0.516215	0.381563	0.405305	0.502928
Sum	-18.87946	-59.66015	159.2711	201.7905	353.1486
Sum Sq. Dev.	19.88976	155.4301	255.7613	20.27460	192.5787
Observations	26	26	26	26	26

In addition, Figure 5.1 (as a set) depicts the trends in the variables through charts.

Figure 5.1. Trends in the Variables





5.2.3. Dependent and Control Variables

Two indicators are widely used in the literature to measure economic growth: capital accumulation and productivity growth (see: Levine and Zervos, 1996; Levine *et al.*, 2000; Rioja and Valev, 2002) and the growth of per capita real gross domestic product (see: Hansson and Jonung, 1997; Ghatak and Siddiki, 1999; Ben M'rad, 2000; Levine *et al.*, 2000; Beck and Levine 2002; Boulila and Trabelsi, 2002). To measure economic growth, this study uses the growth of per capita real *GDP* and gross fixed capital *GFC***,** following the majority of finance and growth studies**.**

In referring to economic growth, economists generally imply a quantitative and measurable increase in output that takes place in the economy (*i.e*., real *GDP*).

In this study concerning Saudi Arabia economic growth is proxied by:

GDP = Gross Domestic Product by at constant prices (1999 = 100)

NOGDP = Non-Oil *GDP*

NOPSGDP = Non-Oil Private Sector *GDP*

GFC = Gross Fixed Capital

NOGFC = Non-Oil *GFC*

Other potential determinants of economic growth are controlled for in the regressions when assessing the strength of the relationship between stock markets, intermediary development and economic growth, following Easterly *et al.* (1997), Levine *et al*., (2000), Trabelsi (2002) and Ben Naceur and Ghazouani (2003). The ratio of Government Consumption (*GC*) expenditure to *GDP* is used as a proxy for government size and a reliable indicator of credible and permanent fiscal adjustment (Easterly *et al*., 1997).

The control variable in this study concerning the Saudi Arabia economy is proxied by *GS* = government spending. *GS* is used as in the Saudi economy revenue from oil income affects the government's revenue, which in turn influences the government's contribution to economic growth. *GS* therefore reflects the impact of the oil sector on Saudi Arabia's economic growth.

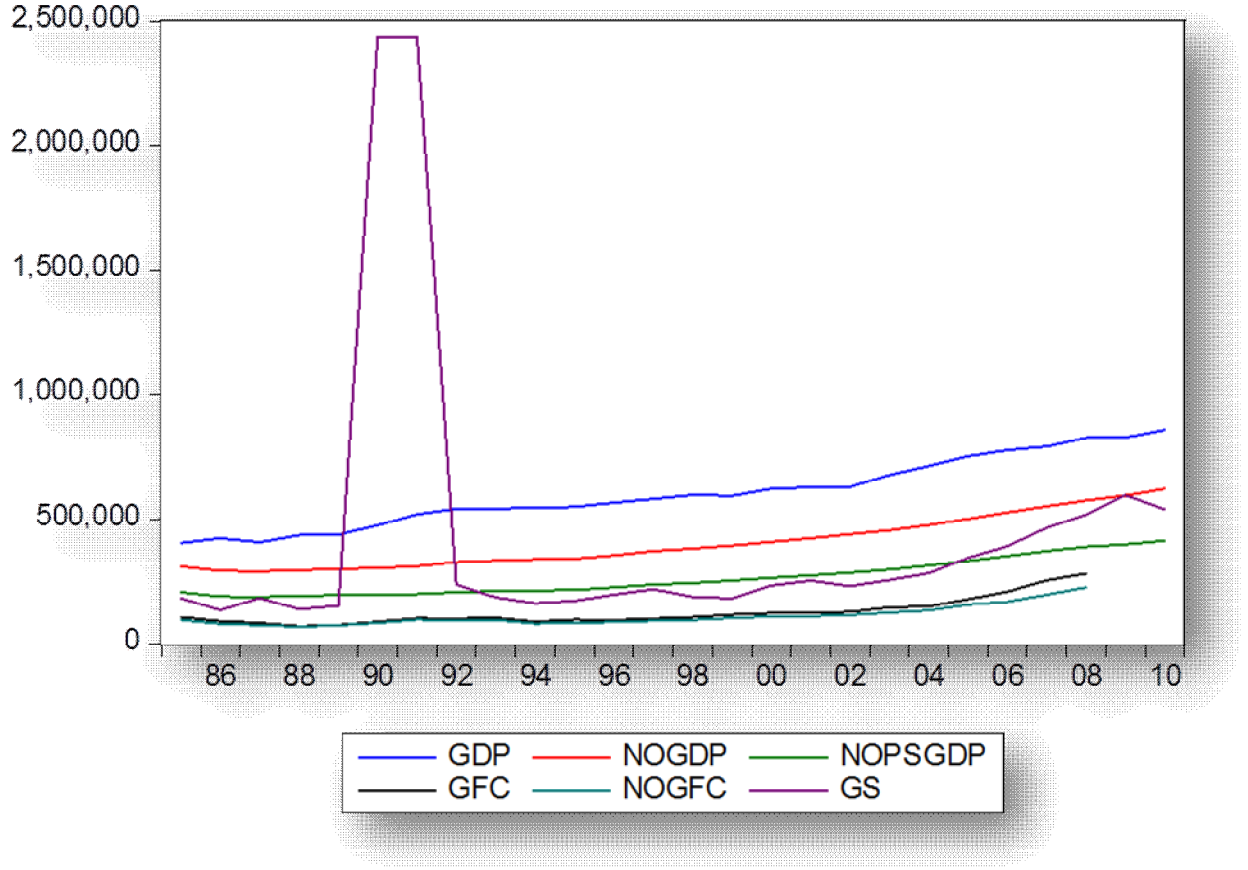
Table5.2. Presents the summary statistics for the macroeconomic variables defined above.

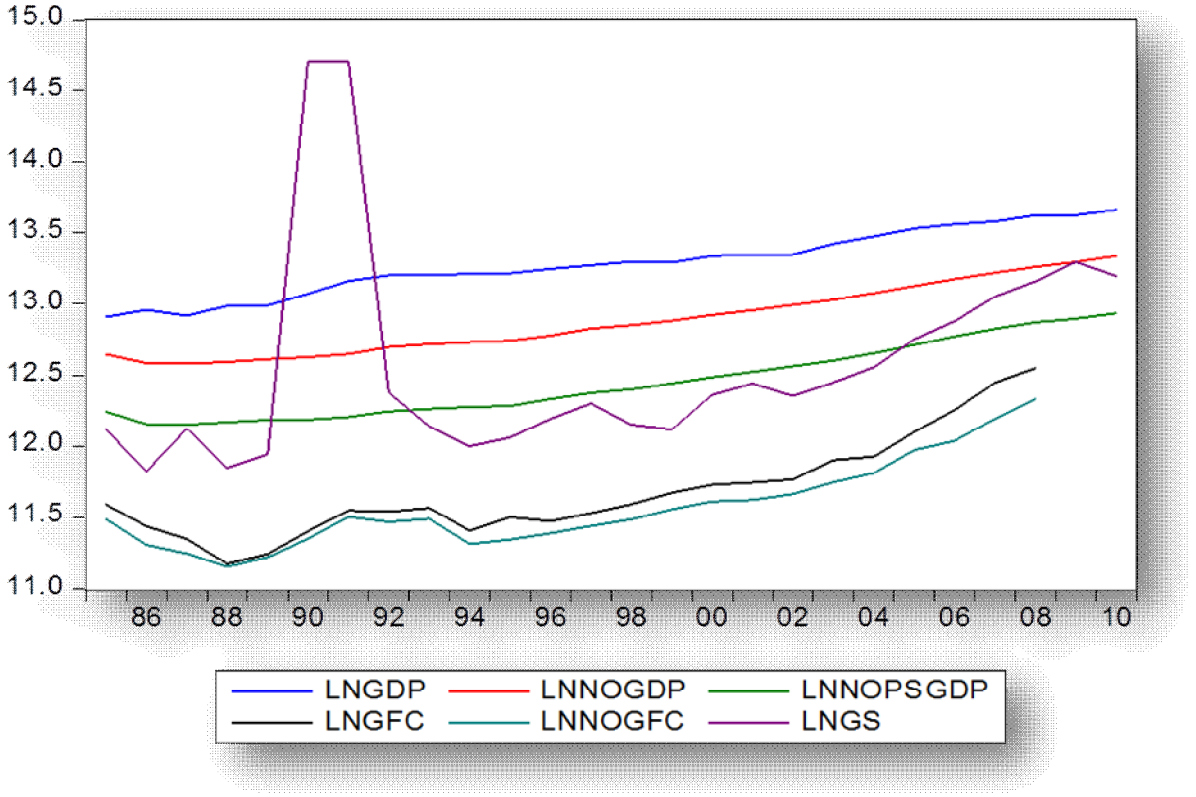
Table5.2. Summary Statistics of Annual Data, 1985-2010

Statistics	***GDP***	***NOGDP***	***NOPSGDP***	***GFC***	***NOGFC***	***GS***
Mean	585924.8	389175.6	253935.9	127897.0	112247.3	426103.3
Median	574994.0	364692.0	233551.0	107259.5	98074.00	227386.0
Maximum	826478.0	576250.0	390081.0	283833.0	228355.0	2437123.
Minimum	404685.0	292649.0	190081.0	71768.00	70312.00	137422.0
Std. Dev.	123788.5	87524.66	61525.67	54422.57	40055.49	627104.5
Skewness	0.318668	0.721888	0.847935	1.652431	1.536235	2.889063
Kurtosis	2.225301	2.329249	2.512901	4.904090	4.639859	9.612135
Jarque-Bera	1.006355	2.534397	3.113243	14.54768	12.12921	77.10706
Probability	0.604606	0.281620	0.210847	0.000693	0.002324	0.000000
Sum	14062196	9340215.	6094461.	3069527.	2693936.	10226478
Sum Sq. Dev.	3.52E+11	1.76E+11	8.71E+10	6.81E+10	3.69E+10	9.04E+12
Observations	24	24	24	24	24	24
	LNGDP	***LNNOGDP***	***LNNOPSGDP***	***LNGFC***	***LNNOGFC***	***LNGS***
Mean	13.25953	12.84900	12.41892	11.69124	11.57877	12.53042
Median	13.26203	12.80650	12.36091	11.58294	11.49348	12.33404
Maximum	13.62493	13.26430	12.87411	12.55614	12.33866	14.70633
Minimum	12.91086	12.58673	12.15521	11.18119	11.16070	11.83081
Std. Dev.	0.211959	0.214948	0.228051	0.355670	0.307374	0.755345
Skewness	-0.028535	0.478954	0.597245	1.012801	0.977173	2.018949
Kurtosis	2.111921	1.979402	2.081608	3.340223	3.207523	6.398110
Jarque-Bera	0.791941	1.959208	2.270248	4.218815	3.862535	27.85178
Probability	0.673027	0.375460	0.321382	0.121310	0.144964	0.000001
Sum	318.2287	308.3759	298.0541	280.5897	277.8905	300.7300
Sum Sq. Dev.	1.033309	1.062661	1.196164	2.909522	2.173019	13.12255
Observations	24	24	24	24	24	24

In addition, Figure 5.2 depicts the trends in the control or macroeconomic variables.

Figure 5.2. Trends in Control Variables





5.3. SPECIFICATION OF MODEL

In this study, a time-series growth regression is used for an empirical evaluation of whether the index of stock market development (*STOCK*) is connected to economic growth. This empirical analysis is performed over the period 1985 to 2010.

In order to focus on the empirical impact of stock market development on economic growth, the growth model is extended in equation 2.11, providing a more comprehensive evaluation that consists of the major determinants of economic growth and stock market channels. The general model and variables used are based on economic theory and proposed by theoretical and empirical studies, such as Beck and Levine (2004), Rousseau and Wachtel (2000), Levine and Zervos (1998a), and Atje and Jovanovic (1993). To test the causal relationships, the following multivariate model is to be estimated:

$$GROWTH_t = F\,(X_t\,,\, STOCK_t) \qquad (5.1)$$

where *GROWTH* is the dependent variable that is the time series of economic growth indicators over the period of the study. *GROWTH* is proxied by:

GDP = Gross Domestic Product by at constant prices (1999 = 100)

NOGDP = Non-Oil *GDP*

NOPSGDP = Non-Oil Private Sector *GDP*

GFC = Gross Fixed Capital

NOGFC = Non-Oil *GFC*

STOCK is the independent variable that is the time series of stock market indicators over the period of the study and is proxied by:

MCR= Market Capitalization Ratio

NST = Number of Shares Traded

VSTR = Value of Share Traded Ratio

GI= General Index of Share Price

NT= Number of Transactions.

It should be noted that in equation 5.11, *X* is a set of control variables, used to control for other factors as well as *STOCK* that may account for economic growth. *X* is proxied by:

GS_t = Government Spending

To measure the *GDP* flexibility according to the various definitions of GDP_t the logarithm formula is used to make the algebraic formula proposed for the equation 5.2 the following:

$$GDP_t = a_{0.} STOCK_t^{a1} \quad (5.2)$$

We can rewrite equation 2.2 as follows:

$$GDP_t = a_{0.} MCR_t^{a1}. NST_t^{a2}. VSTR_t^{a3}. GI_t^{a4}. NT_t^{a5} \quad (5.3)$$

To improve the model we add the control variables

$$GDP_t = a_{0.} X_t^{a1}. STOCK_t^{a2} \quad (5.4)$$

We can rewrite the equation (5.4) as following

$$GDP_t = a_{0.} GS_t^{a1}. MCR_t^{a2}. NST_t^{a3}. VSTR_t^{a4}. GI_t^{a5}. NT_t^{a7} \quad (5.5)$$

Then the structure of the regression equation is the following where all data are expressed in their logarithms to control for convergence, in order to include the proliferative effect of time series and are symbolised with the letter *ln* indicating the natural logarithm preceding each variable name.

5.3.1.Model 1: *GDP*

$$lnGDP_t=a_0+a_1lnMCR_t+a_2lnNST_t+a_3lnVSTR_t+a_4lnGI_t+a_6lnNT_t+u \quad (5.6)$$

where *GDP* = gross domestic product by at constant prices (1999 = 100)

To improve the model we add the control variables and it will be estimated by the following equation in its final form:

$$lnGDP=a_0+a_1lnGS_t+a_2lnMCR_t+a_3lnNST_t+a_4lnVSTR_t+a_5lnGI_t+a_6lnNT_t+u \quad (5.7)$$

where u = error term.

5.3.2.Model 2: *NOGDP*

$$lnNOGDP_t = a_0 + a_1 lnMCR_t + a_2 lnNST_t + a_3 lnVSTR_t + a_4 lnGI_t + a_6 lnNT_t + u \quad (5.8)$$

where *NOGDP* = Non-Oil *GDP*

To improve the model we add the control variables and it will be estimated by the following equation in its final form:

$$lnNOGDP_t = a_0 + a_1 lnGS_t + a_2 lnMCR_t + a_3 lnNST_t + a_4 lnVSTR_t \; a_5 lnGI_t \; a_6 lnNT_t + u \quad (5.9)$$

5.3.3.Model 3: *NOPSGDP*

$$lnNOPSGDP_t = a_0 + a_1 lnMCR_t + a_2 lnNST_t + a_3 lnVSTR_t + a_4 lnGI_t + a_6 lnNT_t + u \quad (5.10)$$

where *NOPSGDP* = Non-Oil Private Sector *GDP*

To improve the model we add the control variables and it will be estimated by the following equation in its final form:

$$lnNOPSGDP_t = a_0 + a_1 lnGS_t + a_2 lnMCR_t + a_3 lnNST_t + a_4 lnVSTR_t + a_5 lnGI_t + a_6 lnNT_t + u \quad (5.11)$$

5.3.4.Model 4: *GFC*

$$lnGFC_t = a_0 + a_1 lnMCR_t + a_2 lnNST_t + a_3 lnVSTR_t + a_4 lnGI_t + a_6 lnNT_t + u \quad (5.12)$$

where *GFC* = Gross Fixed Capital.

To improve the model we add the control variables and it will be estimated by the following equation in its final form:

$$lnGFC_t = a_0 + a_1 lnGS_t + a_2 lnMCR_t + a_3 lnNST_t + a_4 lnVSTR_t + a_5 lnGI_t + a_6 lnNT_t + u \quad (5.13)$$

5.3.5.Model 5: *NOGFC*

$$lnNOGFC_t = a_0 + a_1 lnMCR_t + a_2 lnNST_t + a_3 lnVSTR_t + a_4 lnGI_t + a_6 lnNT_t + u \quad (5.14)$$

Where *NOGFC* = Non-Oil GFC

To improve the model we add the control variables and it will be estimated by the following equation in its final form:

$$lnNOGFC_t = a_0 + a_1 lnGS_t + a_2 lnMCR_t + a_3 lnNST_t + a_4 lnVSTR_t + a_5 lnGI_t + a_6 lnNT_t + u \quad (5.15)$$

It should be noted that the econometric computer software Eviews 7.0 is used for the estimation of the model.

5.4. ESTIMATION METHOD

The estimation method used in this study is time series method within which cointegration method is used. Prior to examining co-integration, it is necessary to determine the order of integration of the stock market development and economic growth variables. The co-integration relationship is present within a set of non-stationary time series when it is possible to identify a linear combination of the variables that gives stationary results. To this end, a unit root test is carried out using both the *ADF* and *PP* tests. However, despite the model specification, another important issue remained to checked is multicollinearity in the models.

These tests are conducted on the level of data in addition to their first differences in logarithm terms. The null hypothesis tested whether the variables being examined have a unit root or not. However, different time series techniques were used to

examine the stock market development relationship. Unit root tests, Johansen co-integration test and Granger causality tests are widely used to examine the strength and the direction of the relationship. However, Granger causality test is applied in order to find the direction of causality between the examined variables of the estimated model. Finally, the last step is the estimation of the short-run dynamics within a vector error correction model (*VECM*). The empirical results and the discussion of some of the issues involved are presented in Chapter Six. First, some theoretical background of these tests will be presented.

5.4.1. Unit Root Tests

The logarithm form of the identified variables is used in this study; therefore, the first differences of *GDP*, stock market variables and control variables represent the economic growth rate and changes in the independent variable.

Concerning time-series, examinations involving stochastic trends, Augmented Dickey-Fuller (*ADF*), all offer evidence as to whether the variables are integrated. The Phillips-Perron (PP) (1988) unit root test was conducted on individual series to give evidence as to the integration of the variables. A multivariate co-integration analysis was subsequently performed. The Phillips-Perron (PP) (1988) test is a development of the Dickey-Fuller (*DF*) test (1979), making a semi-parametric correction for auto-correlation. It is also more robust where there are weak autocorrelation and heteroskedastic regression residuals.

Augmented Dickey-Fuller (*ADF*) unit root tests are performed for individual series to offer evidence as to whether the variables are stationary and integrated in the same order. Following Seddighi *et al* (2000), the Augmented Dickey-Fuller test involves the estimation of one of the following equations:

$$\Delta Y_t = \beta\, Y_{t-1} + \sum_{\delta} \delta_\delta \Delta Y_{\delta} + \varepsilon_\delta \qquad (5.16)$$

$$\Delta Y_t = \alpha_0 + \beta\, Y_{t-1} + \sum_{\delta} \delta_\delta \Delta Y_{\delta} + \varepsilon_\delta \qquad (5.17)$$

$$\Delta Y_t = \alpha_0 + \alpha_1 t + \beta\, Y_{t-1} + \sum_{\delta} \delta_\delta \Delta Y_{\delta} + \varepsilon_\delta \qquad (5.18)$$

In order to ensure that the errors are not correlated, the additional lagged terms are also included. The maximum lag length begins with two lags.

The null hypothesis is that the variable Y_t is a non-stationary series H_0: $\beta=0$ and is refused when β is significantly negative Ha: $\beta<0$. The null hypothesis H_0 is accepted and the series is non-stationary or not integrated of order zero *1 (0)* if the resulting *ADF* statistic is higher than McKinnon's critical values,

Otherwise, rejection of the null hypothesis implies stationarity. Failure to reject the null hypothesis leads to carrying out the test on the difference of the series; therefore further differencing is conducted until stationarity is achieved and the null hypothesis is rejected (Dickey and Fuller 1979).

Phillips and Perron (1988) have developed a more comprehensive theory of unit root non-stationarity, which extends the Dickey-Fuller (*DF*) test, making the semi-parametric correction for autocorrelation. It is more robust where there are weak autocorrelation and heteroskedastic regression residuals. The PP tests are similar to ADF tests, but they incorporate an automatic correction to the DF procedure to allow for autocorrelated residuals. Choi (1992) asserts that the Phillips-Perron test seems to be stronger than the *ADF* test for aggregate data. The PP test gives different lag profiles for the examined variables (time-series) and occasionally a lower levels of significance, but qualitatively the central conclusion is the same as the *DF* test reports. The tests often give the same conclusions as, and suffer from most of the same important limitations as, the *ADF* tests. Brooks (2008), argues that the most important criticism that has been levelled at unit root tests is that their power is low if the process is stationary but with a root close to the non-stationary boundary. The source of this problem is that, under the classical hypothesis-testing framework, the null hypothesis is never accepted, it is simply stated that it is either rejected or not rejected. This means that a failure to reject the null hypothesis could occur either because the null was correct, or because there is insufficient information in the sample to enable rejection (Brooks, 2008). However, as discussed below, the results achieved in our sample are not placed on the limits and not subject to this important criticism.

As the null hypothesis in the Augmented Dickey-Fuller test states that a time series contains a unit root, without strong evidence against it, this hypothesis is accepted. Nevertheless, this approach may have low power against stationary near unit root processes. The *PP* unit root test is specified as it is general and can be employed where there are heteroskedastic auto-correlated innovations.

5.4.2. Johansen Co-integration Test

As it was determined that the variables under examination are integrated of order 1, a co-integration test was carried out. The hypothesis is that if it is not the null of non-co-integration, it will be co-integration. This is tested using the Johansen maximum likelihood procedure (Johansen and Juselious, 1990, 1992).

The question arises as to whether a long-run equilibrium relationship among variables exists when a unit root is confirmed for a data series. Engle and Granger (1987) report that a set of variables, Y_t can be considered to be co-integrated of order (d, b) – denoted by *CI(d, b)* - if Y_t is integrated of order d and there is a vector, β, so that $\beta' Y_t$ is integrated of order (d-b).

Co-integration tests in this research are carried out using Johansen and Juselious (1990, 1992) method. Johansen and Juselious' (1990, 1992) and Engle and Granger's (1987, 1990, 1992) multivariate co-integration techniques, using a maximum likelihood estimation process, permit to estimate models involving two or more variables at the same time in order to avoid the problems involved in the regression methods commonly used in prior studies on this matter.

Hence, the Johansen method uses the maximum likelihood process to determine whether co-integrated vectors are present in non-stationary time-series.

Johansen and Juselious (1990, 1988), following Chang and Caudill (2005), suggest two test statistics to test the number of co-integrated vectors (or the rank of Π): the trace ($\lambda trace$) and the maximum eigenvalue (λmax). The likelihood ratio statistic (LR) for the trace test ($\lambda trace$), as proposed by Johansen (1988) is:

$$\lambda trace\ (r) = -\ T \sum_{i=r+1}^{n} \ln (1- \hat{\lambda}_i) \qquad (5.19)$$

where $\hat{\lambda}_i$ = the greatest estimated value of the characteristic root (eigen value) gained from the estimated Π matrix, $r = 0, 1, 2,...n-1$, and T is the number of observations that can be used.

The $\lambda trace$ statistic tests the null hypothesis that the number of different characteristic roots is less than or equal to r, (where r is 0, 1, or 2,) against the general alternative. In this statistic, $\lambda trace$ will be small when the values of the characteristic roots are closer to zero. The value will be large in relation to the values of the characteristic roots, which are further from zero. Otherwise, as Johansen (1988) proposed, the maximum Eigen value (λmax) statistic, is:

$$\lambda trace\ (r,r+1) = -\,T \sum_{i=r+1}^{n} \ln\,(1-\hat{\lambda}_{r+1}) \qquad (5.20)$$

The null hypothesis that the number of r co-integrated vectors is r against the alternative of $(r+1)$ co-integrated vectors is tested by the λmax statistic. Hence, the null hypothesis $r=0$ is tested against the alternative that $r=1$, $r=1$ against the alternative $r=2$, and so on. If the estimated value of the characteristic root is near zero, the λmax will be small.

Johansen‘s co-integration tests are known to be very sensitive to the selection of lag length. A *VAR* model is first fitted to the time-series data to find a suitable lag structure.

The Schwarz Criterion (*SC*) and the Likelihood Ratio (*LR*) test are used to choose the number of lags needed in the co-integration test. According to the *SC* and the *LR* test, the value $p=1$ is the most suitable specification for the order of the *VAR* model.

5.4.3. Causality Tests

Granger’s (1969) causality test has been commonly used to test for the causal relationship between two variables. Therefore, this test was considered suitable to test the long-term relationship between stock market development and economic growth.

The Granger test was chosen because it is a simpler and more powerful method to test causal relationships (Granger, 1986). According to this test, if past values of a variable *Y* make a significant contribution to forecasting the future value of another

variable *X*, then it is said that *Y* Granger causes *X*. However, if past values of *X* statistically improve the forecast of *Y*, then it can be concluded that *X* Granger causes *Y*. The following regressions form the basis of the test:

$$Y_t = a_0 + \sum_{j=1}^{k} a_{1j} Y_{t-j} + \sum_{j=1}^{k} b_{1j} X_{t-j} + u_t \qquad (5.21)$$

$$X_t = a_0 + \sum_{j=1}^{k} a_{2j} X_{t-j} + \sum_{j=1}^{k} b_{2j} Y_{t-j} + v_t \qquad (5.22)$$

where:

Y_t is the dependent and X_t is the explanatory variable in equation *5.21*;

X_t is the dependent and Y_t is the explanatory variable in equation *5.22*;

u_t and v_t are mutually uncorrelated error terms;

t denotes the time period;

j is the number of lags.

The Wald *F*-statistic test was used to test the above hypotheses. Its form is as follows:

$F = ((RSS_R - RSS_U)/q)) / ((RSS_U/T\text{-}2_q\text{-}1))$

where:

RSS_U= is the sum of squared residuals from the complete (unrestricted) equation;

RSS_R= the sum of squared residuals from the equation, assuming that a set of variables is redundant, when the restrictions are applied (restricted equation);

T = the sample size;

q = is the lag length.

Following Katsos (2000, 2004), the hypotheses in this test are as follows:

H_0: *X* does not Granger cause *Y*, *i.e.* $\{\alpha_{11}, \alpha_{12}, \ldots\ldots \alpha_{1k}\}=0$, if *Fc* < critical value of *F*.

H_a: *X* does Granger cause *Y*, *i.e.* $\{\alpha_{11}, \alpha_{12}, \ldots\ldots \alpha_{1k}\}\neq 0$, if *Fc* > critical value of *F*.

H_0: *Y* does not Granger cause *X*, *i.e.* $\{\beta_{21}, \beta_{22},...\beta_{2k}\}=0$, if $Fc <$ critical value of *F*.

H_a: *Y* does Granger cause *X*, *i.e.* $\{\beta_{21}, \beta_{22},....\beta_{2k}\}\neq 0$, if $Fc >$ critical value of *F*.

Recent research in time-series econometrics indicated a number of crucial problems concerning the Granger causality test. First, the direction of causality is dependent on the number of lagged terms incorporated. If the true lag length is greater than the chosen lag length, the omission of relevant lags may lead to bias. In contrast, including extraneous lags in the equation may result in the estimates being ineffective. The Akaike and Schwarz information criterion (*AIC/SIC*) was used to establish the selection of lag length.

Further, the basis of the conventional Granger causality is the assumption that the variables must have the same order of integration if they are stationary, or even if they are non-stationary. Toda and Phillips (1993) stated that any causal inference in Granger jargon is debatable when there are stochastic trends and the *F*-test is valid only if the variables in levels are co-integrated.

Tests exist for co-integration and co-integrating ranks, such as Engle and Granger's (1987) correction model (*ECM*) and the vector auto-regression error correction model (*VECM*) of Johansen and Jesolius (1990). However, these tests are not easy to understand and their sufficient rank conditions based on trace and maximum Eigen value test for co-integration must be met.

It should be noted that *ECM* was not conducted in this study due to the model specification and data problems.

5.4.4. Vector Error Correction Model (*VECM*)

In the short-run, deviations from the theoretical framework could occur due to shocks to any of the variables. In addition, the dynamics governing the short-run behaviour of economic growth are different from those in the long-run. Due to this difference, the short-run interactions and the adjustments to long-run equilibrium are important because of the policy implications. According to Engle and Granger (1987), if cointegration exists between non-stationary variables, then an error-correction representation of the type specified by equation below exists for these variables.

Given the fact that the variables of the economic growth equation are cointegrated, the next step is the estimation of the short-run dynamics within a vector error correction model (*VECM*) in order to capture the speed of adjustment to equilibrium in the case of any shock to any of the independent variables.

$$\Delta\delta\delta = \delta_{\delta} + \delta_{\delta\delta\,\delta}^{\delta\,\delta\,\delta}\ \delta_{\delta}\Delta\delta\delta_{\delta\delta\,\delta} + \delta_{\delta\delta\,\delta}^{\delta\,\delta\,\delta}\ \delta_{\delta}\Delta\delta_{\delta\delta\,\delta} + \delta_{\delta\delta\,\delta}^{\delta\,\delta\,\delta}\ \delta_{\delta}\Delta\delta_{\delta\delta\,\delta} + \delta_{\delta\delta\,\delta}^{\delta\,\delta\,\delta}\ \delta_{\delta}\Delta\delta\ \delta\delta_{\delta\delta\,\delta}$$
$$+ \delta_{\delta\delta\,\delta}^{\delta\,\delta\,\delta}\ \delta_{\delta}\Delta\delta\delta_{\delta\delta\,\delta} + \delta_{\delta\delta\,\delta}^{\delta\,\delta\,\delta}\ \delta_{\delta}\Delta\delta\delta\delta\delta_{\delta\delta\,\delta} + \delta\ \delta\delta\delta_{\ \delta\delta\,\delta} + \delta_{\delta}$$

Where Δ indicates the first difference of a series and $\delta_{\delta,}$ δ_{δ}, δ_{δ}, δ_{δ}, δ_{δ}, δ_{δ}, δ_{δ} $\delta\delta\delta\ \delta$ are parameters of the model to be estimated. i is the number of lags included for the first difference of both dependent and independent variables.

5.5. CONCLUSION

This chapter presented the modelling as well as the estimation related methods. The study is constructed within time-series analysis, for which cointegration, Granger causality and vector error correction tests were run, the details of which presented in Chapter 6.

CHAPTER 6

THE NEXUS BETWEEN STOCK MARKET DEVELOPMENTS AND ECONOMIC GROWTH IN SAUDI ARABIA: EMPIRICAL ANALYSIS

6.1. INTRODUCTION

As the literature review chapter demonstrates there is number of studies empirically examining the relationship between the developments in stock exchange and economic growth. This is also the main aim of this research by examining the relationship between stock exchange and economic growth in the case of Saudi Arabia.

In this chapter the characteristics of the data were scrutinised against a number of empirical analysis methods. In conducting the empirical analysis, time-series analysis is considered to be the appropriate method. For this, in the first part of the empirical analysis the data are tested for the existence of unit root. Second, following the adjustments after the unit root test, a series of *OLS* regression results are presented. Third, these results are further examined by using Johansen Co-integration analysis Fourth, the dependent and independent variables are controlled for causal relations among themselves in pairs and finally the estimation of the short-run dynamics within a vector error correction model (*VECM*) is conducted. As the theoretical backgrounds of these methodologies have been discussed in the previous chapter in detail, this chapter presents only the results of the empirical analysis.

6.2. UNIT ROOT TESTS

Since this study employs a time-series analysis due to the characteristics of our sample data, it is necessary to control for the problem of spurious regressions. As a result, each of the variable series will be tested for stationary characteristics through the application of Augmented Dickey Fuller (*ADF*) and Phillips Perron (*PP*) unit root tests.

Table 6.1 presents the unit root test estimation through *ADF* tests. In the case of the levels of the series, the null hypothesis of non-stationary characteristics cannot be

rejected, with the exception of only three of the series. Thus, it is concluded that the levels of all series are non-stationary, but they are rejected for first difference, suggesting that these variables are integrated at the first order or 1 (1). Considering 5% level of significance, the results thus suggest that all variables are integrated at order one in the unit root test.

Table 6.1: Augmented Dickey-Fuller (ADF) Test

Variables	**ADF (0)**	**ADF (1)**
LNGDP	-0.383813	-5.269403
LNNOGDP	2.127238	-5.700204
LNNOPSGDP	2.243730	-6.642181
LNGFC	3.959028	-3.416344
LNNOGFC	4.263265	-3.505330
LNMCR	-0.983318	-6.299399
LNNST	-0.660726	-4.768617
LNVSTR	-1.781543	-3.555766
LNGI	-1.168094	-5.986761
LNNT	-1.607056	-3.975417
LNGS	-3.898203	-3.508789
1% Critical Value	**-3.724070**	**-3.737853**
5% Critical Value	**-2.986225**	**-2.991878**
10% Critical Value	**-2.632604**	**-2.635542**

Table 6.2 presents the unit root estimations through *PP* tests. The results are consistent with the results of the *ADF* test reported above. In general, while the data series are non-stationary at levels, they are integrated at the first difference. These results are consistent with the standard theory, which assumes that most macroeconomic variables are not static at level, but become stationary at the first difference (Enders, 1995). In this case the data are integrated at the first different will be used to investigate the *OLS* regression test.

Table 6.2: Phillips-Perron (PP) Test

Variables	**PP (0)**	**PP (1)**
LNGDP	-0.367805	-5.257529
LNNOGDP	2.897085	-6.055479
LNNOPSGDP	2.418195	-6.642181
LNGFC	1.383406	-3.374558
LNNOGFC	1.365631	-3.492149
LNMCR	-0.917941	-6.252041
LNNST	-0.656601	-4.768617
LNVSTR	-1.380862	-3.537695
LNGI	-1.128320	-5.958319
LNNT	-1.607056	-3.375417
LNGS	-2.815783	-8.258804
1% Critical Value	**-3.724070**	**-3.737853**
5% Critical Value	**-2.986225**	**-2.991878**
10% Critical Value	**-2.632604**	**-2.635542**

6.3. OLS REGRESSION ANALYSIS

After conducting the unit root test and identifying the degree of cointegration, this section presents the results of the economic growth models from different perspectives. In addition, the results will be contrasted with each other in order to determine the parallels and divergences and possible explanations for these.

Since revenues from a natural resource, namely oil, represent one of the main elements of the Saudi economy, analyses based on the results using traditional measures of economic growth might be misleading. As a result, the analysis will employ economic performance indicators that represent the state of the Saudi economy without the oil revenues, as well as the traditional measures. The dependent variables employed for these purposes in this section are: Gross Domestic Product (*GDP*), non-oil *GDP* (*NOGDP*), non-oil private sector *GDP* (*NOPSGDP*), gross fixed capital formation (*GFC*) and non-oil *GFC* or *NOGFC*. The results of the *OLS* regression analysis are presented below in Table 6.3, 6.4, 6.5, 6.6 and 6.7, respectively. However, despite the model specification, another important issue is to

check for multicollinearity in the models. In order to check for multicollinearity, a Pearson Correlation Matrix is presented in Table 6.3 above.

Table 6.3: Correlation Matrix

	LNMCR	**LNNST**	**LNNT**	**LNVSTR**	**LNGI**	**LNGS**
LNMCR	1.000000					
LNNST	0.726704	1.000000				
LNNT	0.558344	0.976984	1.000000			
LNVSTR	0.649380	0.976384	0.981794	1.000000		
LNGI	0.995101	0.727092	0.756569	0.761564	1.000000	
LNGS	0.310090	0.251418	0.286190	0.243771	0.302415	1.000000

Table 6.3 presents some important issues for the models employed. As can be seen clearly, the correlation coefficients suggest a three-way relationship: First, Government Spending (*GS*) proxied by *LNGS* in the model seems to be the only one without a multicollinearity problem with other variables. However, the other five variables present two groups which have very strong correlation within each other. The second group consists of Market Capitalisation, proxied by *LNMCR* and General Index, proxied by *LNGI* in the models. Finally, the third group consisting Number of Shares Traded proxied by *LNNST*, Value of Shares Traded proxied by *LNVSTR* and Number of Transaction, proxied by *LNNT*.

The regressions analysis in the following section is based on Stepwise *OLS* Regressions which allow the researchers to optimise their models by pointing at the most suitable variable among proxies that have multicollinearity problems. The criteria was specified to choose one of the two highly correlated proxies General Index (*LNGI*) and Market Capitalisation (*LNMCR);* and choose one of the three highly correlated proxies, Number of Shares Traded (*LNNST*), Value of Shares Traded (*LNVSTR*) and Number of Transactions (*LNNT*).

In addition, with regard to the stationary issue analysed above, all the regressions reported below will based on the estimations on the first differences rather than at level in order to fulfil the criteria of *OLS* regressions methodology.

It should be noted that one of the most important limitations of the econometric analysis of the data employed in this study is the number of available observations. The availability of data limits the number of observations, and thus the general soundness of the analysis. It should be expected with this small number of observations that their distribution characteristics will not follow a normal distribution. As a result, to be able to protect the analysis from this limitation, all variables are represented in their exponential logarithm values. In addition, because of the time-series characteristics of the data employed, they are controlled for the effects of heteroskedasticity and auto-correlation, and with the existence of both of these, all results presented below in Tables 6.4, 6.5, 6.6, 6.7 and 6.8, which are Newey-West heteroskedasticity and auto-correlation consistent.

6.3.1.Model 1: *GDP*

The regression analysis starts with the first model employing the most traditional measure of economic growth, *GDP* as the dependent variable (see: equation 5:18).

$$lnGDP = a_0 + a_1 lnGS_t + a_2 lnMCR_t + a_3 lnNST_t + a_4 lnVSTR_t + a_5 lnGI_t + a_6 lnNT_t + u \quad (5.7)$$

As noted above, this model is limited by multicollinearity issues among the independent variables. As a result the Stepwise Regression analysis employed, which suggests that, in order to optimise the model and achieve the highest explanatory power, the model should consist of Market Capitalisation (*LNMCR*) and Number of Shares Traded (*LNNST*) and Government Spending (*LNGS*). It is quite expected and reasonable in the sense that these two variables are employed in order to capture the market value and the market volume. As a result, it can be said that the model captures both of the essential facets of the financial markets. The results of this model are presented in Table 6.4.

First of all, the high value of Adjusted *R*-square at 0.96 indicates the soundness and the high explanatory ability of the model. Reflecting this very high value, which is

common in macroeconomic analysis, only two of the three independent variables seem to be statistically significant in explaining the changes in *GDP*: While the natural logarithm of Market Capitalisation ratio (*LNMCR*) is significant at 1% level, and Number of Shares Traded (*LNNST*) is at 5% level.

Table 6.4: Determinants of *GDP* in Saudi Arabia

Dependent Variable: LNGDP Method: Stepwise Regression			
Variable	Coefficient	Std. Error	Prob.
C	8.322823	2.044005	0.0007
LNMCR***	0.040649	0.0475915	0.0067
LNNST**	0.465727	0.586939	0.0439
LNGS	-1.769960	0.014376	0.3871
R-squared	0.965396	Mean dependent var	13.28916
Adjusted R-squared	0.954469	S.D. dependent var	0.228736
S.E. of regression	0.048808	Akaike info criterion	-2.977052
Sum squared resid	0.045262	Schwarz criterion	-2.638333
Log likelihood	45.70167	Hannan-Quinn criter.	-2.879513
F-statistic	88.34614	Durbin-Watson stat	1.816050
Prob(F-statistic)	0.000000		

These results are intriguing because they suggest that the general economy is more closely related to the value rather than the volatility. However, it can also be suggested that the general economy is vulnerable to market crises and can be severely affected. This inevitably increases worries about an asset bubble and thus results in a slight decrease in the *GDP* as happened in 2006 in Saudi Stock market. Finally, it is also interesting to see the Government Spending (LNGS) does not have a statistically significant relationship to the *GDP* of the Saudi Arabia. One possible explanation of this can be the existence of sovereign wealth funds, which accumulate the windfall from the revenues of the natural resources and use them as balancing power for the general economy. However, the spending and investments of these funds are out of the general government budget, and these spending can be masking the affect of government activity on the *GDP* in general.

Finally the Durbin Watson statistic value at 1.81 proves that the model is sound against autocorrelation issues. This also proves the model is Newey-West heteroskedasticity and autocorrelation consistent.

6.3.2.Model 2: *NOGDP*

In examining the *Non-Oil GDP*, the equation depicted in 5.20 is used:

$$lnNOGDP_t = a_0 + a_1\, lnGS_t + a_2\, lnMCR_t + a_3\, lnNST_t + a_4\, lnVSTR_t + a_5\, lnGI_t + a_6\, lnNT_t + u \quad (5.9)$$

In this second model, as noted above the independent variables in this model suffer a multicollinearity problem. As a result, a Stepwise Regression analysis is also employed in order to examine the relationship between the Saudi Stock Market development and the Non-Oil *GDP* of the Saudi economy. The Stepwise regression criteria gave us the same variables among the highly correlated proxies: Market Capitalisation proxied by *LNMCR* and Number of Shares Traded, proxied by *LNNST*. In addition, Government Spending (*GS*) is also included in the model representing the direct influence of the Saudi government on the Non-Oil *GDP*.

The results, especially if compared to those of the *GDP* model discussed above, suggest an interesting outcome. First of all, this time the statistical significances of the two variables which were significant for the *GDP* are lower than the previous model. While *LNMCR* was significant at 1% level for the *GDP*, the significance level decreases to 5% level when analysed for the Non-Oil *GDP*. It is the same in case of the *LNNST*, as the significance level is 10% for Non-Oil *GDP*, whereas it was significant at 5% level for the *GDP* as seen above. These results are however consistent with the view Saudi financial markets are still under strong influence of the natural reserve revenues, especially oil. In this case it can be suggested that the development of the economy and the financial markets are both in tandem with the oil revenues for the Saudi economy.

On the other hand it should also be noted that the Government Spending, proxied by *LNGS* is also significant at 10% level. Although the coefficient for the independent variable *LNGS* is relatively low in comparison to the other two variables, it can be said that the Government Spending, when the direct influence of oil revenues taken

out of the equation are an important factor of the Saudi economy. In addition, this also supports the idea that most of the oil revenues are accumulated in the sovereign wealth funds of the country rather than being added into the general budget.

Finally, the Durbin-Watson statistics value suggests that the model is safe for autocorrelation, as expected from the Newey-West autocorrelation and heteroskedasticity consistent estimations.

Table 6.5: Determinants of *NOGDP* in Saudi Arabia

Dependent Variable: LNNOGDP Method: Stepwise Regression			
Variable	Coefficient	Std. Error	Prob.
C	11.97970	1.713044	0.0000
LNMCR**	0.542218	0.155376	0.0468
LNNST*	0.124792	0.015662	0.0736
LNGS*	0.001650	0.012048	0.0846
R-squared	0.978426	Mean dependent var	12.88525
Adjusted R-squared	0.927957	S.D. dependent var	0.242783
S.E. of regression	0.040905	Akaike info criterion	-3.330329
Sum squared resid	0.031791	Schwarz criterion	-2.991611
Log likelihood	50.29428	Hannan-Quinn criter.	-3.232791
F-statistic	143.6154	Durbin-Watson stat	1.723990
Prob(F-statistic)	0.000000		

6.3.3. Model 3: *NOPSGDP*

The analysis in the previous section holds when the model is further detailed and a *Non-Oil GDP* is investigated, which is expressed in Equation 5.22 and the reports for this is depicted in Table *6.6*:

$$lnNOPSGDP_t = a_0 + a_1\, lnGS_t + a_2\, lnMCR_t + a_3\, lnNST_t + a_4\, lnVSTR_t + a_5\, lnGI_t + a_6\, lnNT_t + u \quad (5.11)$$

The multicollinearity limitation is also evident among the independent variables employed in this model. As a result, Stepwise Regression estimation is used to filter the multicollinearity problem and achieve the optimum results with the highest explanatory power. The Stepwise regression estimation gave the same three variables

for the best mix for the highest explanatory power. The results of the estimation are summarised below in Table 6.6.

Consistent with the analysis above, Government Spending (*LNGS*) is again significant at 10% level in this Non-Oil model. In addition, it should also be noted that the coefficient of this independent variable is much higher than the Non-Oil *GDP*. However, this should also be expected that the Government Spending (*LNGS*) is very closely and directly related to private sector *GDP*, especially when the oil revenues are excluded from the analysis. However, the Market Capitalisation (*LNMCR)* has a lower significance at 10% level in comparison to Non-Oil *GDP* model discussed above. In addition to this decrease in the significance level, the coefficient for the variable is also lower in comparison to Model 2 results.

Table 6.6: Determinants of *NOPSGDP* in Saudi Arabia

Dependent Variable: LNNOPSGDP Method: Stepwise Regression			
Variable	Coefficient	Std. Error	Prob.
C	12.67563	1.822121	0.0000
LNMCR*	1.179982	0.165270	0.0876
LNNST	0.133707	0.016659	0.2554
LNGS*	0.928658	0.012815	0.0699
R-squared	0.916679	Mean dependent var	12.45737
Adjusted R-squared	0.890768	S.D. dependent var	0.257525
S.E. of regression	0.043510	Akaike info criterion	-3.206871
Sum squared resid	0.035968	Schwarz criterion	-2.868152
Log likelihood	48.68932	Hannan-Quinn criter.	-3.109332
F-statistic	142.8023	Durbin-Watson stat	1.855497
Prob(F-statistic)	0.000000		

Moreover, the Number of Shares Traded (*LNNST*) is not statistically significant for Non-Oil Private Sector *GDP*. As a result, it could be safe to say that the Saudi financial markets are still vulnerable to the oil revenues and when the oil revenues are taken out of the equation, their influence on the general economy is diminishing. This might suggest that the stock markets might be more of an amplifier for the macroeconomic growth rather than being the real cause.

In addition to the decreasing significance levels, the explanatory power of the model is also decreasing as it is evident on the *Adjusted* R^2 values. However, it is still high

with 0.89 at the lowest among these three models. Since the explanatory power of the three models analysed above are very high, reflected in the *Adjusted R-square* values of 0.95, 0.93 and 0.89 respectively (Tables 6.4, 6.5 and 6.6) for *GDP*, Non-oil *GDP* and Non-oil Sector *GDP*, the results are somewhat conclusive, suggesting the statistically significant influence of Market capitalisation (*LNMCR*) on three different measures of *GDP*, analysed above. Moreover, this influence is also independent from the effects of the oil revenues, which have a considerable impact on the Saudi economy in general.

6.3.4. Model 4: *GFC*

The Gross Fixed Capital (*GFC*) as expressed in Equation 5.25 is also examined in detail and the results are reported in Table 6.7.

$$lnGFC_t = a_0 + a_1 lnGS_t + a_2 lnMCR_t + a_3 lnNST_t + a_4 lnVSTR_t + a_5 lnGI_t + a_6 lnNT_t + u \quad (5.13)$$

Similar to the discussion above, for model 4 once again a Stepwise Regression analysis is employed in order to avoid from multicollinearity. The same three independent variables; *LNMCR*, *LNNST* and *LNGS*, are suggested as the model with the highest explanatory power with the results of the Stepwise Regression. The results can be seen in Table 6.7. First of all, Market Capitalization Ratio (*LNMCR*) and Number of Shares Traded (*LNNST*) consistent with the previous analyses are statistically significant at 5% level. However, it should also be noted that, despite the same level of significance, the coefficient of Market Capitalisation (*LNMCR*) is much higher in comparison to the coefficient of the Number of Shares Traded (*LNNST*). Since the Market Capitalisation is directly linked to the accumulation of Fixed Capital in an economy this should be expected. It is indeed interesting to see the market trading volume has also an effect on the fixed capital. However, it should be noted that the market volume also directly reflects the market demand and the livelihood. As a result, the positive and statistically significant relation to the *GFC* should be expected.

Although it is a bit lower than the previous estimations, the *Adjusted R square* value is still very high at 0.89, pointing out a very good explanatory power for the model. In addition, the Durbin-Watson statistics at 1.77 suggest that the model is safe against

the risk of autocorrelation, as can be expected from a Newey-West heteroskedasticity and autocorrelation consistent estimation.

Table 6.7: Determinants of *GFC* in Saudi Arabia

Dependent Variable: LNGFC Method: Stepwise Regression			
Variable	Coefficient	Std. Error	Prob.
C	17.20255	5.139863	0.0038
LNMCR**	0.998969	0.459446	0.0441
LNNST**	0.198085	0.058216	0.0254
LNGS	0.060240	0.035627	0.1091

R-squared	0.915495	Mean dependent var	11.69124
Adjusted R-squared	0.885670	S.D. dependent var	0.355670
S.E. of regression	0.120261	Akaike info criterion	-1.159805
Sum squared resid	0.245868	Schwarz criterion	-0.816206
Log likelihood	20.91765	Hannan-Quinn criter.	-1.068648
F-statistic	30.69543	Durbin-Watson stat	1.768592
Prob(F-statistic)	0.000000		

6.3.5. Model 5: *NOGFC*

The analysis is further detailed by examining Non-Oil Gross Fixed Capital (*LNNOGFC*) in Equation 5:29, as reported in Table 6.8:

$$lnNOGFC_t = a_0 + a_1\, lnGS_t + a_2\, lnMCR_t + a_3\, lnNST_t + a_4\, lnVSTR_t + a_5\, lnGI_t + a_6\, lnNT_t + u \quad (5.15)$$

As noted above, the model needed to be readjusted via a Stepwise Regression analysis as a result of high multicollinearity. Given the criteria, the regression analysis suggested that Market Capitalisation (*LNMCR*), Number of Shares Traded (*LNNST*) and Government Spending (*LNGS*) make up for the model with the highest explanatory power free of multicollinearity.

The results are in general, consistent with the findings established above, as the Number of Shares Traded *(LNNST*) is still statistically significant at 5% level in explaining the changes in *NOGFC*, as suggested by the fairly consistent coefficient. The consistency in the coefficient and the significance level suggests that the influence of Number of Shares Traded on *GFC* is consistent at a certain level and independent from the reflections of oil revenues on the general Saudi economy.

However, while the significance level remains the same at 5% level, the coefficient regarding the Market Capitalization is lower in Comparison to *GFC* analysis presented in Table 6.7 above and has declined from 0.99 to 0.75. This result and the previous analysis above suggest that the influence of Market Capitalization is vulnerable to oil revenues and reflects the changes in that front. In addition, Government Spending (*GS*), as depicted by *LNGS* in the model is statistically significant at 10% with a positive but small coefficient suggesting a small but statistically significant influence of Government Spending on Non-oil Gross Fixed Capital (Table 6.8).

The high *Adjusted* R^2 value of 0.89 (Table 6.8) offers reassurance as to the soundness and the explanatory power of the model and relevant analysis. In addition, the Durbin-Watson statistics level at 1.89 provides additional assurance against a possible autocorrelation issue. However, as noted above since, just as all the other regression models discussed in this section, this should be expected from a Newey-West autocorrelation and heteroskedasticity consistent estimations.

Table 6.8: Determinants of *NOGFC* in Saudi Arabia

Dependent Variable: LNNOGFC Method: Stepwise Regression			
Variable	Coefficient	Std. Error	Prob.
C	14.99193	4.438658	0.0036
LNMCR**	0.754800	0.396766	0.0342
LNNST**	0.158801	0.050274	0.0482
LNGS*	0.062667	0.030766	0.0575

R-squared	0.915620	Mean dependent var	11.57877
Adjusted R-squared	0.885839	S.D. dependent var	0.307374
S.E. of regression	0.103855	Akaike info criterion	-1.453153
Sum squared resid	0.183359	Schwarz criterion	-1.109554
Log likelihood	24.43783	Hannan-Quinn criter.	-1.361996
F-statistic	30.74498	Durbin-Watson stat	1.858760
Prob(F-statistic)	0.000000		

6.4. JOHANSEN CO-INTEGRATION ANALYSIS

Following OLS regression analyses, the next step in testing the relation between the six independent variables employed above, namely, Market Capitalization Ratio (*LNMCR*), Number of Shares Traded (*LNNST*), Value of Shares Traded (LNVSTR), General Index (*LNGI*), *Number of Transaction (LNNT) and Government Spending (GS) and the dependent variables of GDP, Non-Oil GDP, Non-oil Sector GDP*, Gross Fixed Capital and Non-oil Gross Fixed Capital. Co-integration between these independent and dependent variables was tested by the Johansen co-integration test to establish the long-term relationship.

In the Johansen co-integration test, the existence of a co-integration vector is signified by a trace test value exceeding the critical value of 5% level of significance. Such a result means that the co-integration tests are statistically significant at the level of 5% for determining a long-run relationship between the independent and dependent variables. On the other hand, if the trace-test results appear to be below the critical value, this points to a long-run equilibrium relationship between the independent and dependent variables.

6.4.1. Model 1: *GDP*

Following the same order of dependent variables in analysing, the first step is the tests for *GDP*, as depicted in Table 6.9. The co-integration analysis gives rather interesting results. First of all, the independent variable, the Number of Shares Traded (*LNNST*), which was consistently statistically significant in the *OLS* regression analyses above, does not appear to have a long-run relationship with the *GDP*.

Table 6.9: Johansen Co-integration test

	Hypothesized No. Of CE(s)	**Eigenvalue**	**Trace Statistics**	**Critical Value 5%**
LNMCR	**None**	0.218823	5.998592	15.49471
	At most 1	0.218823	0.071723	3.841466
LNNST	**None**	0.174153	4.868224	15.49471
	At most 1	0.011434	0.276000	3.841466
LNVSTR	**None**	0.231882	6.880785	15.49471

	At most 1	0.022628	0.549308	3.841466
LNGI	**None**	0.257186	7.210497	15.49471
	At most 1	0.003123	0.075075	3.841466
LNNT	**None**	0.380697	11.90706	15.49471
	At most 1	0.016823	0.407196	3.841466
LNGS	**None**	0.469379	15.77995	15.49471
	At most 1	0.002952	0.070959	3.841466

This lack of a long-run relationship is also evident for the other significant independent variables of Market Capitalization (*LNMCR*) and General Index (*LNGI*) (Table 6.9). The relationship between the *GDP* of the Saudi economy and these independent variables seem to be insignificant in the long-run, rather than following similar trends.

As a result, it can be suggested that while changes in the *GDP* can be explained by the changes in Market Capitalization (*LNMCR*), General Index (*LNGI*) and Number of Shares Traded (*LNNST*), they do not have a long-run relationship with the *GDP* and lack the power to determine it in the long run.

On the other hand, another variable, which was not statistically significant when using the *OLS* regression analysis, Government Spending (*LNGS*), seems to have a long-run co-integrating relationship with the level of *GDP* in the Saudi economy. This however can be explained with the heavy presence of government sector in the economy financed through the large oil revenues, as despite the bourgeoning private sector, the public sector continues to patronise the economy through various means.

6.4.2. Model 2: *NOGDP*

In this section, the analysis is extended to the relationship between Non-oil GDP and stock market. However, as can be seen in table 6.10, the results suggest a similar relationship set, as the Number of Shares Traded (*LNNST*) and the Value of Shares Traded (*LNVSTR*) do not seem to have a relationship with the Non-oil *GDP* (*LNNOGDP*), whereas the Government Spending (*LNGS*) provides evidence of a long-run co-integrating relationship. As a result, it can be suggested that while the changes in Non-oil *GDP* are sensitive to changes in Number of Shares Traded

(*LNNST*) and the Value of Shares Traded (*LNVSTR*), this relationship is not significant in the long run, whereas in the long run, Non-oil *GDP* is rather defined by Government Spending (*LNGS*). This again provides evidence for the overwhelming role of the government in the economy, as the state remains the main stake holder in the creation and generation of wealth and its allocation.

Despite the results of the *OLS* regression analysis presented below, the strongest determinant of the long-run Saudi economic performance seems to be Government Spending (*LNGS*), as the results presented in tables 6.8, 6.9 and 6.10 suggest. These results could be discouraging for the development of the Saudi financial markets and their influence on the macroeconomic performance. However, the results also indicate that the performance changes are still influenced by the Number of Shares Traded (*LNNST*), Value of Shares Traded (*LNVSTR*) and General Index (*LNGI*) despite the fact that they may not be statistically significant.

Table 6.10: Johansen Co-integration Test

	Hypothesized No. Of CE(s)	**Eigenvalue**	**Trace Statistics**	**Critical Value 5%**
LNMCR	**None**	0.277693	11.04509	15.49471
	At most 1	0.126203	3.237766	3.841466
LNNST	**None**	0.305532	10.07792	15.49471
	At most 1	0.053803	1.327312	3.841466
LNVSTR	**None**	0.331446	10.23282	15.49471
	At most 1	0.023451	0.569521	3.841466
LNGI	**None**	0.335288	12.54179	15.49471
	At most 1	0.107897	2.740165	3.841466
LNNT	**None**	0.367563	13.96528	15.49471
	At most 1	0.116366	2.969088	3.841466
LNGS	**None**	0.415849	18.07949	15.49471
	At most 1	0.194037	5.177204	3.841466

Despite the results of the *OLS* regression analysis presented above, the strongest determinant of the long-run Saudi economic performance seems to be Government Spending (*LNGS*), as the results presented in tables 6.7, 6.8 and 6.9 suggest. These

results could be discouraging for the development of the Saudi financial markets and their influence on the macroeconomic performance. However, the results also indicate that the performance changes are still influenced by the Number of Shares Traded (*LNNST*), Value of Shares Traded (*LNVSTR*) and General Index (*LNGI*) despite the fact that they may not be statistically significant.

6.4.3. Model 3: *NOPSGDP*

Further examination of the Non-oil Private Sector *GDP* (Table 6.11) produced evidence for the long-run co-integrating relationship between the various measures of the *GDP* of the Saudi economy and its Government Spending (*LNGS*), as the results depicted in table 6.11.

Table 6.11: Johansen Co-integration test

	Hypothesized No. Of CE(s)	**Eigenvalue**	**Trace Statistics**	**Critical Value 5%**
LNMCR	**None**	0.264325	10.38950	15.49471
	At most 1	0.118322	3.022280	3.841466
LNNST	**None**	0.385135	12.16897	15.49471
	At most 1	0.020475	0.496500	3.841466
LNVSTR	**None**	0.445445	14.29818	15.49471
	At most 1	0.006149	0.148026	3.841466
LNGI	**None**	0.345998	12.32803	15.49471
	At most 1	0.085175	2.136547	3.841466
LNNT	**None**	0.378750	14.28194	15.49471
	At most 1	0.112245	2.857439	3.841466
LNGS	**None**	0.488407	19.50288	15.49471
	At most 1	0.132721	3.417463	3.841466

6.4.4. Model 4: *GFC*

Further detailing the analysis by employing the Gross Fixed Capital (*LNGFC*) also provides a similar set of relationship between the independent variables and the dependent variable of *LNGFC*, which is depicted in table 6.12. The Government

Spending (*LNGS*) provides evidence that it is the only variable which has a co-integrating long-run relationship with the fixed capital accumulation of the Saudi economy.

Table 6.12: Johansen Co-integration Test

	Hypothesized No. Of CE(s)	**Eigenvalue**	**Trace Statistics**	**Critical Value 5%**
LNMCR	**None**	0.436035	12.62700	15.49471
	At most 1	0.001191	0.026213	3.841466
LNNST	**None**	0.376294	11.22021	15.49471
	At most 1	0.037223	0.834531	3.841466
LNVSTR	**None**	0.429847	12.38439	15.49471
	At most 1	0.001076	0.023680	3.841466
LNGI	**None**	0.428701	12.74510	15.49471
	At most 1	0.019291	0.428554	3.841466
LNNT	**None**	0.484197	15.01530	15.49471
	At most 1	0.020274	0.450613	3.841466
LNGS	**None**	0.625935	22.88993	15.49471
	At most 1	0.055525	1.256780	3.841466

6.4.5.Model 5: *NOGFC*

The search for the determinants of economic growth in the case of Saudi Arabia further examined by controlling the Non-oil performance, which as can be seen in table 6.13 proves to be even more significant.

Table 6.13: Johansen Co-integration Test

	Hypothesized No. Of CE(s)	**Eigenvalue**	**Trace Statistics**	**Critical Value 5%**
LNMCR	**None**	0.281072	7.259915	15.49471
	At most 1	2.390006	5.260005	3.841466
LNNST	**None**	0.328391	10.22317	15.49471
	At most 1	0.064441	1.465446	3.841466

LNVSTR	**None**	0.330373	8.926195	15.49471
	At most 1	0.004690	0.103431	3.841466
LNGI	**None**	0.250681	6.566312	15.49471
	At most 1	0.009829	0.217312	3.841466
LNNT	**None**	0.425021	12.41769	15.49471
	At most 1	0.010958	0.242412	3.841466
LNGS	**None**	0.541891	19.30055	15.49471
	At most 1	0.092127	2.126306	3.841466

As can be seen, the Government Spending (*LNGS*) is the only variable which has a long-run influence on the Gross Non-oil Fixed Capital of the Saudi economy. The influence of oil-revenues in the long-run is also evident in the much lower trace statistics of the other independent variables.

In summarising, in the light of the discussion and analyses above, it is evident that while the Number of Shares Traded (*LNNST*), the Value of Shares Traded (*LNVSTR*) and the General Index performance (*LNGI*) have statistically significant influences on the macroeconomic performance of the Saudi economy and cause fluctuations and changes, in the long run, the main variable defining this performance, however, remains to be Government Spending (*LNGS*).

6.5. GRANGER CAUSALITY TEST

Following the analysis of the time series model to study the variables that are non-stationary at the level and stationary at the first difference, and the *OLS* regression analysis to demonstrate the sensitivity of the dependent variables to the changes in the independent variables and finally controlling for series of co-integrating relations, the final stage of the analysis is the investigation of the causal relationships between the independent variables and the dependent variables representing the macro-economic performance of the Saudi economy. In order to investigate these causal relationships, the Granger causality test is employed for all models.

The probability values generated from the Granger Causality Tests are depicted in the Table (Table 6.14, 6.15, 6,16, 6.17 and 6.18). The reported F-statistics are a set of

standard tests for the joint hypothesis that the independent variables have causal relationships with the dependent variables.

6.5.1. Model 1: *GDP*

Starting the causality analysis by investigating the relationship between the independent variables, Market Capitalization Ratio (*LNMCR*), Number of Shares Traded (*LNNST*), Value of Shares Traded (*LNVSTR*), General Index (*LNGI*), Number of Transaction (*LNNT*) and Government Spending (*GS*) with the *GDP*, the results can be summarised as in Table 6.14:

Table 6.14: Granger Causality Test

	Null Hypothesis	**F-Statistic**	**Probability**
LNMCR	LNMCR does not Granger Cause LNGDP	2.27141	0.1305
	LNGDP does not Granger Cause LNMCR	2.01736	0.1605
LNNST	LNNST does not Granger Cause LNGDP	1.45685	0.2578
	LNGDP does not Granger Cause LNNST	0.73656	0.4919
LNVSTR	LNVSTR does not Granger Cause LNGDP	2.09423	0.1507
	LNGDP does not Granger Cause LNVSTR	0.90721	0.4204
LNGI	LNGI does not Granger Cause LNGDP	2.30773	0.1267
	LNGDP does not Granger Cause LNGI	1.93336	0.1721
LNNT	LNNT does not Granger Cause LNGDP	1.29224	0.2977
	LNGDP does not Granger Cause LNNT	4.06149	0.0340
LNGS	LNGS does not Granger Cause LNGDP	5.54287	0.0127
	LNGDP does not Granger Cause LNGS	0.13363	0.8757

As the results demonstrates, the probability of accepting the null hypothesis for Number of Shares Traded (*LNNST*) not causing a change in *GDP* (*LNGDP*) is 25.78%, while the probability of rejecting it is 74.22%. The causality from the other direction suggests a similar relationship. In the similar manner, the probability that *LNGDP* does not cause a change in *LNNST* is 49.19%, whereas the probability of rejecting such a relationship is 50.81%. Both of these results suggest a causal relationship between *GDP* and *MCR*, albeit in a weaker form, particularly from *GDP* to the Number of Shares Traded (*LNNST*).

The test for Value of Shares Traded (*LNVSTR*) also provides evidence for a similar relationship. While the probability of accepting the null hypothesis is 15.07%, the probability for rejecting it is 84.93%. On the other hand, the probability of rejecting a causal relationship from *LNGDP* to *LNVSTR* is 42.04%, whereas that of accepting it is 57.96%. In other words, 57.96% of the times, *LNGDP* causes a change in *LNVSTR*.

Continuing the analysis for the fourth independent variable, General Index (*LNGI*), the probability of accepting the null hypothesis is 12.67% and the probability of rejecting is 87.33%. In the other direction, the probability of accepting the null hypothesis that *GDP* does not Granger cause *GS* is 17.21% and rejecting it is 82.79%, providing evidence for a causal relationship between these two variables.

In addition, checking the causal relationship between *LNGDP* and *LNNT*, the probabilities for accepting the null hypothesis are 29.77% and 3.4% respectively. These results indicate that at 70.33% of the times, a change in the Number of Transactions (*LNNT*) causes a change in the *GDP*, and 96.6% of the times a change in the *GDP* results in a change in *LNNT*. The strength of the results indicates that with higher per capita income, Saudi people have a higher tendency to invest in the stock market.

Finally, the relationship between Government Spending (*LNGS*) and the *GDP* gives rather interesting results. First, the probability of accepting the null hypothesis that Government Spending does not cause *GDP* is only 1.27% and rejecting it is 98.73%, implying a strong influence of Government Spending on the *GDP*. More interestingly, the probability of accepting the null hypothesis that *GDP* does not cause Government Spending is 87.57%, suggesting that in 85.57 out of 100 times, the *GDP* does not create Government Spending. This one-way causal relationship suggests that the Saudi government uses Government Spending as a stimulator for the general economy and has a tendency to intervene by injecting liquidity into the economy when the macro-economic performance is not as strong. In addition, these results also suggest that this tendency is not for the long run and when the performance reaches the targeted levels, the spending becomes more controlled.

6-5-2- Model 2: *NOGDP*

When the analysis is further detailed by investigating the relationships between the Non-oil *GDP* as the dependent variable and the independent variables, the results in table 6.15. also indicate some interesting findings. First, the probability of accepting the null hypothesis for Market Capitalization Ratio (*LNMCR*) does not cause a change in Non-oil *GDP* (*LNNOGDP*) is 14.5%, while the probability of rejecting it is 85.5%. The causality in the other direction suggests a similar relationship.

Table 6.15: Granger Causality Test

	Null Hypothesis	**F-Statistic**	**Probability**
LNMCR	LNMCR does not Granger Cause LNNOGDP	2.14140	0.1450
	LNNOGDP does not Granger Cause LNMCR	1.15737	0.3355
LNNST	LNNST does not Granger Cause LNNOGDP	0.40887	0.6701
	LNNOGDP does not Granger Cause LNNST	1.27761	0.3016
LNVSTR	LNVSTR does not Granger Cause LNNOGDP	0.46098	0.6375
	LNNOGDP does not Granger Cause LNVSTR	0.49472	0.6174
LNGI	LNGI does not Granger Cause LNNOGDP	2.55079	0.1044
	LNNOGDP does not Granger Cause LNGI	0.94684	0.4055
LNNT	LNNT does not Granger Cause LNNOGDP	0.08675	0.9173
	LNNOGDP does not Granger Cause LNNT	1.80353	0.1918
LNGS	LNGS does not Granger Cause LNNOGDP	1.32341	0.2897
	LNNOGDP does not Granger Cause LNGS	0.41990	0.6631

The probability that *LNNOGDP* does not cause a change in *LNMCR* is 33.55%, whereas the probability of rejecting such a relationship is 66.45%. Both these results suggest a causal relationship between *NOGDP* and *MCR*.

It should also be noted that the probability of accepting the null hypothesis for Number of Shares Traded (*LNNST*) does not cause a change in Non-oil *GDP* (*LNNOGDP*) is 67.07%, while the probability of rejecting it is 32.93%. On the other hand, the causality from the other direction suggests a different relationship. The probability that *LNNOGDP* does not cause a change in *LNNST* is 30.16%, whereas the probability of rejecting such a relationship is 69.84%. These results suggest that while *NOGDP* causes a change in Number of Shares Traded (*LNNST*), NST does not cause a change in *NONGDP*.

The test for Value of Shares Traded (*LNVSTR*) provides evidence of a non-causal relationship from both ends. While the probability of accepting the null hypothesis is 63.75%, the probability for rejecting it is 36.25%. On the other hand, the probability of rejecting a causal relationship from *LNNOGDP* to *LNVSTR* is 61.74%, whereas accepting is 38.26%. In other words, *LNNOGDP* causes a change in *LNVSTR* only 38.26% of the times.

Continuing the analysis for the fourth independent variable, General Index (*LNGI*), the probability of accepting the null hypothesis is 10.44% and the probability of rejecting is 89.56%. In the other direction, the probability of accepting the null hypothesis that *NOGDP* does not Granger because *GS* is 40.55% and rejecting it is 59.45%, providing evidence for a causal relationship between these two variables.

In addition, checking the causal relationship between *LNNOGDP* and *LNNT*, the probabilities for accepting the null hypothesis are 91.73% and 19.18% respectively. These results indicate that only 8.27% of the times a change in the Number of Transactions (*LNNT*) causes a change in the *NOGDP*, and 81.82% of the times a change in the *NOGDP* results in a change in *LNNST*. These results suggest a one-way causal relation from *NOGDP* to *NT*, and indicate that the macro-economic performance is a determinant for the Number of transactions in the Saudi capital markets.

Finally, the relationship between the Government Spending (*LNGS*) and the *NOGDP* suggest the probability of accepting the null hypothesis that Government Spending does not cause *GDP* is 28.97% and rejecting it is 71.03%, This implies a strong influence of Government Spending on the *NOGDP*. More interestingly, the probability of accepting the null hypothesis that *NOGDP* does not cause Government Spending is 66.31%, suggesting that 66.31 out of 100 times, the *NOGDP* does not create Government Spending.

These results suggest a less clear causal relation between the macro-economic performance of the Saudi economy and the Saudi financial markets once oil revenues are taken out of the equation. Thus, it can be suggested that oil revenues are not the only determining factor of the dynamism of the Saudi economy, as the bourgeoning non-oil sector through economic diversification has contributed to the expansion of the economy. Such diversification can also be noticed in the non-oil economic activity of the government sector as well.

6-5-3- Model 3: *NOPSGDP*

In order to capture the real dynamics of the macro-economic performance of the Saudi economy and the Saudi financial markets without the influence of oil revenues, the analysis is further detailed by examining the Granger causality relationships between the Non-oil Sector *GDP* (*LNNOPSGDP*) and the independent variables. As can be seen in the results depicted in table 6.16, the probability of accepting the null hypothesis that Market Capitalization Ratio (*LNMCR*) does not cause a change in Non-oil Sector *GDP* (*LNNOPSGDP*) is 21.19%, while the probability of rejecting it is 79.81%. The causality in the other direction suggests a similar relationship. The probability that *LNNOPSGDP* does not cause a change in *LNMCR* is 31.58%, whereas the probability of rejecting such a relationship is 69.42%. Both these results suggest a causal relationship between *NOPSGDP* and *MCR*.

Similarly, the probability of accepting the null hypothesis that Number of Shares Traded (*LNNST*) does not cause a change in *NOPSGDP* (*LNNOPSGDP*) is 40.55%, while the probability of rejecting it is 59.45%. The causality from the other direction suggests a similar relationship. The probability that *LNNOPSGDP* does not cause a change in *LNNST* is 43.78%, whereas the probability of rejecting such a relationship

is 56.22%. Both these results suggest a causal relationship between *NOPSGDP* and *NST*.

The test for Value of Shares Traded (*LNVSTR*) also provides evidence for a different kind of relationship. While the probability of accepting the null hypothesis is 16.62%, the probability for rejecting it is 83.38%. On the other hand, the probability of rejecting a causal relationship from *LNNOPSGDP* to *LNVSTR* is 29.49%, whereas accepting it is 70.51%. In other words, only at 29.49% of the times does *LNNOPSGDP* cause a change in *LNVSTR*, indicating a somewhat one-way relationship from *VSTR* to *NOPSGDP*.

Table 6.16: Granger Causality Test

	Null Hypothesis	**F-Statistic**	**Probability**
LNMCR	LNMCR does not Granger Cause LNNOPSGDP	1.68548	0.2119
	LNNOPSGDP does not Granger Cause LNMCR	1.22534	0.3158
LNNST	LNNST does not Granger Cause LNNOPSGDP	0.94690	0.4055
	LNNOPSGDP does not Granger Cause LNNST	0.86302	0.4378
LNVSTR	LNVSTR does not Granger Cause LNNOPSGDP	1.97499	0.1662
	LNNOPSGDP does not Granger Cause LNVST	0.35590	0.7051
LNGI	LNGI does not Granger Cause LNNOPSGDP	2.11585	0.1480
	LNNOPSGDP does not Granger Cause LNGI	0.98395	0.3921
LNNT	LNNT does not Granger Cause LNNOPSGDP	0.07936	0.9240
	LNNOPSGDP does not Granger Cause LNNT	1.84064	0.1859
LNGS	LNGS does not Granger Cause LNNOPSGDP	0.28822	0.2897
	LNNOPSGDP does not Granger Cause LNGS	0.35754	0.7040

Continuing the analysis for the fourth independent variable, General Index (*LNGI*), the probability of accepting the null hypothesis is 14.80% and the probability of rejecting it is 85.20%. In the other direction, the probability of accepting the null hypothesis that *NOPSGDP* does not Granger because *GS* is 39.21% and rejecting it is 60.79%, providing evidence for a causal relationship between these two variables.

In addition, checking the causal relationship between *LNNOPSGDP* and *LNNT*, the probabilities for accepting the null hypothesis are 92.40% and 18.59% respectively. These results indicate that at only 7.6% of the times does a change in the Number of Transactions (*LNNT*) cause a change in the *GDP*, and 81.41% of the times a change in the *NOPSGDP* results in a change in LNNT. These results indicate another one-way causal relationship with *NOPSGDP*.

Finally, the relationship between Government Spending (*LNGS*) and *NOPSGDP* gives rather interesting results. First, the probability of accepting the null hypothesis that Government Spending does not cause *GDP* is 28.97% and rejecting it is 71.03%, implying a strong influence of Government Spending on *NOPSGDP*. More interestingly, the probability of accepting the null hypothesis that Non-oil Public Spending *GDP* does not cause Government Spending is 70.4%, suggesting that out of 100 times, in 70.4 the *GDP* does not create Government Spending.

6.5.4. Model 4: *GFC*

When the analysis shifts to investigating the Gross Fixed Capital (*GFC*) of the Saudi economy, the Granger Causality Test also suggests some interesting results, as the results presented in table 6.17, with stronger emphasis on one-way relationships. First, investigating the probability of accepting the null hypothesis of Market Capitalization Ratio (*LNMCR*) not causing a change in GFC (*LNGFC*) is only 3.05%, while the probability of rejecting it is 96.95%. The causality from the other direction suggests a relationship of totally opposite nature. The probability that *LNGFC* does not cause a change in *LNMCR* is 93.56%, whereas the probability of rejecting such a relationship is 6.44%. Both these results suggest a one-way causal relationship from *MCR* to *GFC*.

Second, the probability of accepting the null hypothesis of Number of Shares Traded (*LNNST*) not causing a change in *GFC* (*LNGFC*) is 2.39%, while the probability of

rejecting it is 97.61%. The causality from the other way around suggests a relationship of a totally opposite nature once again. The probability that *LNGDP* does not cause a change in *LNNST* is 68.59%, whereas the probability of rejecting such a relationship is 31.41%. Both these results suggest another one-way causal relationship from the Number of Shares Traded (*LNNST*) to Gross Fixed Capital (*LNGFC*).

Testing for Value of Shares Traded (*LNVSTR*) also provides evidence of a similar relationship, as the probability of accepting the null hypothesis is 1.97%, the probability of rejecting it is 98.03%. On the other hand, the probability of rejecting a causal relationship from *LNGFC* to *LNVSTR* is 80.77%, whereas accepting is 19.23%. In other words, 19.23% of the times, *LNGFC* causes a change in *LNVSTR*.

Table 6.17: Granger Causality Test

	Null Hypothesis	**F-Statistic**	**Probability**
LNMCR	LNMCR does not Granger Cause LNGFC	4.31607	0.0305
	LNGFC does not Granger Cause LNMCR	0.06678	0.9356
LNNST	LNNST does not Granger Cause LNGFC	4.69148	0.0239
	LNGFC does not Granger Cause LNNST	0.38553	0.6859
LNVSTR	LNVSTR does not Granger Cause LNGFC	4.99459	0.0197
	LNGFC does not Granger Cause LNVSTR	0.21632	0.8077
LNGI	LNGI does not Granger Cause LNGFC	4.59634	0.0254
	LNGFC does not Granger Cause LNGI	0.00204	0.9980
LNNT	LNNT does not Granger Cause LNGFC	5.90993	0.0113
	LNGFC does not Granger Cause LNNT	1.45342	0.2614
LNGS	LNGS does not Granger Cause LNGFC	0.27133	0.7656
	LNGFC does not Granger Cause LNGS	1.75711	0.2025

Continuing the analysis for the fourth independent variable, General Index (*LNGI*), the probability of accepting the null hypothesis is 2.54% and the probability of rejecting is 97.46%. In the other direction, the probability of accepting the null hypothesis that *GFC* does not Granger cause *GS* is 99.80% and rejecting it is 1.2%, providing evidence of another one-way causal relationship.

In addition, checking the causal relationship between *LNGFC* and *LNNT*, the probabilities for accepting the null hypothesis are 1.13% and 26.14% respectively. These results indicate that at 98.87% of the times, a change in the Number of Transactions (*LNNT*) causes a change in the *GFC*, and 73.86% of the times a change in the *GFC* results in a change in *LNNT*. The strength of the results indicates that with higher investments in fixed capital Saudi people has a higher tendency to invest in the stock market.

Finally, the relationship between Government Spending (*LNGS*) and *GFC* give rather interesting results. First, the probability of accepting the null hypothesis that Government Spending does not cause *GFC* is 76.56% and rejecting it is 23.44%, implying that Government Spending does not have an influence on *GFC*. More interestingly, the probability of accepting the null hypothesis that *GFC* does not cause Government Spending is 20.25%, suggesting that 79.75% of the times, Gross Fixed Capital creates Government Spending.

These results presented table 6.17 suggest an interesting trend in the causal relationship between the Gross Fixed Capital of Saudi Arabia and the independent variables representing the stock market. The relationships seem to be one-way from Gross Fixed Capital to the financial markets, suggesting that additions to the fixed capital encourage activity and strength in the financial markets. Another interesting result comes from the nature of the causal relationship between the *GFC* and the Government Spending. While the results above in Tables 6.14, 6.15 and 6.16 indicate that Government Spending is an important factor in defining the level of *GDP*, the relation goes in the opposite direction, when it comes to the *GFC*, and *GFC* itself becomes an important cause explaining the level of Government Spending itself. These interesting results will further be investigated by excluding the influence of the oil revenues by examining the relationships with Non-oil Gross Fixed Capital. .

6.5.5. Model 5: *NOGFC*

The results presented Table 6.18 suggest similar types of causal relationships between the independent variables representing the Saudi financial markets and the Non-oil Gross Fixed Capital to the results presented above in Table 6.16. First, investigating the probability of accepting the null hypothesis for Market Capitalization Ratio

(*LNMCR*) is not causing a change in *NOGFC* (*LNNOGFC*) is 24.29%, while the probability of rejecting it is 75.71%. The causality from the other way around suggests a relationship of totally opposite nature. The probability that *LNGFC* does not cause a change in *LNMCR* is 86.16%, whereas; the probability of rejecting such a relationship is 13.84%. Both these results suggest a one-way causal relationship from *MCR* to *NOGFC*.

Second, the probability of accepting that the null hypothesis for Number of Shares Traded (*LNNST*) does not causing a change in *NOGFC* (*LNNOGFC*) is 5.13%, while the probability of rejecting it is 94.87%. The causality from the other direction suggests a relationship of the totally opposite nature once again. The probability that *LNGDP* does not cause a change in *LNNST* is 44.88%, whereas the probability of rejecting such a relationship is 55.22%. Both these results show a causal relationship between the Number of Shares Traded (*LNNST*) and Non-oil Gross Fixed Capital (*LNNOGFC*), although the causality is much stronger from the former to the latter.

Table 6.18: Granger Causality Test

	Null Hypothesis	**F-Statistic**	**Probability**
LNMCR	LNMCR does not Granger Cause LNNOGFC	1.53968	0.2429
	LNNOGFC does not Granger Cause LNMCR	0.15025	0.8616
LNNST	LNNST does not Granger Cause LNNOGFC	3.55619	0.0513
	LNNOGFC does not Granger Cause LNNST	0.84021	0.4488
LNVSTR	LNVSTR does not Granger Cause LNNOGFC	2.46132	0.1151
	LNNOGFC does not Granger Cause LNVSTR	0.21875	0.8057
LNGI	LNGI does not Granger Cause LNNOGFC	1.45596	0.2608
	LNNOGFC does not Granger Cause LNGI	0.01855	0.9816
LNNT	LNNT does not Granger Cause	2.79931	0.0889

	LNNOGFC		
	LNNOGFC does not Granger Cause LNNT	2.28832	0.1318
LNGS	LNGS does not Granger Cause LNNOGFC	0.72918	0.4968
	LNNOGFC does not Granger Cause LNGS	0.92865	0.4142

Testing for Value of Shares Traded (*LNVSTR*) also provides evidence of a similar relationship. While the probability of accepting the null hypothesis is 11.51%, the probability for rejecting it is 88.49%. On the other hand, the probability of rejecting a causal relationship from *LNNOGFC* to *LNVSTR* is 80.57%, whereas accepting it is 19.43%. In other words, 19.43% of the times *LNNOGFC* causes a change in *LNVSTR*.

Continuing the analysis for the fourth independent variable, General Index (*LNGI*), the probability of accepting the null hypothesis is 26.08% and the probability of rejecting is 73.92%. In the other direction, the probability of accepting the null hypothesis that *NOGFC* does not Granger cause *GS* is 98.16% and rejecting it is 1.84%, providing evidence for another one-way causal relationship.

In addition, checking the causal relationship between *LNNOGFC* and *LNNT*, the probabilities for accepting the null hypotheses are 8.89% and 13.18% respectively. These results indicate that at 91.11% of the times a change in the Number of Transactions (*LNNT*) causes a change in the Non-oil *GFC*, and 86.82% of the times a change in the Non-oil *GFC* results in a change in *LNNT*. This strength of the results indicates that with higher investments in fixed capital, Saudi people have higher tendencies to invest in the stock market, similar to the analysis for the *GFC* presented above in table 6.17.

Finally, the relationship between the Government Spending (*LNGS*) and the *NOGFC* gives rather interesting results. First, the probability of accepting the null hypothesis that Government Spending does not cause *NOGFC* is 49.68% and rejecting it is 50.32%, implying that Government Spending does have a weak causal influence on the *NOGFC*. More interestingly, the probability of accepting the null hypothesis that

NOGFC does not cause Government Spending is 41.42%, suggesting that 58.58% of the times Non-oil Gross Fixed Capital creates Government Spending.

Overall, these results are consistent with the results for the Gross Fixed Capital (*GFC*) presented above in table 6.16, which are also consistent with the results of the other, table 14, table 15 and table 16. Thus, the level and the strength of the relationships seem to decrease when the influence of the oil revenues is taken out of the equation. These results suggest an expected significant influence of oil revenues on the Saudi economy and Saudi financial markets.

6.6. ERROR CORRECTION MODEL (*ECM*)

The concept of error correction is related to cointegration because this relationship describes the long-run equilibrium. If a set of variables has cointegrated, then there exists an Error Correction Model (*ECM*) to describe the short-run adjustment to equilibrium (Engle and Granger, 1987).

The incidence of mutual cointegration between variables indicates that the Granger must be causal in one direction, at least, but the rules of engagement do not refer to the direction of causality between the variables. Thus, to verify the rules of engagement, tests of causation are carried out in the context of *ECM* (Brooks, 2008).

In addition, the *t*-statistics on the coefficients of the lagged error correction term (ECT_{t-1}) should indicate the significance of long-run causality between the two variables. The statistical significance of the *t*-statistics in tests should be at most 5%.

6.6.1. Model 1: *GDP*

The results of ECM with *GDP* in Table 6.19 show that there is a bi-directional causality that runs from *GDP* to *MCR*, *GDP* to *NST*, but only one directional from *GDP* to *GS*. The products of the process (*MCR*, *NST* and *GS*) are all statistically significant at the 5% level. The *ECM* (EC_{t-1}) shows that the significant results indicate the speed of adjustment to the long-run equilibrium, and reveal the direction of causality, which runs from Economic Growth (*GDP)* to Government Spending (*GS*).

Table 6.19: Causality with *ECM* Test with *GDP*

Variables	ECT_{t-1}	*t*-Stat
LNMCR	-0.23132	-2.89
LNGDP	0.61103	1.18
LNNST	-0.75130	-3.71
LNGDP	0.75103	1.17
LNGS	-0.12070	-3.36
LNGDP	0.64072	1.29

This result presented in table 6.19 is also consistent with the regression analysis discussed above. Since the regression analysis showed that there was no statistically significant causal relationship between the Government Spending (*GS*) and the *GDP*, the direction of the relationship seems to be the other way around. In other words, in Kingdom of Saudi Arabia, the economic growth leads to increase in the Government Spending (*GS*), whereas, the Market Capitalisation (*LNMCR*) and Number of Shares Traded (*LNNST*) seem to be supporting the economic growth proxied by the *GDP*.

6.6.2. Model 2: *NOGDP*

The results of ECM with *NOGDP* in Table 6.20 show that there is a bi-directional causality that runs from *NOGDP* to *MCR*, *NOGDP* to *NST* and *NOGDP* to *GS*. The products of the process (*MCR*, *NST* and *GS*) are all statistically significant at the 5% level. The *ECM* (EC_{t-1}) shows that the significant results indicate the speed of adjustment to the long-run equilibrium, and reveal the direction of causality.

Table 6.20: Causality with *ECM* Test with *NOGDP*

Variables	ECT_{t-1}	*t*-Stat
LNMCR	-0.98640	-3.18
LNNOGDP	0.77832	1.24
LNNST	-0.29080	-2.66
LNNOGDP	0.71832	1.41
LNGS	-0.79216	-2.61
LNNOGDP	0.51103	1.24

Consistent with the analysis above, all three variables seem to be in a bi-directional causal relationship with *NOGDP*. Different from the results for the *GDP*, summarized

above in Table 6.19, this time all three variables seem to be in a causal and bi-directional relationship with *NOGDP*. In other words, all three variables cause a change in the *NOGDP* positively and at the same time they are also positively affected by this change in the level of *NOGDP*.

6.6.3. Model 3: *NOPSGDP*

The results of ECM with *NOPSGDP* in Table 6.21 show that there is a bi-directional causality that runs from *NOPSGDP* to *MCR*, *NOPSGDP* to *NST* and *NOPSGDP* to *GS*. The products of the process (*MCR*, *NST* and *GS*) are all statistically significant at the 5% level. The *ECM* (EC_{t-1}) shows that the significant results indicate the speed of adjustment to the long-run equilibrium, and reveal the direction of causality.

Consistent with the analysis above, all three variables seem to be in a bi-directional causal relationship with *NOPSGDP*. In other words, all three variables cause a change in the *NOPSGDP* positively and at the same time they are also positively affected by this change in the level of *NOPSGDP*.

Table 6.21: Causality with *ECM* Test with *NOPSGDP*

Variables	ECT_{t-1}	*t*-Stat
LNMCR	-0.82323	-3.49
LNNOPSGDP	-0.19943	-1.37
LNNST	-0.34679	-1.38
LNNOPSGDP	0.81532	2.87
LNGS	0.26802	3.39
LNNOPSGDP	0.11877	3.57

6.6.4. Model 4: *GFC*

The results of *ECM* with *GFC* in Table 6.22 show that there is a bi-directional causality that runs from *GFC* to *MCR*, *GFC* to *NST*, but only one directional from *GFC* to *GS*. The products of the process (*MCR*, *NST* and *GS*) are all statistically significant at the 5% level. The *ECM* (EC_{t-1}) shows that the significant results indicate the speed of adjustment to the long-run equilibrium, and reveal the direction

of causality, which runs from the macroeconomic indicator *GFC* to Government Spending (*GS*).

Table 6.22: Causality with *ECM* Test with *GFC*

Variables	ECT_{t-1}	*t*-Stat
LNMCR	-0.32626	-3.65
LNGFC	0.68651	1.17
LNNST	-0.78955	-3.93
LNGFFC	0.79312	1.11
LNGS	-0.16623	-3.48
LNGFC	0.64490	1.53

This result is also consistent with the regression analysis discussed above, as well as the *ECM* model for the *GDP*. Since the regression analysis showed that there was no statistically significant causal relationship between the Government Spending (*GS*) and the *GFC*, the direction of the relationship seems to be the other way around. In other words, in Kingdom of Saudi Arabia, the economic growth in fact supports the Government Spending, whereas, the Market Capitalisation (*LNMCR*) and Number of Shares Traded (*LNNST*) seem to be supporting the economic growth proxied by the *GFC*.

6.6.5. Model 5: *NOGFC*

The results of *ECM* with *NOGFC* in Table 6.23 show that there is a bi-directional causality that runs from *NOGFC* to *MCR*, *NOGFC* to *NST* and *NOGFC* to *GS*. The products of the process (*MCR*, *NST* and *GS*) are all statistically significant at the 5% level. The Error Correction Model (EC_{t-1}) shows that the significant results indicate the speed of adjustment to the long-run equilibrium, and reveal the direction of causality.

Consistent with the analysis below, all three variables seem to be in a bi-directional causal relationship with *NOGFC*. In other words, all three variables cause a change in the *NOGFC* positively and at the same time they are also positively affected by this change in the level of *NOGFC*.

Table 6.23: Causality with *ECM* Test with *NOGFC*

Variables	ECT_{t-1}	*t*-Stat
LNMCR	-0.09502	-0.87
LNNOGFC	-0.02346	-4.41
LNNST	-0.07831	-3.66
LNNOGFC	-0.02833	-3.78
LNGS	-0.83756	-3.15
LNNOGFC	-0.28432	-1.76

7.6. CONCLUSION

This chapter attempts to present an empirical evidence for the relationship between Saudi stock markets proxies by various measures as independent variables throughout the analysis, employing numerous statistical and econometric methods.

Initially, the analysis starts with the examination of the general characteristics of the data for solid results in the following sections. In the process, first, the limitation of the sample period and the time-series characteristics of the data required attention. In order to eliminate the issues arising from the limited time period and achieve normal distribution, the natural logarithms of the variables were employed in the analysis throughout. Secondly, to test whether the sample characteristics are stationary, two types of Unit Roots tests, Augmented Dickey-Fuller and Phillips-Perron, were employed. The results of both these tests showed that the data is not stationary in the levels, but becomes stationary at the first difference. In accordance with these results, the *OLS* regression analysis was structured and examined.

The regression analysis was also itself subject to investigation as a methodology. In relation to the time-series characteristics of the data, the results would be subject to auto-correlation and heteroskedasticity. The Durbin-Watson statistics results (1.81, 1.72, 1.86, 1.77 and 1.86) suggest that the models are safe against the risk of autocorrelation. As a result, all regression results reported in this chapter were Newey-West heteroskedasticity and auto-correlation robust estimations.

The *OLS* regression analysis provided consistent results in general. The Market Capitalisation (*LNMC*) was statistically significant in all of the results presented. It

was also joined by Number of Shares Traded (*LNNST*) in all of the results, except the *Non-Oil PSGDP* model, and Government Spending (*LNGS*) in some of the results showed statistically significant for *NOGDP, NOPSGDP* and *NOGFC*. An interesting feature of the *OLS* regression results is the decline in the coefficients once the influence of the oil revenues on the Saudi economy was excluded from the equation. This should be considered as further evidence of the strong influence of oil revenues on the macro-economic performance of Saudi Arabia.

The data was further scrutinised by employing other methodologies. Johansen Co-integration analysis was employed to identify the long-run relationship between the numerous dependent variables employed and the independent variables.

It should be noted that the most interesting and important aspect of this analysis is the emergence of Government Spending as the dominant factor in the long-run. To summarise, it appeared from the results that the health of the Saudi economy is more of a result of the Government monetary and fiscal policies than the development of and the activities in the Saudi financial markets. These results indicate that despite the recent development and growth in the Saudi financial markets, the economy in general still rely on the oil revenues and government policies in the long run.

These suggestions were also supported by the results from Granger Causality Analysis. The results of the Granger Causality Analysis presented above suggested some interesting and important findings. First, the variables representing the financial markets provided non-conclusive results, suggesting a requirement for further investigation. Second, it became evident in the causality analysis that Saudi government plays an active role in the economy and intervenes when the macro-economic performance does not achieve desired results. In relation to this, these interventions do not seem to be long-term and structural, but rather, situational. Third, the causal relationships from the independent variables of the financial markets weakened when the influence of the oil revenues was taken out of the equation, suggesting that the strength and the depth of the Saudi financial markets are still reliant on the oil revenues. Finally, the causal relationships between the financial markets and Gross Fixed Capital suggest a one-directional relationship from the *GFC* to the financial markets, implying that Saudi financial markets are based more on the real economy than on the developed financial markets.

The results of *ECM* with all the models for *GDP* showed that there is a bi-directional causality that runs from *GDP, NOGDP, NOPSGDP, GFC* and *NOGFC* to *MCR,* and to *NST*, but it is only one-directional from *GDP* to *GS* and from *GFC* to *GS*. The products of the process *MCR*, *NST* and *GS* are all statistically significant at the 5% level. The Error Correction Model (EC_{t-1}) shows that the significant results indicate the speed of adjustment to the long-run equilibrium, and reveal the direction of causality. In other words, *MCR* and *NST* variables cause a change in the *GDP, NOGDP, NOPSGDP*, *GFC* and *NOGFC* positively and at the same time they are also positively affected by this change on the level of *GDP, NOGDP, NOPSGDP, GFC* and *NOGFC*.

CHAPTER 7
PERCEPTIONS ON THE SAUDI STOCK MARKET IMPACTING ECONOMIC GROWTH: INTERVIEW ANALYSIS

7.1. INTRODUCTION

Chapter 6 provided an econometric analysis with the objective of establishing causality between economic growth and stock market variables in the case of Saudi Arabia. In order to substantiate the results of the empirical chapter, this chapter aims to analyse the primary data collected through an interview schedule from various stackeholders. This helps to give a qualitative meaning to the quantitatively established results.

This chapter, thus, analyses the answers of the eighteen selected respondents to each question to obtain the best possible understanding regarding different aspects of Saudi stock market development. All the interviewees are professionals and have a background in the Saudi stock market in *Tadawul* in different positions or as financial analysts in institutions of financial intermediation.

Considering that this is a very specific area and therefore require a very specific knowledge and knowledgeable individuals, care had to be taken in defining the sample. It is not possible to define the population, due not to having a particularly defined sphere where such individuals are located so that their population can be known. Therefore, 'rule of thumb' strategy enables to determine the sample, which was done through purposive sampling. This is due to the fact that 'knowing people who knows the subject' is considered to provide the most efficient technique to collect the necessary data when the population cannot even be guessed. Purposive sampling enables to reach people as part of the sample, who have particular knowledge about the subject matter. It should also be stated that since the research did not know either people with such specialization, therefore 'snow-balling' method was utilized to identifying the best people who could answer the questions. This implied that after locating a particular person with the necessary knowledge and information, after the interview conducted he was asked to direct the researcher to

another individual(s) who can also be helpful and available for the interviews. Through purposive sampling and snow-ball strategy, it was possible to reach out 18 individuals with specialized knowledge on the subject matter.

As regards to the research method used to analyse the data generated through interviews, coding analysis based on thematic approach is used. Ghauri and Gronhaug (2010) state that using a program for analysing qualitative data is advantageous when there is a large quantity of data to be coded, annotated and linked. However if the quantity of data is small, it is not necessary to use such a program and data can be analysed manually. As the sample in this research consists of only eighteen respondents, it was considered that manual analysis was more appropriate; and hence coding in this study was conducted through a manual analysis rather than using any relevant software.

The mechanistic of the coding system is based on deconstruction the given answers through content analysis in a thematic manner. In other words, the given answers by all the sample on a particular question, are carefully deconstructed to locate the main key words from each of the respondents. After listing all the main key words, an attempt, then, is made to develop a general theme out of the given answers. In further examining the raw material as culmination of the interviews, each of the emergent keywords/sentences then are subjected to another explanatory process through which the statements of each of the respondents are listed for the given keywords/sentence. With this, all the aspects of the particular question and theme is analysed in detail, applied and exemplified in the following sections.

7.2. DATA ANALYSIS

Based on the explanations above, the following sections, hence, present the coding analysis and the related results through a thematic analysis.

7.2.1. Reasons for the Creation of the Stock Market in Saudi Arabia

Chapter 4 discussed the development and emergence of the Saudi stock market, which started its activity in the mid-thirties. However, the stock market was informal

and random until the early 1980s and at the same time it suffered from many structural and regulatory distortions. In 1984, the Saudi government created a formal financial stock market and established the Capital Market Authority to organise and develop it. Further, in 2007, the SSM or Saudi Stock Market Company (*Tadawul*) was established. There was an urgent need to create a formal and advanced market to keep up with a steady increase in the number of firms, shareholders, liquidity and capitalisation in the stock market as a result of the increase in the Saudization of foreign banks, the privatisation of some government sectors, the privatisation of family companies and rapid economic growth. It is therefore important that the reasons of the creation of *Tadawul* should be made clear in referring to the perceptions, opinions and knowledge of the various participants, as in the following questions and their analysis:

The participants were asked to express their opinions on the reasons for the creation of the stock market in Saudi Arabia (Question 1**). (***What were the main reasons for the creation of the stock market in Saudi Arabia?*). The coded answers for this are provided in Table 7.1.

Table 7.1: Reasons for the creation of the Saudi stock market

Question1	What were the main reasons for the creation of the stock market in Saudi Arabia?
Focused Coding 1	
1	**Reforming and Structuring the Operation of the Financial Sector** • To reform the structure of stock market • To provide and disclose information pertaining to securities • To preserve the rights of shareholders • To achieve fairness, efficiency and transparency in securities transactions • To diminish the risks associated with securities transactions • Corporate Governance
2	• **Meeting the requirements of economic development to accelerate the development process** • Mobilisation of savings and providing liquidity • Attracting foreign capital to invest in Saudi stock market • Increasing privatisation programs • Reducing dependence on government spending • Creating opportunities for small investors

	• Providing a diversified and comprehensive financial services
Theme 1	The creation of an official and integrated stock market in Saudi Arabia has been very important to provide comprehensive, diverse, and competitive financial services and high efficiency, as well as meeting the financial requirements of economic development through capital markets to support economic growth.

Table 7.1 present the reasons of the creation of the Saudi stock market on the basis of the answers obtained from the interviewees. The focused coding in table 7.1 categorises the whole set of answers given to question1 in terms of the main reasons for the creation of the stock market in Saudi Arabia according to the interviewees.

Table 7.1 shows that the participants have identified two main reasons for the creation of the stock market in Saudi Arabia, which are the reform and structure of the financial sector in terms of capital markets to provide and disclose information pertaining to securities, preserve the rights of shareholders, maintain fairness, efficiency and transparency in securities transactions, achieve fairness, efficiency and transparency in securities transactions, diminish the risks associated with securities transactions and corporate governance. Furthermore, they also cited meeting the requirements of economic development to accelerate the development process by the mobilisation of savings and the provision of liquidity, attracting foreign capital to invest in the Saudi stock market, increasing privatisation programs, reducing dependence on government spending, creating opportunities for small investors and providing diversified and comprehensive financial services.

Tables 7.2 presents the results for focused coding 1 of question 1. It shows that the eighteen participants in the interviews had various perceptions of the first main reason for reforming and structuring the operation of the financial sector. While 5 interviewees considered providing and disclosing information pertaining to securities as the first step to resolving the random nature of the market, 5 further interviewees focused on preserving the rights of shareholders to protect investors in securities. In addition, further, 7 emphasised the achievement of fairness, efficiency and transparency in securities transactions, 5 indicated the reduction of the risks associated with securities transactions and 4 confirmed the need for corporate governance.

Table 7.2: Focused Coding Number 1 for Question 1

Reforming and Structuring the Operation of the Financial Sector		
Participants	Total	Aims
4,5,16,17,18	5	To provide and disclose information pertaining to securities
4,5,8,16,18	5	To preserve the rights of shareholders
4,5,6,8,16,17,18	7	To achieve fairness, efficiency and transparency in securities transactions
4,5,16,17,18	5	To diminish the risks associated with securities transactions
13,14,17,18	4	Corporate Governance

Tables 7.3 depicts the results for focused coding 2 of question 1. It shows that the eighteen participants in the interviews identified various factors as being the second main reason for meeting the requirements of economic development to support economic growth through the creation of an official stock market in Saudi Arabia. While 15 interviewees regarded the requirement of the mobilisation of savings and providing liquidity as the second main reason, 10 recognized the importance of attracting foreign capital to invest in the Saudi stock market, and 9 identified increasing privatization programs. Moreover, 11 interviewees mentioned the need to reduce dependence on government spending in that period; 8 emphasized the creation of opportunities for small investors and 9 stressed the provision of diversified and comprehensive financial services.

Table 7.3: Focused Coding Number 2 for Question 1

Meeting the requirements of economic development to accelerate the development process		
Participants	Total	Requirements
1-3,5-7,9-14, 15,17,18	15	Mobilisation of savings and providing liquidity
1-3,5-7,9,11,12,15,	10	Attracting foreign capital to invest in the Saudi stock market
1-3,7- 9,11,12,16	9	Increasing privatisation programs
1-3,7-9,11,12,16-18	11	Reducing dependence on government spending
1,7-9,11,12,13,16	8	Creating opportunities for small investors
2,3,5-7,9,11,12,15	9	Providing diversified and comprehensive financial services

7.2.2. Responding to the lack of institutional investors

The lack of institutional trading has inhibited the development of the market and caused losses to individual investors in the domestic market. In Saudi Arabia the rates of individual investors represent a large numbers than institution investors which means increase the risks of volatility and instability.

Question 2 (*Has the lack of institutional investors inhibited development of the market? If so, in what way*?) was set in attempt to discover if the lack of institutional investors has inhibited development of the market in Saudi Arabia.

Table 7.4: Responding to the lack of institutional investors

Question 2	Has the lack of institutional investors inhibited development of the market? If so, in what way?
Focused Coding	
1	• Yes; failure of the market
2	• Yes; lack of liquidity
3	• Yes; lack of information
4	• Yes; increased risk
Theme 2	The lack of institutional investors has inhibited development of the market causing failure of the market, lack of liquidity, lack of information and increased risk.

Table 7.4 presents the results of question 2 on the basis of the answers obtained from the interviewees. Focused coding in table 7.4 categorises the whole set of answers given by the interviewees. Participants agreed that the lack of institutional investors inhibited development of the market, causing failure of the market, lack of liquidity, lack of information and increased risk.

Table 7.5: Focused Coding Numbers 1, 2, 3 and 4 for Question 2

1. Yes. Failure of the market		
Participants	Total	Failure of the market
1-5, 7-9, 11-18	16	
2. Yes. Lack of liquidity		
Participants	Total	Lack of liquidity
1-5,7-9,11-14, 16- 18	15	

3. Yes. Increased risk		
Participants	Total	Increased risk
1-18	18	
4. Yes. Lack of information		
Participants	Total	Lack of information
1-5, 7-9, 11-18	16	

Table 7.5 gives the results for focused coding 1, 2, 3, and 4 of question 2 and shows that 16 participants in the interviews agreed that the lack of institutional investors inhibited development of the market, causing failure of the market; while 15 interviewees stated that it caused lack of liquidity, all 18 perceived that it led to increased risk and 16 were of the opinion it resulted in lack of information.

7.2.3. The link between stock market development and economic growth

Although it is recognised that there is a correlation between economic growth and financial development, as also indicated by the previous chapter, the findings on the direction of the causal relationship between them can be questioned. Some researchers take the view that the financial markets accelerate the pace of economic growth by increasing the liquidity of global financial assets and facilitate risk diversification for investors, encourage investment decisions based on available information, increase productivity by encouraging corporate managers to work hard for the benefit of shareholders, and transfer savings to larger companies. Others argue that the growth of the financial sector results in growth in economic activity, given that the financial markets mirror the economy, therefore reflecting economic growth, and develop the market by providing the financial services and investment products necessary for economic development.

There is considerable debate in Saudi Arabia about the relationship between the local stock market and economic growth with the momentum given to the market in recent years, and this has been questioned, particularly after the series of sharp declines, which began in February 25, 2006, and saw stock market losses amounting to 52% of market value in 2007. However, the economy is growing at a healthy pace, with oil prices rising steadily. Furthermore, the Saudi government has raised the level of government spending through the largest national budget in the history of the country,

with estimated expenditure of 380 billion riyals and revenues of 400 billion riyals in 2007. Question 3, thus, aims to explore the direct research question of this study.

Question 3 (a) *Would you please reflect on the link between stock market development and business growth? (b) What is the direction of causality? (c) Does the stock market contribute to economic growth and business development or vice versa? Please give a reason for your answer?*) was set in an attempt to determine the interviewees' perceptions of the link, the causality and the contributions of business development and stock market development.

Table 7.6: Stock market development and business growth

Focused Coding 3(a)	
1	• Stock market development provides more financial services and mobilisation of financial savings
2	• Stock market development is an inevitable result of business development in the petroleum economy
3	• Both stock market development and business increase the profitability of providing financial services and accelerates economic growth
4	• No relationship. The development of one is not necessary for the development of the other.
Focused Coding 3(b)	
1	• From stock market development to economic growth
2	• From economic growth to stock market development
3	• From both
4	• No direction of causality
Focused Coding 3(c)	
1	**Yes, the stock market contributes to economic growth** • Financing of small projects • Reduce capital cost
2	**No, it does not contribute to economic growth.** • Importance of oil • government intervention
3	**Vice versa**
Theme 3(a)	There are four opinions, three in agreement that there are different links between business development and stock market development, while there is also an opinion that there is no link.
Theme 3(b)	The direction of causality comes from stock market to economic growth, from economic growth to stock market development; bi-directional, or there is no direction of causality
Theme 3(c)	The stock market contributes to economic growth and business development in different ways, or vice versa.

According to table 7.6, various positions were taken by the participants on each of the issues covered in this section. Some expressed positive opinions, while some others could not see any correlation between economic or business growth and the stock market.

Table 7.6 shows the results of the focused coding for question 3 (a). It shows disagreement among the interviewees on the link between business development and stock market development. Four different perceptions emerge as a result: stock market development provides more financial services and the mobilisation of financial savings; stock market development is an inevitable result of business development in the petroleum economy; both stock market development and business increase the profitability of providing financial services and accelerates economic growth, and; there is no relationship, as the development of one is not necessary for the development of the other.

Table 7.6 also shows the results of the focused coding for question 3 (b). It reveals argument among the interviewees regarding the direction of causality. As can be seen some argue that the causality runs 'from stock market development to economic growth', where the development of financial institutions and markets increases the savings and channels them into productive investments. Some interviewees thought that the financial markets accelerated economic growth by increasing the liquidity of financial assets, facilitate risk diversification, and encouraged investment decisions based on the information available, and increase productivity. Some other interviewees argued that the observed causality runs 'from economic growth to stock market development', and this opinion confirms the negative role of the financial system. According to this view, the development of the financial sector occurs as aggregate business growth. Moreover, continued economic expansion requires more financial services and instruments. Other interviewees argued that it is a 'bi-directional causality', as business growth makes the development of the system of financial intermediation is profitable that encourages introducing more financial services and instruments, in the same time establishment of a functioning and development of stock market lead to a rapid economic growth and. The rest of the participants argued that there is 'no direction of causality'.

In addition, table 7.6 shows the results of the focused coding for question 3 (c), which asked whether the stock market contributed to economic growth or not, or vice versa, in the interviewees' opinions and perceptions. Some of the respondents were of the opinion that the stock market contributed to economic growth, with some stating that this contribution came through the financing of small projects and others that it was achieved through the reduction in capital cost. Others took the view that it did not contribute to economic growth, with some giving the importance of oil in the Saudi economy as the reason for this, while others stated that it was because of the strong government intervention in the economy. Conversely, another group perceived that the influence was bi-directional.

Table 7.7 presents the focused coding No. 1 for question 3(a). It shows that nine participants believed that stock market development was linked to economic growth because it provides more financial services and mobilisation of financial savings.

Table 7.7: Focused Coding Number 1 for Question 3(a)

Providing more financial services and mobilization of financial savings		
Participants	Total	Stock market development provides more financial services and mobilisation of financial savings
5,7,9,10,12,13,14,17,18	9	

Table 7.8 presents the focused coding No. 2 for question 3(a). It can be seen that 3 interviewees held that there was a link between stock market development and economic growth as the Saudi oil economy would inevitably lead to such development.

Table 7.8: Focused Coding Number 2 for Question 3(a)

It is an inevitable result of business development in petroleum economy		
Participants	Total	Stock market development is an inevitable result of business development in petroleum economy
1,6,8	3	

Table 7.9 presents the focused coding No. 3 for question 3(a). It reveals that three participants were of the view that the profitability of financial services provision was increased and economic growth accelerated by both stock market development and business.

Table 7.9: Focused Coding Number 3 for Question 3(a)

Both increase the profitability of providing financial services and accelerates economic growth		
Participants	Total	Both stock market development and business increase the profitability of providing financial services and accelerates economic growth.
3,11,15	3	

Table 7.10 displays the results of the focused coding No. 4 for Question 3(a). It can be seen that 3 participants felt that there was no relationship between stock market development and economic growth because the development of one is not necessary for the development of the other.

Table 7.10: Focused Coding Number 4 for Question 3(a)

No relationship.		
Participants	Total	No relationship. It is not necessary to the development of one of them standing on the other.
2, 4,16	3	

In Table 7.11 can be seen the results of the focused coding No. 1 for question 3 (b). It shows that 6 participants believed that stock market growth led to economic growth.

Table 7.11: Focused Coding Number 1 for Question 3(b)

From stock market development to economic growth		
Participants	Total	From stock market development to economic growth
9,10,13,14,17,18	6	

Table 7.12 presents the results of the focused coding No. 2 for question 3 (b). It shows that 5 participants held that the causality ran from economic growth to stock market development.

Table 7.12: Focused Coding Number 2 for Question 3(b)

From economic growth to stock market development		
Participants	Total	From economic growth to stock market development
1, 5, 6, 8, 12,	5	

Table 7.13 gives the result of the focused coding No. 3 for Question 3(b) and shows that 4 participants were of the opinion that the causality was bi-directional.

Table 7.13: Focused Coding Number 3 for Question 3(b)

From both		
Participants	Total	From both
3,7,11,15	4	

Table 7.14 give the result of focused coding No. 4 for question 3 (b) and shows that 3 participants perceived that there was no direction of causality.

Table 7.14: Focused Coding Number 4 for Question 3(b)

No direction of causality		
Participants	Total	No direction of causality
2, 4, 16	3	

Table 7.15 depicts the results of focused coding No. 1 for question 3 (c). It shows that 12 participants were of the opinion that the stock market contributed to economic growth through financing and encouraging small projects, while the same12 believed that the stock market could reduce capital costs.

Table 7.15: Focused Coding Number 1 for Question 3(c)

Yes, Stock market contributes to economic growth through		
Participants	Total	Motives
5, 6, 7, 9, 10, 11, 12, 13, 14, 15, 17, 18	12	Financing of small projects
5, 6, 7, 9, 10, 11,12, 13, 14, 15, 17, 18	12	Reduce capital cost

Table 7.16 reports the results of the focused coding No. 2 for Question 3 (c). It shows that 3 participants felt that the stock market did not contribute to economic growth because of the important role played by petroleum in Saudi's economy, and the same 3 participants expressed opinion that the stock market did not contribute to economic development because of the considerable contribution of the Saudi government to the economy through the oil revenues.

Table 7.16: Focused Coding Number 2 for Question 3(c)

No, It does not contribute to economic growth due to		
Participants	Total	Motives
2,4,16	3	Importance of oil
2,4,16	3	Government intervention

In table 7.17 the result of the focused coding No. 3 for Question 3 (c) can be seen, which demonstrates that 3 participants perceived that the influence of the stock market on economic development was bi-directional.

Table 7.17: Focused Coding Number 3 for Question 3(c)

Vice versa		
Participants	Total	Vice versa
1, 3, 8	3	

7.2.4. Liberalisation of stock market

The financial services sector is considered as one of the most important economic sectors.

The stability of economic growth is linked to the stability of financial institutions with the implementation of the policy of financial liberalisation within the framework of international agreements which has led to an increased volume of transactions, the evolution of stock prices and a rise in demand from foreign investors in the Saudi stock market. Some argue that the policy of financial liberalisation and open markets must be in accordance with a conditional agreement in terms of type and size of investments. On the other hand, others advocate a policy of full liberalisation. Even the negative effects of open direct foreign investment in Saudi stocks do not obscure the significant benefits that will be received by the domestic market from foreign capital, as foreign capital could revive the market and stimulate companies to adhere to disclosure and transparency to attract external liquidity, and thus it will develop a form that meets the aspirations of foreign investors.

In 1997, foreign investors were allowed to invest in the Saudi stock market through investment funds in the London Stock Exchange. In addition, in 1999, they were allowed to invest in the Saudi stock market through investment funds opened by Saudi banks and citizens of the Gulf Cooperation Council (*GCC*) were allowed to invest directly in the Saudi stock market. In 2008, Saudi Arabia allowed the so-called swap agreements between non-resident foreign investors, and local intermediaries, thereby supporting the indirect foreign ownership of shares in Saudi Arabia. According to the predictions of financial analysts, interviewees and the Saudi Capital Market Authority, it is expected that the Saudi stock market will be opened to foreigners during the first half of 2012.

In searching the opinions of the participants on economic liberalisation policies and their effect on share prices and the opening up of the stock market to foreign investors in particular, Question 4 (a) invited them to express their opinions on whether 'economic liberalisation policies have had a positive effect on share prices' and whether 'the stock market be opened up for foreign investors' aimed to discover respondents'.

Table 7.18: Results of Question 4(a) (b)

Question4(a)(b)	(a) Do you think economic liberalisation policies have had a positive effect on share prices? (b) Should the stock market be opened up for foreign investors?
Focused Coding 4(a)	
1	It has a positive effect
2	It has a negative impact
3	No effect
Focused Coding 4(b)	
1	Yes, increase of competition and the depth of market
2	No**,** control of foreign investors in the domestic market
Theme 4(a)	Economic liberalisation policies have had a positive effect on share prices through increased completion, reduced price volatility and increased profits
Theme 4(b)	The stock market should be opened up for foreign investors which will increase competition and depth in the market. However, some agree on imposing restrictions.

Table 7.18 shows the results for the focused coding for the responses to question 4 (a), which shows that some of the interviewees felt that economic liberalisation policies had a positive effect on share prices because of increased competition,

reduced price volatility and increased profits. However, other interviewees were of the opinion that such policies had a negative impact because foreign investors might flood the market and were concerned about the effect of global financial crises on the Saudi economy if there was considerable foreign investment. In addition, still others took the view that there would be no effect on the stock market.

Table 7.18 shows the results of the focused coding for the answers to question 4 (b). While some respondents were in favour of opening the Saudi stock market to foreign investors as it would increase competition and the depth of the market, they were divided as to whether there should be full or conditional liberalisation. However, other respondents were against allowing foreign investment in the Saudi stock market as they were concerned that this would allow foreign investors to gain control of the market.

Table 7.19: Focused Coding Numbers 1, 2 and 3 for Question 4(a)

1. It has a positive effect		
Participants	Total	Effects
1, 2, 3, 6, 7, 8, 9, 10, 11, 12, 13, 18	12	Increased competition
1, 2, 3, 6, 7, 8, 9, 10, 11, 12, 13, 14, 17	13	Reduce price volatility
1, 2, 3, 6, 7, 8, 9, 10, 11, 12, 14,	11	Increase profits
2. It has a negative impact		
Participant	Total	Impacts
5	1	Flooding the market
5	1	The impact of financial crises
3. No effect		
Participants	Total	No effect
4,15, 16	3	

Table 7.19 shows the result of the focused coding Number 1 for Question 4(a). As can be seen, twelve people stated that they believed economic liberalisation policies would have a positive effect on share prices by increasing competition, while 13 people believed it would have a positive effect by reducing price volatility and 11 thought it would have a positive effect by leading to increased profits.

The table also shows the result of the focused coding Number 2 for Question 4 (a). It can be seen that one respondent believed that economic liberalisation policies would have a negative effect on share prices by flooding the market and by leaving the Saudi market vulnerable to the impact of financial crises. In addition, the results of the focused coding Number 3 for Question 4(a) can be seen in table 7.19. They show that 3 interviewees took the view that economic liberalisation policies would have no effect on the market.

Table 7.20 displays the results of the focused coding Number 3 for question 4 (b). It shows that 16 respondents agreed that opening the market to foreign investors would increase competition and the depth of the market. However, 8 interviewees were in favour of full liberalisation and another 8 advocated conditional liberalisation.

Table 7.20: Focused Coding Number 1 for Question 4(b)

Yes, increase of competition and the deep of market		
Participants	Total	Form
1, 3, 6, 7, 9, 11, 12, 16	8	Full liberalisation
2, 4, 8, 13, 14, 15, 17, 18	8	Conditional liberalisation

Table 7.21 displays the results of the focused coding Number 2 for question 4(b), which shows that two interviewees were not in favour of opening the Saudi stock market to foreign investors, on the grounds that this may lead to foreign investors gaining control of the market.

Table 7.21: Focused Coding Number 2 for Question 4(b)

No. Lead to control of foreign investors on the domestic market		
Participants	Total	No**,** controlling foreign investors on the domestic market
5,10	2	

7.2.5- The main regulative and legal concerns for investors in the *Tadawul*

The Capital Market Law issued by Royal Decree number 30/m, dated 31/7/2003 aims to restructure the market to be more sophisticated, based on the promotion of trust, transparency, and disclosure, and to attract investors, provide a fair deal and protect investors' securities. The separation of regulatory and operational roles of the market

has been implemented through the creation of new institutions and committees to settle disputes. Among these are the Capital Market Authority (*CMA*), the Saudi Stock Exchange (*Tadawul*), the Committee for the Resolution of Securities Disputes (CRSD), and the Appeal Committee for the Resolution of Securities Conflicts (ACRSC).

Question 5 invited the participants to express opinion on 'the main regulative and legal concerns for investors in the *Tadawul*?' with the objective of discovering what the respondents considered to be the main regulative and legal concerns for investors in the *Tadawul*. The results of the focused coding showed 2 main regulative and legal concerns were raised by the respondents. These can be seen in table 7.22

Table 7.22: Results of Question 5

Question 5	What are the main regulative and legal concerns for investors in the *Tadawul*?
Focused Coding	
1	Regulate and monitor the business activities in various ways
2	Improve the operations of the *Tadawul*
Theme 5	There have been a number of regulative and legal concerns for investors in the *Tadawul* that must be met to support stock market and protect investors in terms of operation of the *Tadawul*.

In table 7.23, the focused coding Number 1 for question 5 can be seen. It shows that over half (10) of the respondents found one of the main regulative and legal concerns for investors in the *Tadawul* to be the regulation and development of the capital market and the development and improvement of the practices of entities involved in securities trading. In addition, it can be seen that one-third (6) of the interviewees believed that one of the main regulative and legal concerns for investors in the *Tadawul* was the regulation and monitoring of the issuance of and trading in securities. Furthermore, as the results a small number (2) of the interviewees were of the opinion that one of the main regulative and legal concerns for investors in the *Tadawul* was the regulation and monitoring of the business activities of parties subject to the *CMA*'s supervision issuance of and trading in securities. Lastly a small minority (2) of the interviewees believed that one of the main regulative and legal concerns for investors in the *Tadawul* was the regulation and monitoring of the full disclosure of information pertaining to securities and their issuers.

Table 7.23: Focused Coding Number 1 for Question 5

Regulate and monitor the business activities in various ways		
Participants	Total	
1,2,4,6,7,9,10,11,12,18	10	Regulate and develop the capital market, and to seek to develop and improve the practices of entities involved in securities trading
1, 2, 5, 6, 8, 15	6	Regulate and monitor the issuance of and trading in securities
2, 5	2	Regulate and monitor business activities of parties subject to the *CMA*'s supervision
2, 5	2	Regulate and monitor the full disclosure of information pertaining to securities and their issuers

Table 7.24 shows the focused coding Number 2 for question 5. It can be seen that the majority (10) of the respondents found one of the main regulative and legal concerns for investors in the *Tadawul* to be the protection of investors in securities from unfair and unsound practices, or acts involving fraud, deceit, cheating, manipulation, or insider trading. Secondly, the results also shows that more than two-thirds (13) of the respondents found one of the main regulative and legal concerns for investors in the *Tadawul* to be to maintain fairness, efficiency and transparency in securities transactions. Thirdly, a few (4) interviewees believed one of the main regulative and legal concerns for investors in the *Tadawul* was the development of controls that mitigate the risks associated with securities transactions.

Table 7.24: Focused Coding Number 2 for Question 5

Improve the operations of the *Tadawul*		
Participants	Total	
1, 2, 3, 4, 6, 7, 9, 10, 15, 16	10	Protect investors in securities from unfair and unsound practices, or acts involving fraud, deceit, cheating, manipulation or insider trading
1-,6, 8, 13-18	13	Maintain fairness, efficiency and transparency in securities transactions
2,3,5,8	4	Maintain fairness, efficiency and transparency in securities transactions

7.2.7. *Shari'ah* board

In recent years, the argument concerning the legality of some of the transactions in the stock market, such as the shares of certain banks or companies which have been financed by commercial banks using interest has intensified. The problem relates to

the many investors who do not want to trade in the shares of commercial banks or companies, as there is a *fatwa* against the sale and purchase of shares. Therefore, it is a vital requirement for the legitimacy of the stock market to take the application of the Islamic financial sector into account.

In exploring these issues, the following questions were asked: Question 6 (a) **(***Are there any shari'ah compliancy concerns for equity investors in Saudi Arabia*?) and 6 (b) *Should the Tadawul have its* ***own shari'ah*** *board as is the case with the Securities Commission in Malaysia*?). Both of the questions aimed to investigate respondents' perspectives regarding *shari'ah* compliancy in the context of the stock market.

Table 7.30 shows the results of the answers to question 6 (a). It can be seen that some of the respondents agreed that there were *shar'iah* compliancy concerns for equity investors in Saudi Arabia because there was a prohibition of trading in shares in banks and on trading securities and because some financial transactions were incompatible with *shar'iah*. However, other respondents did not think there were any such concerns, that *shar'iah* compliancy increased investors' confidence, or that *shar'iah* did not conflict with stock market development.

Table 7.25 shows the results of the answers to question 6 (b). It shows that some of the interviewees think that the *Tadawul* should have its own *shari'ah* board, as one source of legislation would reduce the severity of the dispute. Others held that it should, as this would create legitimate alternatives.

However, other interviewees did not think that the *Tadawul* should have its own *shari'ah* board because there is an absence of a clear Islamic financial system, while still others thought it should not because this would raise doubts and questions about some of the transactions.

Table 7.25: Results of Question 6(a) (b)

Question6(a)(b)	(a) Are there any *shari'ah* compliancy concerns for equity investors in Saudi Arabia? (b) Should the *Tadawul* have its own *shari'ah* board as is the case with the Securities Commission in Malaysia?
Focused Coding 6(a)	
1	**Yes, there are shari'ah compliancy concerns**
2	**No, there no shari'ah compliancy concerns**
Focused Coding 6(b)	
1	**Yes, *Tadawul* should have its own Shari'ah board**

2	**No, , *Tadawul* should not have its own Shari'ah board**
Theme 6(a)	*Shari'ah* is an important issue in the stock market in Saudi Arabia.
Theme 6(b)	Tadawul should have its own *shari'ah* board like the Securities Commission in Malaysia.

Table 7.26: Focused Coding Number 1 for Question 6(a)

Yes, there are shari'ah compliancy concerns		
Participants	Total	Concern
1, 2,5,7,8,9,11,18	**8**	Prohibition on trading in shares of banks
2,4,6,7,	**4**	Prohibition on trading securities
1,5,6,7,8,9,11,12,13,15,18	**11**	Incompatibility of some financial transactions with *shari'ah*

In Table 7.26 the results of the focused coding Number 1 for question 6 (a) can be seen.

As the results show, of the respondents who considered there to be *shari'ah* compliancy concerns for equity investors in Saudi Arabia, 8 felt these concerns involved the prohibition of trading in shares of banks, 4 were of the opinion that they regarded the prohibition on trading securities and 11 held that these concerns involved the incompatibility of some financial transactions with *shar'iah*.

Table 7.27: Focused Coding Number 2 for Question 6(a)

No, there are no shari'ah compliancy concerns		
Participants	Total	Concern
3,10,14,	**3**	Increase the confidence of investors
3,10,14,17	**4**	*Shari'ah* does not conflict with the development of the financial market

In Table 7.27 the results of the focused coding Number 2 for question 6 (a) can be seen. Of the respondents who considered there were no *shari'ah* compliancy concerns for equity investors in Saudi Arabia, 3 felt that this was due to the fact that *shar'iah* compliancy would increase investors' confidence, while 4 gave their reason as being that there was no conflict between *shari'ah* and the development of the financial market.

Table 7.28: Focused Coding Number 1 for Question 6(b)

Yes, *Tadawul* should have its own Shari'ah board		
Participants	Total	Motive
2,5,8,10,13,15,16,18	**8**	One source of legislation would reduce the severity of the dispute.
1,2,5,6,8,9,10,12,13,16	**10**	Create legitimate alternatives

Table 7.28 displays the focused coding Number 1 for question 6 (b). It shows that 8 respondents agreed that the *Tadawul* should have its own *shari'ah* board because having one source of legislation would reduce the severity of the dispute, while 10 agreed, because this would create legitimate alternatives.

Table 7.29: Focused Coding Number 2 for Question 6(b)

No, *Tadawul* should not have its own Shari'ah board		
Participants	Total	Motive
3, 11, 14, 17,	**4**	Absence of a clear Islamic financial system
3, 4, 11, 17,	**4**	Raises questions and doubts about some of the transactions

Table 7.29 shows the focused coding Number 2 for Question 6(b). As can be seen, out of the participants who disagreed, 4 expressed the view that there was no clear Islamic financial system, while 4 felt it would raise doubts about some of the transactions.

7.2.8. The role of stock market in corporate finance in Saudi Arabia

The Saudi stock market is one of the most technologically advanced markets in the world, with an automated system for stock trading that was introduced in 1990. Through this system, applications are processed from the introduction of demand until the final registration on the same day. *Tadawul* is the most important development in the market, representing a new technical infrastructure to support the market. Furthermore, *Tadawul* is an integrated system for trading shares through a technology system, which allows investor stock trading over the Internet.

However, indicators of the Saudi stock market have reflected the depth of the market and its financing, which creates an environment suitable for funding, and in which total market capitalisation at the end of 2010 attained *SR* 1,325.39 billion (US$ 353.44 billion), a rise of 10.86% in comparison with the end of the previous year. The total value of shares traded for 2010 was *SR* 759.18 billion (US$ 202.45 billion) as against *SR* 1,264.01 billion (US$ 337.07 billion) for the previous year, a fall of 39.94%. The total number of transactions executed during the year 2010 reached 19.54 million compared to 36.46 million trades for the previous year, decreasing by 46.42%, while a total of 33.01 billion shares were traded in 2010 compared to 57.13 billion over the previous year, a fall of 42.22% (Tadawul, 2010).

In reflecting on the impact of Saudi stock market on corporate finance and in order to determine the respondents' perspectives on the role of the stock market in corporate finance in Saudi Arabia, the participants were asked the following questions: Question 7 (a) (*Do you think the stock market has played an important role in corporate finance in Saudi Arabia*?) and (b) (*What are the advantages to Saudi businesses of obtaining equity rather than debt finance*?) aimed

Table 7.30: Results of Question 7(a) (b)

Question7(a)(b)	(a) Do you think the stock market has played an important role in corporate finance in Saudi Arabia? (b) What are the advantages to Saudi businesses of obtaining equity rather than debt finance?
Focused Coding 7(a)	
1	Yes, stock market has played an important role in developing corporate finance in Saudi Arabia
2	No, stock market has not played an important role in developing corporate finance in Saudi Arabia
Focused Coding 7(b)	
There are some advantages derived from the stock market	
Theme 7(a)	The stock market has played an important role in corporate finance in Saudi Arabia, although some disagree with this.
Theme 7(b)	There are some advantages to Saudi businesses from obtaining equity rather than debt finance.

Table 7.30 shows the coded results of question 7 (a), which shows that some of the participants thought that the stock market has played an important role in corporate

finance in Saudi Arabia because of the financing of small projects, while others agreed that this was the case due to the large numbers of shareholders and capital it had attracted. In contrast, others disagreed, with some of these stating that the majority of financing was provided by banks and some citing the collapse of the stock market in 2006 when many corporations lost money and were not compensated by the stock market.

Table 7.30 also shows the results of question 7 (b). Among the advantages to Saudi businesses of obtaining equity rather than debt financing that were cited by the respondents were the rapidity of funding, and the facts that there were fewer conditions, lower costs and no interest.

Table 7.31: Focused Coding Number 1 for Question 7(a)

Yes, the stock market has played an important role in developing corporate finance in Saudi Arabia.		
Participants	Total	Roles
7,8,9,10,12,13,15,18	**8**	Financing small projects.
4,8,9,10,11,12,14,15,18	**9**	Attract a large number of shareholders and capital.

Table 7.31 shows the focused coding Number 1 for question 7 (a). Of the participants who agreed that the stock market has played an important role in corporate finance in Saudi Arabia, 8 stated that this was because small projects had received financing, while 9 participants thought this was because it had attracted a large number of shareholders and capital.

Table 7.32: Focused Coding Number 2 for Question 7(a)

No, the stock market has not played an important role in developing corporate finance in Saudi Arabia		
Participants	Total	Motive
1,2,3,5,17,	**5**	The majority of financing comes from banking
16	**1**	The collapse of the stock market in 2006

Table 7.32 displays the results of focused coding Number 2 for question 7 (a), which demonstrates that 5 participants who disagreed did so because they considered that most financing comes from banking, while 1 stated that the collapse of the stock market had led to many businesses losing money and not receiving any compensation.

Table 7.33: Focused Coding for Question 7(b)

There are some advantages derived from the stock market		
Participants	Total	advantages
3,4,5,8,15,16,18	7	Rapid funding
1,3,4,5,6,13,15,16,18	9	Fewer conditions
1,3,4,6,8,11,16,17,18	9	Lower cost
2,3,7,8,9,10,12,14,15,18	10	Interest-free

Tables 7.33 depicts the results of focused coding for question 7 (b). It can be seen, 7 participants thought that rapidity of funding was one of the advantages to Saudi business of obtaining equity rather than debt finance, while 9 participants thought that having fewer conditions was one of these advantages. Moreover, 9 of the participants thought that the lower cost of equity financing was one of its advantages over debt financing, while 10 thought that the fact that equity financing was interest-free was advantageous.

7.2.9. The 2006 crisis in Saudi stock market

At the end of 2006, the *Tadawul* All Share Index (*TASI*) closed at 7933.29 points in comparison to 16712.64 points for 2005, a decrease of 52.53%. The highest closing level for the index (*TASI*) during the year was 20634.86 points (on 25/02/2006). The market capitalisation at the end of 2006 reached *SR* 1225.86 billion, 49.72% less than the previous year (Tadawul, 2006).

Since it was created, according to the powers vested in it, the *CMA* Board has issued several Implementing Regulations aimed at regulating and developing the Capital Market. During the period from the 1st of July, 2004 until the end of 2006, nine Implementing Regulations were issued by the Board. These were the following: Market Conducts Regulations, Offers of Securities Regulations, Listing Rules,

Authorized Persons Regulations, Securities Business Regulations, Real Estate Investment Funds Regulations, Corporate Governance Regulations, Investment Funds Regulations, Glossary of Defined Terms used in the Regulation and Rules of the Capital Market Authority (CMA, 2007).

One of the most important of these regulations was a draft Regulation of Corporate Governance issued on 1/7/2006 in Saudi Arabia. A decision was then issued by the Council of the Capital Market Authority on 21/11/2006 that approved the application and implementation of the regulation in its final issue, which included five sections, in general regarding the definition of terms, rights of shareholders and the general assembly, disclosure and transparency, and the legislation of the Board of Directors and their rights.

In order to determine the respondents' perspectives on the 2006 stock market crash and the reasons behind it, the following question was directed to the participants: **Question 8 (a) (**Would you please reflect on the 2006 crisis in the stock market?) and (b) (What factors caused the collapse?) aimed to.

Table 7.34 shows the results of the focused coding for question 8 (a). Some of the respondents reflected that the Saudi stock market, as an emerging market, needed more factors of stability and economic reform, while others stated that the market had reached a point where it was in need of correction. In addition, in examining the results of focused coding for question 8 (b) it can be seen that the respondents mentioned nine factors which were considered to have contributed to the stock market collapse. These will be given in focused coding for question 8 (b).

Table 7.34: Results of Question 8 (a) (b)

Question8(a)(b)	Would you please reflect on the 2006 crisis in the stock market? What factors caused the collapse?
Focused Coding 8(a)	
Economic reform is essential to correct and moderate the outcome of the Saudi stock market	
Focused Coding 8(b)	
There are operational shortcomings in the stock market	
Theme 8(a)	Economic reform could help to rescue the collapse of the

	stock market
Theme 8(b)	The observed operational shortcomings results in the collapse of the stock market

Tables 7.35 and 7.36 show the results of the focused coding Numbers 1 and 2 for question 8 (a) respectively. It can be seen that 16 participants thought the Saudi stock market, as an emerging market, needed more factors of stability and economic reform, while 15 were of the opinion that the stock market had reached a stage where it was in need of correction.

Table 7.35: Focused Coding Number 1 for Question 8(a)

Economic reform is essential to correct and moderate the outcome of the Saudi stock market		
Participants	Total	Result
1- 12, 15-17,18	**16**	The Saudi stock market is an emerging market and needs more factors of stability (economic reform)

Table 7.36: Focused Coding Number 2 for Question 8(a)

Economic reform is essential to correct and moderate the outcome of the Saudi stock market		
Participants	Total	Result
1-14,16	**15**	The Saudi stock market has reached a stage where it is in need of correction

Table 7.37: Focused Coding Number 1 for Question 8(b)

There are operational shortcomings in the stock market		
Participants	Total	shortcomings
1,5,6,10,15,18	6	Weakness in the legislation and legal systems
1,6,10,15,17,18	6	Lack of control of companies
1,3,6,7,8,9,12,13,14,15	10	Lack of transparency in the market
1,2,3,5,6,7,9,12,15,17	10	Ignorance of speculators, dealers
1,3,4,5,6,8,12,16	8	Misleading by the media and analysts
1,4,5,6,8,12,13,14,18	9	Scramble to obtain greater profits

1,2,3,4,5,6,7,10,11.12,16.17	12	Manipulation of large investors
2,3,4,5,7,8,9,10,13,16,18	11	Increased banking facilities
2,3,4,5,7,8,9,10,16,18	10	Liquidation of investment portfolios

Table 7.37 shows the results of the focused coding for question 8 (b). As the results demonstrate, the participants are in the view that there are operational shortcomings in the stock market. It can be seen that 6 participants believed that weakness in legislation and legal system was a factor that caused the collapse of the Saudi stock market, while 6 felt that lack of control of companies was a factor. Lack of transparency in the market was a factor mentioned by 10 participants and 10 cited the ignorance of speculators and dealers. Eight participants were of the opinion that investors had been misled by the media and financial analysts and that this was a contributory factor to the stock market crash. The scramble to obtain greater profits was given as a factor by 11 of the participants, while 12 participants cited the manipulation of large investors. Lastly, 11 participants thought that increased banking facilities represented a factor in the collapse and the liquidation of investment portfolios was considered to be a factor by 10 participants.

7.2.10. The Saudi stock market and the 2007-2008 global financial crisis

Although there was no direct link between the Saudi economy and the mortgage crisis, the subsequent implications of the global financial crisis in 2007-2008 (which is ongoing) affected the Saudi stock market, where the decrease in indicators of Saudi stock market was associated with the global crisis of the same period. However, Saudi citizens did not feel its impact as they were still suffering financially from the brunt of the crisis in 2006.

At the end of 2008, the *Tadawul* All Share Index (*TASI*) closed at a level of 4,802.99 points as against 11,038.66 points for the previous year, losing 6,235.67 points (56.49%). The highest closing level for the index (*TASI*) during the year was 11,697.01 points, on 12 January 2008. The total market capitalisation at the end of 2008 was *SR* 924.53 billion, a fall of 52.50% compared to the previous year. The total value of shares traded for the year 2008 was *SR* 1962.95 billion, in contrast to *SR*

2,557.71 billion for the previous year, a fall of 23.25%. There were a total of 59.68 billion shares traded for 2008, in comparison to 61.73 billion shares traded during the previous year, a decrease of 3.32%. Furthermore, there were a total of 52.14 million transactions executed in the course of 2008, as opposed to 65.67 million transactions in the previous year, a decrease of 20.60% (Tadawul).

In reflecting on the vulnerability of the Saudi stock market to the 2007-2008 global financial crisis, Question 9 (To what extent was the Saudi stock market vulnerable to the 2007-2008 global financial crisis?) was set with the intention of determining the interviewees' perceptions.

As can be seen in Table 7.38 of the results of the focused coding for question 9, all the participants agreed that the Saudi stock market had shown considerable vulnerability to the 2007-2008 global financial crises and had lost much of its profits. They cited several reasons for their opinion, which will be given in detail in the results for the focused coding in Table 7.39.

Table 7.38: Results of Question 9

Question 9	To what extent was the Saudi stock market vulnerable to the 2007-2008 global financial crisis?
Focused Coding	
Vulnerable (lost much of its profits)	
Theme 9	The Saudi stock market was vulnerable to the 2007-2008 global financial crisis

Table 7.39 shows the results for the focused coding for question 9. It can be seen that the participants were unanimous in agreeing that the stock market had been vulnerable to the global financial crisis of 2007-2008. While 11 participants thought this vulnerability could be attributed to the weakness of an efficient market, 12 were of the opinion that it sprang from the lack of institutional investors. In addition, 6 participants mentioned the contribution of the negative role played by media and 14 cited lack of transparency and official information as having made the stock market vulnerable.

Table 7.39: Focused Coding Number 1 for Question 9

Vulnerable (lost much of its profits)		
Participants	Total	Motive
1,3-6,9,10,12,13,16,18	11	Weakness of an efficient market
3-6,8,10,12-16,18	12	Lack of institution investors
1,2,4,,7,11,17	6	The negative role of media
2,3,5-12,15-18	14	Lack of transparency and official information

7.2.11. Stock market and oil price developments

Predicting the movements of stock prices in Saudi Arabia depends on the indicators of the local and global economies. Among the most important indicators are government spending, bank credit, attract foreign investments, the return of national investment to the local market, and local and global economic growth. The development in oil prices is important for the Saudi economy, which, as a petroleum economy, depends on exports. Therefore, it is expected that movements of oil prices will affect stock market prices according to changes in oil prices, be they increases or decreases. Therefore, Question 10 (a) (How do you see stock prices moving in the next five years?) and (b) (To what extent do stock prices in Saudi Arabia reflect oil price developments?) was set to determine the perceptions of the respondents as to developments in the stock market and oil prices.

Table 7.40 shows the result of the focused coding for question 10 (a). Some of the respondents had an optimistic outlook and predicted more stability, improvements and profits in the future, giving various reasons, such as the strength of the impact of fiscal policy (government spending); increased foreign investment in the Saudi market; rising oil prices; increased awareness of investors; increased depth of the market and improvement in the market structure, and; the development of regulations and legislation. However, others took a pessimistic view in the sense of foreseeing more volatility, fluctuations and losses. The reasons they gave for this pessimism were a lack of institutional investors, the effects of the global economic crisis and potential fluctuations in oil prices. Table 7.40 shows the result of the focused coding for question 10(a) (b).

Table 7.40: Results of Question 10(a) (b)

Question10 (a)(b)	(a) How do you see stock prices moving in the next five years? (b) To what extent do stock prices in Saudi Arabia reflect oil price developments?
Focused Coding 10(a)	
1	**An optimistic outlook:: More stability, improvement and profits**
2	**A pessimistic outlook: More volatility, fluctuations and losses**
Focused Coding 10(b)	
1	Significant impact
2	Limited impact; Stock market crash in 2006 was accompanied by a rise in oil prices
Theme 10(a)	Movements of stock market prices in the five years may be more stable as result of the strength of the Saudi economy.
Theme 10(b)	Stock prices in Saudi Arabia, as a petroleum economy, should reflect oil price developments

As depicted in Table 7.40, some of the respondents thought that oil developments had a significant impact on stock prices, while some felt that they had a limited impact in view of the fact that the stock market crash of 2006 was accompanied by a rise in oil prices.

Table 7.41: Focused Coding Number 1 for Question 10(a)

An optimistic outlook: More stability, improvement and profits		
Participants	Total	Motives
1,2,4,5,12,15,16,18	8	Strength of the impact of fiscal policy (government spending)
1,4,11,12,18	5	Increased foreign investment in the Saudi market
1,2,5,11,12,14,15,16,18	9	Rising oil prices
4,5	2	Increased awareness of investors
2,,11	2	Increase in the depth of the market and improvements in the market structure
5,11,16	3	Development of regulations and legislation

Focused coding number 1 for question 10 (a) depicted in table 7.41 shows that some of the respondents had an optimistic outlook concerning stock prices, seeing more stability, improvement and profits in the future. As the results show, 8 participants took this view because of the strength of the impact of fiscal policy (government spending), while 5 were optimistic because of increased foreign investment in the Saudi market and 9 because of rising oil prices. It should be noted that 2 participants

attributed their optimism to increased awareness on the part of investors, while 2 other participants stated an increase in the depth of the market and improvements in market structure, and 3 stated the development of regulations and legislation, as part of their optimistic outlook.

Table 7.42: Focused Coding Number 2 for Question 10(a)

A pessimistic outlook, More volatility, fluctuations and losses		
Participants	Total	Motives
3,5,17	3	Lack of institutional investors
5,7,8,9,10	5	Global economic crisis
3,5,7,8,9,10,13,17	8	Potential fluctuations in oil prices

Table 7.42 shows the results for the focused coding Number 2 for question 10 (a). Some of the participants were pessimistic about the movement of stock prices in the next five years, foreseeing more volatility, fluctuations and losses. In addition, 3 interviewees stated that they were pessimistic because of the lack of institutional investors, 5 because of the effects of the global economic crisis and 8 due to potential fluctuations in oil prices.

Tables 7.43 and 7.44 show the results for focused coding Numbers 1 and 2 respectively. It can be seen that 6 participants thought that oil price developments had a significant impact on the stock market, while 12 thought they had a limited impact, as oil prices rose at the same time as the stock market crash in 2006.

Table 7.43: Focused Coding Number 1 for Question 10(b)

Significant impact		
Participants	Total	Significant impact
5,10,11,12,14,15,	6	

Table 7.44: Focused Coding Number 2 for Question 8(b)

Limited impact		
Participants	Total	Limited impact. Stock market crash in 2006 was accompanied by a rise in oil prices
1,2,3,4,6,7,8,9,13,16,17,18	12	

7.3. CONCLUSION

The analysis of the interview presented in this chapter shows that the Saudi Stock Market is an emerging market which has gone through several stages of development. The creation of the stock market in Saudi Arabia has been very important in reforming and structuring the operation of the financial sector as well as meeting the requirements of economic development in order to accelerate the development process.

As the results demonstrate, the lack of institutional investors has inhibited development of the market, causing failure of the market, lack of liquidity, lack of information and increased risk. Therefore, institutional investors should be encouraged.

The analysis in the preceding sections demonstrate that there are four opinions on the links between business development and stock market development, while three in agreement that various links exist, and one that there is no link. The analysis shows that the directions of causality between the stock market developments and economic growth are observed through different directions or bi-directional or even no direction of causality.

The results show that the stock market is perceived to contribute to economic growth and business development in various ways, or vice versa. The results of the interviews, however, reveal the importance of the stock market in achieving economic growth. Perhaps in the future the Saudi stock market will gain in importance with the increase of privatisation programmers, increase of the depth and size of the market, number of shareholders, the entry of foreign investors, corporate governance and completion of market legislation, which will encourage the private sector and reduce the impact of reliance on government spending and oil income, particularly in non-oil *GDP*.

The results of the analyses also demonstrate that the interviewees consider economic liberalisation policies having positive effect on share prices through increased competition, reduced price volatility and increased profits. In line with this argument, the stock market is suggested to be opened up to foreign investors, as this would increase competition and give more depth to the market. However, some agree that

restrictions should be imposed. Most of the respondents confirmed the importance of financial liberalisation, although with conservative views as to the degree of liberalisation.

There have been a number of regulative and legal concerns for investors in terms of the operations of the *Tadawul* that must be met to support the stock market and protect investors. Therefore, respondents raised the issue that the business activities should be regulated and monitored in various ways, of which the most important is the regulation and development of the capital market, and ways should be found of developing and improving the practices of entities involved in securities trading. On the other hand, the operations of the *Tadawul* is suggested to be improved in order to maintain fairness, efficiency and transparency in securities transactions.

Considering the developments in Islamic finance, *Shari'ah* remains to be an important issue in the stock market in Saudi Arabia. The *Tadawul* is recommended that should have its own *shari'ah* board, like the Securities Commission in Malaysia.

The results show that stock market has played an important role in corporate finance in Saudi Arabia and there are certain advantages to Saudi businesses from obtaining equity rather than debt finance, although there is some disagreement with this on the ground that the financing comes from banking.

As the results of the analysis show the Saudi stock market was vulnerable to the 2007-2008 global financial crisis and the observed operational shortcomings resulted in the economic reforms that could have helped avoid the collapse of the stock market.

Some of the respondents considered that the movements of stock market prices over the next five years may be more stable as a result of the strength of the Saudi economy. An optimistic outlook prevailing among some of the participants suggest that more stability, improvement and profits, while a pessimistic outlook: more volatility, fluctuations and losses.

The importance of oil prices and revenues for stock market is also considered, and the results suggest that stock prices in Saudi Arabia, as a petroleum economy, should

reflect oil price developments. Despite the belief that there is a limited impact, the stock market crash in 2006 was accompanied by a rise in oil prices.

In conclusion, the analysis presented in this chapter through the opinions and perceptions of the stake-holders evidences the importance of the srock market for the Saudi economic growth. However, a better regulated environment is essential for the potential impact to be realised. Stock market development as part of the financial development and financial architecture of the Saudi economy is expected to contribute a sustainable economic growth. The existence role of the oil revenues will contribute to this position, but the diversity of the economy through financial development will also help to reduce the oil dependence through slight economic structural change.

CHAPTER 8

CONCLUSION

8.1. SUMMARY OF THE FINDINGS

There has been considerable debate concerning the relationship between stock market development and economic growth. It has been argued that a well-functioning stock market can have an accelerating effect on economic growth by channelling more saving to investment and enhancing capital productivity through the efficient allocation of resource. Conversely, there is another view that the development of the stock market is largely irrelevant to real economic activity or even that it may be harmful to the economy. In this study, there is a comprehensive review of the literature presenting these conflicting views. Through this literature review, a comprehensive theoretical framework connecting stock market development to economic growth is developed.

Since the development of oil production in the mid-1940s, the economy of Saudi has been closely linked with the level of oil production. Despite the fluctuation of oil prices, oil production has led to a high economic growth rate for the overall economy. In supporting and directing economic growth and development, the government has been implementing a series of Five-year Plans since 1970. Since then eight development plans have been implemented and the 9^{th} Plan (for 2010 – 2015) is underway. The aim of these plans is to develop an integrated and stable economy, and they have several broad long-term goals. These include diversifying the economy and reducing dependence on oil revenues; raising the standard of living; developing the regions; promoting the role of the private sector; strengthening ties with other countries; developing the physical infrastructure, and developing human resources. The Saudi development plans can be divided into two main periods: the first of which was before the establishment of an official stock market in 1985. The second main period runs from 1985 when the Saudi government launched an official stock market, to the present day. The Saudi government has given considerable support to the national stock market in view of its significance in promoting the private sector through financing its development and offering investment opportunities for both Saudi and foreign capital. However, in spite of the government's efforts to encourage

the private sector, the contribution of other sectors to *GDP* remains low in comparison to that of oil.

One of the most important factors in the acceleration of economic growth is the establishment of an advanced financial market, specifically a stock market. In the light of this, comprehensive reforms of the financial sector have been underway with the intention of developing, extending and increasing access to financial markets and improving financial services. The government amended a number of laws and regulations to facilitate and regulate the growth and performance of the financial sector, specifically the stock market.

The Saudi Stock Market remained informal until the early 1980s, when the government launched a rapid development programme and reformed the market, which was formally regulated in 1984, and in 1985 the Saudi Shares Registration Company was established.

The Saudi stock market has gone through several stages of development in terms of regulation and legislation.

In 1983 the Ministerial Committee was formed, consisting of the Minister of Finance and Minister of Trade and the Governor of the Saudi Arabian Monetary Agency (*SAMA*), to take over the development of regulatory legislation for the Saudi stock market. In 1984, from the Ministerial Committee emerged as the Supervisory Committee of the Stock Market and a year later, *SAMA* made a requirement for Saudi companies to register shares. In 1990, the Electronic Securities Information System (*ESIS*) was introduced to offer the possibility of automated trading for all stocks through local banks. In 1997 the conditions of disclosure requirements were issued in order to provide greater protection for investors and raise the level of transparency and reform in the market. One year after this, conditions and requirements for inclusion in ESIS were issued, where none had previously been in force. In 2001 a new generation of trading systems and settlements was implemented. In 2003, the Capital Market Law (*CML*) was issued with the aim of restructuring the financial market on the basis of new and sophisticated system to promote investor confidence and provide more clarity, transparency and fairness in dealing within the market. Also in 2003, the Capital Market Authority (*CMA*) was established under the Capital

Market Law (*CML*) to supervise and control the parties coming under its authority. On 12th November, 2006, the *CMA* passed the Corporate Governance Regulations, which put forward the rules and standards governing the management of companies listed on the capital market, with the aim of ensuring conformity to best corporate governance practices, thus protecting shareholders; and stakeholders' rights. In 2007, the *SSM* or Saudi Stock Market Company (*Tadawul*) was established under the *CML* to provide depository and trading services in Saudi Arabia and a year later, the *CMA* issued a resolution allowing authorised persons to engage in swap agreements with non-resident foreign investors, either individuals or financial institutions. In 2009, the Saudi stock market joined the World Federation of Exchanges (*WFE*) and the first Exchange Traded Fund *ETF*) was listed and traded under the *ETFs* market segment on 28th March 2010.

This study aims to examine the relationship between stock market development and economic growth in Saudi Arabia covering the period from the formal launch of the Saudi Stock Market in 1985 up to 2010, during which period there have been dramatic changes in the stock market indicators. This period could be divided into two stages. The first stage, from 1985 to 1999 was characterised by relative stability in price fluctuations in accordance with the general index of stock prices derived from statistical reports to *SAMA* and the Saudi Stock Exchange Co. (*Tadawul*). During this period, the index value ranged between 650 and 2028 points. However, the second stage, from 2000 to 2010, witnessed a rapid increase in share prices that began in early 2003 and peaked in February 2006. However, during 2006, the Saudi Stock Market suffered a major crash during which the stock price index collapsed and lost 65% of its value.

The range of Saudi stock sectors has expanded over the years and the number of listed companies on the stock market has increased considerably, from 75 in 2000 to 146 in 2010. With the issuance of the Capital Market Law in 2008, eight new sectors were included in the stock market in addition to the existing eight sectors. In 1985, there were 4 million shares traded, while in 2010, this number had risen to 3255 million. The Value of Shares Traded showed similar growth, as it was *SR* 759184 million in 2010 compared to *SR* 760 million in 1985. Similarly, the Market Value of Shares, which was *SR* 67 billion in 1985, had risen to *SR* 1,325 billion by 2010. In

addition, while the number of transactions in 1985 was 7,842, there were 19,536,143 transactions in 2010.

The performance of the Saudi stock market has been characterised by fluctuation and volatility since its official start in 1985. From the base rate of 1,000 points in 1985, it closed at 16,094.7 points on 17th November 2005, which can be attributed to high growth in the domestic economy, in addition to rising oil prices and money supply. In 2006 the Saudi Stock Market collapsed and the price index lost more than 13,000 points, falling by 65% from its highest level. In 2010, the *TASI* closed at 6,620.75 points.

In addition to the developments and trends in the Saudi Stock Market, this study explored the theoretical backgrounds of several econometric methods through which then the results of the empirical analysis were presented.

The econometric analysis in this study employed economic performance indicators that represented the state of the Saudi economy without the oil revenues as well as the traditional measures. One of the most important limitations in the econometric analysis of the data employed in this study is the shortage in the number of available observations. As a result, to be able to protect the analysis from this limitation, all variables are represented in their exponential logarithm values.

Hence, empirical evidence was presented for the relationship between Saudi stock markets proxied by various measures as independent variables throughout the analysis, employing numerous statistical and econometric methods. The analysis began with the examination of the general characteristics of the data for sound results. In order to eliminate the issues arising from the limited time period and achieve normal distribution, the natural logarithms of the variables were employed in the analysis throughout. Second, to test whether the sample characteristics were stationary, two types of Unit Roots tests, Augmented Dickey-Fuller and Phillips-Perron, were employed. The results of both these tests showed that the data were not stationary in the levels, but became stationary at the first difference. In accordance with these results, the *OLS* regression analysis was structured and examined.

The regression analysis was also itself subject to investigation as a methodology. In relation to the time-series characteristics of the data, the results would be subject to

auto-correlation and heteroskedasticity. The Durbin-Watson statistics suggested that these issues were existent. As a result, all regression results reported were Newey-West heteroskedasticity and auto-correlation robust estimations. In addition, the model is limited by multicollinearity issues among the independent variables; the regression analysis is based on Stepwise *OLS* Regressions to optimise the model and achieve the highest explanatory power.

The *OLS* regression analysis provided consistent results in general. The Market Capitalisation (*LNMC*) was statistically significant in all of the results presented, as was Number of Shares Traded (*LNNST*) in all of the results, apart from the *Non-Oil PSGDP* model. In some of the results, Government Spending (*LNGS*) was found to be statistically significant for *NOGDP, NOPSGDP* and *NOGFC*. It was interesting to note from the *OLS* regression results that the coefficients declined when the influence of the oil revenues on the Saudi economy was excluded from the equation. This further demonstrated the strong influence of oil revenues on the macro-economic performance of Saudi Arabia.

The data was further scrutinised by employing other methodologies. Johansen Co-integration analysis was employed to identify the long-run relationship between the numerous dependent variables employed and the independent variables. Probably the most interesting and important aspect of this analysis is the emergence of Government Spending (*GS*) as the dominant factor in the long run. To summarise, it appeared from the results that the health of the Saudi economy is more of a result of the government's monetary and fiscal policies than the development of and the activities in the Saudi financial markets. These results indicate that despite the recent development and growth in the Saudi financial markets, the economy in general is still reliant on the oil revenues and government policies in the long run.

These suggestions were also supported by the results from Granger Causality Analysis, which suggested some interesting and important findings. First, the variables representing the financial markets provided non-conclusive results, suggesting a requirement for further investigation. Second, it became evident in the causality analysis that the Saudi government plays an active role in the economy and intervenes when the macro-economic performance does not achieve the desired results. In relation to this, these interventions do not seem to be long-term and

structural, but rather, situational. Third, the causal relationships from the independent variables of the financial markets weakened when the influence of the oil revenues was taken out of the equation, suggesting that the strength and the depth of the Saudi financial markets are still reliant on the oil revenues. Finally, the causal relationships between the financial markets and Gross Fixed Capital (*GFX*) suggested a one-directional relationship from the *GFC* to the financial markets, implying that Saudi financial markets are based more on the real economy than on the developed financial markets.

With all the models for *GDP,* the results of ECM revealed a bi-directional causality running from *GDP, NOGDP, NOPSGDP, GFC* and *NOGFC* to *MCR,* and to *NST*, although it is only one-directional from *GDP* to *GS* and from *GFC* to *GS*. The products of the process *MCR*, *NST* and *GS* are all statistically significant at the 5% level. The Error Correction Model (EC_{t-1}) shows that the significant results indicate the speed of adjustment to the long-run equilibrium, and reveal the direction of causality. In other words, *MCR* and *NST* variables cause a change in the *GDP, NOGDP, NOPSGDP*, *GFC* and *NOGFC* positively and at the same time they are also positively affected by this change on the level of *GDP, NOGDP, NOPSGDP, GFC* and *NOGFC*.

In addition to such findings through quantitative or econometric data analysis, qualitative data in the form of primary data were gathered through interviews with eighteen selected respondents to obtain the best possible understanding regarding different aspects of Saudi stock market development. All the interviewees were professionals with a background in the Saudi stock market, in *Tadawul* in different positions or as financial analysts in institutions of financial intermediation. Coding analysis of the data obtained from the interviews showed that, according to the respondents, the Saudi Stock Market is an emerging market which has gone through several stages of development. Moreover, they considered the creation of the stock market in Saudi Arabia being a very important development in reforming and structuring the operation of the financial sector as well as meeting the requirements of economic development in order to accelerate the development process.

However, a number of respondents stated that, in their opinion, the lack of institutional investors has inhibited development of the market, causing failure of the

market, lack of liquidity, lack of information and increased risk; therefore, institutional investors should be encouraged.

The interviewees expressed their opinion of the links between business development and stock market development. It should be noted that most of the participants agreed that various links exist. The directions of causality indicated by the interviewees were from stock market development to economic growth; from economic growth to stock market development; bi-directional or; there is no direction of causality. This last opinion confirms the results of the empirical study. The stock market contributes to economic growth and business development in various ways, or vice versa. The results of the interviews revealed the importance of the stock market in achieving economic growth.

The interviewees suggested that perhaps in the future the Saudi stock market will gain in importance with the increase of privatisation programmes, increase of the depth and size of the market, number of shareholders, the entry of foreign investors, corporate governance and completion of market legislation, which will encourage the private sector and reduce the impact of reliance on government spending and oil income, particularly in non-oil *GDP*.

In addition, they were largely in agreement that economic liberalisation policies have had a positive effect on share prices through increased competition, reduced price volatility and increased profits.

Most interviewees agreed that the stock market should be opened up to foreign investors, as this would increase competition and give more depth to the market. However, some agree that restrictions should be imposed. Most of the respondents confirmed the importance of financial liberalisation, although with conservative views as to the degree of liberalisation.

The respondents also mentioned that there have been a number of regulative and legal concerns for investors in terms of the operations of the *Tadawul* that must be met to support the stock market and protect investors. Business activities should be regulated and monitored in various ways, of which the most important is the regulation and development of the capital market, and ways should be found of developing and improving the practices of entities involved in securities trading. On

the other hand, the operations of the *Tadawul* should also be improved in order to maintain fairness, efficiency and transparency in securities transactions.

Shari'ah compliancy is an important issue in the stock market in Saudi Arabia. The interviewees expressed the opinion that the *Tadawul* should have its own *Shari'ah* board, like the Securities Commission in Malaysia.

While most of the interviewees agreed that the stock market has played an important role in corporate finance in Saudi Arabia and there are certain advantages to Saudi businesses from obtaining equity rather than debt finance, although there was some disagreement with this on the ground that the financing comes from banking.

The Saudi stock market was vulnerable to the 2007-2008 global financial crisis and the respondents stated that observed operational shortcomings resulted in the economic reforms that could have helped avoiding the collapse of the stock market.

Some of the interviewees were optimistic, believing that movements of stock market prices over the next five years may be more stable as a result of the strength of the Saudi economy. Those with an optimistic outlook saw more stability, improvement and profits, while those with a more pessimistic outlook: foresaw more volatility, fluctuations and losses. The respondents believed that stock prices in Saudi Arabia, as a petroleum economy, should reflect oil price developments. However, despite the belief that there is a limited impact, the stock market crash in 2006 was accompanied by a rise in oil prices.

These results indicate that despite the recent development and growth in the Saudi financial markets, the economy in general still rely on the oil revenues and government policies in the long run

8.2. REFLECTING ON THE FINDINGS

This study makes several contributions both to the academic literature and in terms of informing policy makers.

The Saudi Stock Market has evolved in the second half of the past decade in terms of legislation, the establishment of the Capital Market Authority and the independence of the stock market *Tadawul*. In addition, there has been an increase in the market

size, the number of joint stock companies, investment funds, and market liberalisation policies for foreign investors and to allow the citizens of the Gulf Cooperation Council, or *GCC*, and residents to invest in the domestic market, increasing privatisation, corporate governance and economic reforms. However, the stock market had been suffering from a disorder of regulations, legislation and restructuring in its first two decades. The result of the weak relationship between economic growth and the stock market can be explained by the following:

(i) There was duplication with the role of banks in providing banking and investment services;

(ii) There was also a lack of institutional investors and an increase in individual investors in the stock market;

(iii) Investment funds were weak, and administration of investment companies lacked efficiency and their contribution to the productive sectors was low;

(iv) There was also a lack of corporate incentive programs to increase the efficiency of production and profit, as well as a lack of transparency and disclosure of information;

(v) There was weak guidance of the market by government institutions;

(vi) The market became flooded with large speculators who reaped the profits and then exited, causing a loss to small shareholders;

(vii) There have been some economic distortions concerning the nature of fiscal and monetary policies of the petroleum economy that have depended on the policy of government spending;

(viii) The contribution of the other sectors, in particular the service sector, to *GDP* has been low and the contribution of oil to *GDP* has continued to be important, although this is vulnerable to fluctuations in world oil prices.

In sum, the stock market can be an important tool to rise funding for economic growth. However, this requires an investment mindset rather than perceiving the

stock market as the centre for 'gambling', which resulted in the crash with a devastating effect in Saudi Arabia.

8.3. RECOMMENDATIONS

Based on the results of this study, the most of important recommendations for increasing the role of the stock market in economic growth in the future, according to the economic and financial facts of the economy in general and the stock market in particular are:

(i) Complete restructuring of the financial sector, in particular the stock market, and support for the depth of the stock market through the development of market systems and regulatory legislation, the acceleration of privatisation, corporate governance and economic reform programs;

(ii) Expansion in the process of liberalisation of foreign investment and the encouragement of residents to increase their investment in the local stock market;

(iii) Increase in mergers and acquisitions between companies to strengthen and support the increase of the companies' capital; as the empirical literature on mergers and acquisition indicate, in order to overcome the 'size' issue, mergers and acquisition provides a golden opportunity to benefit from economies of scale and scope but also helps to pull the resources together for a particular purpose. It also helps to overcome the observed competition and saturation of the market. Consequently, it leads to economic efficiency in resource allocation but also in operation. This leads to better economic outcomes and hence efficient utilization of the scarce resources leading to efficiency induced economic growth and larger volume in the stock exchange;

(iv) Increase in the number of investment funds in shares and stimulate investors to invest in them;

(v) Increase in the institutional investments and decrease in the individual investments that are more likely to make a loss;

(vi) Meeting the requirements of increased disclosure and transparency, and hence the importance of effective corporate governance system; the literature and the real

life experience, in particular after the recent financial crisis, indicates that there is a direct relationship between corporate governance efficiency and the economic performance of the firms in an economy, as such an efficient structure helps to mitigate observed risks by taking up the necessary measures on time. Consequently, an efficient corporate governance structure leads to efficient running and management of firms and financial institutions inducing economic growth or at least preventing economic downturn. This is expected to have positive impact also on the performance of the firms and financial institutions listed in the stock market.

(vii) Protecting small investors from speculative investors to collect savings and pumped into the stock market, contributing to support the market and hence economic growth;

(viii) Raising awareness among investors and increase the efficiency of workers in the market;

(ix) Urging companies to contribute to the actual process of development, with greater control over boards of directors, their investments, and the optimal allocation of resources;

(x) Establishing a stock company for marketing and economic research and a feasibility studies centre for projects proposed to agricultural and industrial companies, taking into account the geographic distribution and climate in Saudi Arabia and the natural resources available in each region;

(xi) Increasing cooperation between companies and research centres in universities and the King Abdulaziz City for Science and Technology in the implementation of registered innovations;

(xii) Increasing cooperation between companies and research centre in universities and the King Abdulaziz City for Science and Technology to support innovation and manufacturing. Considering that knowledge determines the shape of the new economy, and innovation lies in the heart of knowledge economy, economic growth, as evidenced by growing literature, is very much affected by the expansion of knowledge and innovation. At the hearth of innovation and knowledge are the universities, research centres and think tanks. However, In Saudi Arabia, innovation

and knowledge creation remains a huge problem as in other developing counties. However, the government's recent efforts to overcome this particular problem have to be commended, such as the King Abdulaziz City for Science and Technology. It is also important to note that such institutions should directly work in collaborations with the industry to respond to the needs to the economy, which can then lead to organised efforts towards economic growth.

(xiii) Accelerating the integration of equity markets among *GCC* countries;

(xiv) Further studies to verify the relationship between the stock market and economic growth in general and support from the capital market to provide more information for researchers.

8.4. THE LIMITATIONS OF THE STUDY AND FUTURE RESEARCH

Similar to any other study, this study also has some limitations. It is hoped, therefore, that the future studies can undertake more sophisticated econometric analysis in the case of Saudi Arabia with the increasing disclosure of effective data system.

In terms of qualitative analysis, the interviews were conducted with professionals related to the *Tadawul*. It might also be important to consider the perceptions of the investors, and therefore future studies should also consider conducting perhaps a questionnaire to measure the opinions of the investors on the operations and impact of the stock market on the economic performance.

There are some conceptual issues related to the stock market operation in Saudi Arabia. Therefore, a political economy approach will be useful in interpreting the results in relation to the *Tadawul*'s operation. For instance, the heavy presence of the government and its economic role should be considered and examined as an hindrance for stock market performance. Hence, such studies can be conducted through political economy approach in giving further meaning to the econometrics studies.

3.5. EPILOGUE

This study aimed at examining and assessing the role of Saudi Stock Market on the economic growth in Saudi Arabia. For this quantitative and qualitative methods utilised to assemble secondary and primary data, respectively. As the literature review chapters, modelling chapter and also the empirical chapters indicate, this research has fulfilled its aims and objective. While with this, this study ends, it is expected that the future studies built on this should continue.

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Appendix 1

CAPITAL MARKET AUTHORITY

Anti-Money Laundering and Counter-Terrorist Financing Rules

English Translation of the Official Arabic Text
Issued by the Board of the Capital Market Authority
Pursuant to its Resolution Number 1-39-2008
Dated 3/12/1429 H Corresponding to 1/12/2008
Based on the Capital Market Law
issued by Royal Decree No. M/30 dated 2/6/1424H
Amended by Resolution of the Board of the Capital Market Authority Number (1-32-2011) Dated 25/11/1432 H Corresponding to 23/10/2011
Arabic is the official language of the Capital Market Authority
The current version of these Regulations, as may be amended, can be found at the *CMA* website: www.cma.org.sa
Or
http://www.cma.org.sa/En/Documents/AML%20%20amended%20Final.pdf

Appendix 2

CAPITAL MARKET AUTHORITY
MERGER AND ACQUISITION REGULATIONS

English Translation of the Official Arabic Text
Issued by the Board of the Capital Market Authority
Pursuant to its Resolution Number 1-50-2007
Dated 21/9/1428 H Corresponding to 3/10/2007
Based on the Capital Market Law
issued by Royal Decree No. M/30 dated 2/6/1424H
Arabic is the official language of the Capital Market Authority
The current version of these Regulations, as may be amended, can be found at
the *CMA* website: www.cma.org.sa
Or
http://www.cma.org.sa/En/Documents/MERGER%20REGULATION-26-8-009.pdf

Appendix 3

CAPITAL MARKET AUTHORITY
INVESTMENT FUNDS REGULATIONS

English Translation of the Official Arabic Text

Issued by the Board of the Capital Market Authority

Pursuant to its Resolution Number 1 – 219 - 2006

Dated 3/12/1427H Corresponding to 24/12/2006

Based on the Capital Market Law

issued by Royal Decree No. M/30 dated 2/6/1424H

Arabic is the official language of the Capital Market Authority

The current version of these Regulations, as may be amended, can be found at the *CMA* website: www.cma.org.sa

Or

http://www.cma.org.sa/En/Documents/INVESTMENT%20FUND%20REGUL-50-PAGE.pdf

Appendix 4

CAPITAL MARKET AUTHORITY
CORPORATE GOVERNANCE REGULATIONS
IN THE KINGDOM OF SAUDI ARABIA

Issued by the Board of Capital Market Authority
Pursuant to Resolution No. 1/212/2006
dated 21/10/1427AH (corresponding to 12/11/2006)
based on the Capital Market Law
issued by Royal Decree No. M/30
dated 2/6/1424AH
Amended by Resolution of the Board
of the Capital Market Authority Number 1-10-2010
Dated 30/3/1431H corresponding to 16/3/2010G
English Translation of the Official Arabic Text
Arabic is the official language of the Capital Market Authority
The current version of these Rules, as may be amended, can be found aton
the *CMA* website: www.cma.org.sa
Or
http://www.cma.org.sa/En/Documents/CORPORATE%20GOVERNANCE.pdf

Appendix 5

Capital Market Authority

Kingdom of Saudi Arabia

Real Estate Investment Funds Regulations

in the Kingdom of Saudi Arabia

English Translation of the Official Arabic Text

Issued by the Board of the Capital Market Authority

Pursuant to its Resolution Number 1-193-2006

Dated 19/6/1427 Corresponding to 15/7/2006

Based on the Capital Market Law

issued by Royal Decree No. M/30 dated 2/6/1424H

Arabic is the official language of the Capital Market Authority

The current version of these Regulations, as may be amended, can be found at

the *CMA* website: www.cma.org.sa

Or

http://www.cma.org.sa/En/Documents/REAL%20ESTATE%20INVE%20FUND%20REG__.pdf

Appendix 6

Capital Market Authority

KINGDOM OF SAUDI ARABIA

SECURITIES BUSINESS REGULATIONS

English Translation of the Official Arabic Text

Issued by the Board of the Capital Market Authority

Pursuant to its Resolution Number 2-83-2005

Dated 21/05/1426H Corresponding to 28/06/2005G

Based on the Capital Market Law

issued by Royal Decree No. M/30 dated 2/6/1424H

Arabic is the official language of the Capital Market Authority

The current version of these Regulations, as may be amended, can be found at the *CMA* website: www.cma.org.sa

Or

http://www.cma.org.sa/En/Documents/SECURITIES%20BUSINESS.pdf

Appendix 7

Capital Market Authority

KINGDOM OF SAUDI ARABIA

AUTHORISED PERSONS REGULATIONS

English Translation of the Official Arabic Text

Issued by the Board of the Capital Market Authority

Pursuant to its Resolution Number 1-83-2005

Dated 21/05/1426H Corresponding to 28/06/2005G

Based on the Capital Market Law

issued by Royal Decree No. M/30 dated 2/6/1424H

Arabic is the official language of the Capital Market Authority

The current version of these Regulations, as may be amended, can be found at the *CMA* website: www.cma.org.sa

Or

http://www.cma.org.sa/En/Documents/AUTHORISED%20PERSON.pdf

Appendix 8

Capital Market Authority
MARKET CONDUCT REGULATIONS
TRANSLATION
KINGDOM OF SAUDI ARABIA
MARKET CONDUCT REGULATIONS

English Translation of the Official Arabic Text
Issued by the Board of the Capital Market Authority
Pursuant to its Resolution Number 1-11-2004
Dated 20/8/1425H Corresponding to 4/10/2004G
Based on the Capital Market Law
issued by Royal Decree No. M/30 dated 2/6/1424H
Arabic is the official language of the Capital Market Authority
The current version of these Regulations, as may be amended, can be found at the *CMA* website: www.cma.org.sa
Or
http://www.cma.org.sa/En/Documents/Market%20Conduct%20Regulation-26-8-009.pdf

Appendix 9

Capital Market Authority

KI NGDOM OF SA UDI ARABIA

OFFERS OF SECURITIES REGULATIONS

Issued by the Board of the Capital Market Authority

Pursuant to its R esolution Number 2-11-2004

Dated 20/8/1425H Corre sponding to 4/10/2004G

Based on the Capital Ma rket Law

issued by Roya l Decree No. M/30 dated 2/6/1424H

Amended by Resolution of the Board

of the Capital Mar ket Authority Number 1-28-2008

Dated 17/8/1429H Corre sponding to 18/8/2008G

Arabic is the ocial la nguage of the Capital Ma rket Authority

Important Notice: The current version of theseRegulations, as may be amended, can be

found at the *CMA* website: www.cma.org.sa

Or

http://www.cma.org.sa/En/Documents/OFFERS-OF-SECURITIES-REGULATION.pdf

Appendix 10

Capital Market Authority
KINGDOM OF SAUDI ARABIA
LISTING RULES

English Translation of the Official Arabic Text
Issued by the Board of the Capital Market Authority
Pursuant to its Resolution Number 3-11-2004
Dated 20/8/1425H Corresponding to 4/10/2004G
Based on the Capital Market Law
issued by Royal Decree No. M/30 dated 2/6/1424H
Amended by Resolution of the Board
of the Capital Market Authority Number 2-128-2006
Dated 22/12/1426H Corresponding to 22/1/2006G
Arabic is the official language of the Capital Market Authority
The current version of these Rules, as may be amended, can be found at
the *CMA* website: www.cma.org.sa
Or
http://www.cma.org.sa/En/Documents/LISTING-%20RULES.pdf

Appendix 11

Capital Market Authority
KINGDOM OF SAUDI ARABIA
GLOSSARY OF DEFINED TERMS USED IN THE REGULATIONS AND RULES OF THE CAPITAL MARKET AUTHORITY

English Translation of the Of cial Arabic Text
Issued by the Board of the Capital Market Authority
Pursuant to its Resolution Number 4-11-2004
Dated 20/8/1425H Corresponding to 4/10/2004G
Based on the Capital Market Law
issued by Royal Decree No. M/30 dated 2/6/1424H
Amended by Resolution of the Board
of the Capital Market Authority Number 1-28-2008
Dated 17/8/1429H Corresponding to 18/8/2008G
Arabic is the of cial language of the Capital Market Authority
The current version of this Glossary, as may be amended, can be found at
the *CMA* website: www.cma.org.sa
Or
http://www.cma.org.sa/En/Documents/GLOSSARY%20OF%20DEFINED.22X28-26-8-009.pdf

Appendix 12

Interview questions

الإسم (إختياري)

Name:

العمل حاليا وسابقا (إختياري):

Occupation or Position:

Question 1: What were the main reasons for the creation of the stock market in Saudi Arabia?

السؤال الأول: ما الأسباب الرئيسية لإنشاء سوق الاسهم في المملكة العربية السعودية كما تراها من حيث الأهمية؟

Question 2: Has the lack of institutional investors inhibited development of the market? If so, in what way?

السؤال الثاني: هل قلة المستثمرين في شكل مؤسسات (ليس فردي) حال دون تطور السوق؟ إذا كان الأمر كذالك لماذا؟

Question 3: (a) Would you please reflect on the link between stock market development and business growth? (b) What is the direction of causality? (c) Does the stock market contribute to economic growth and business development or vice versa? Please give a reason for your answer?

السؤال الثالث: هل من الممكن تلمس العلاقة بين تطور المشروعات (النمو الإقتصادي) وتطور سوق الأسهم السعودي؟ ما هو اتجاه العلاقة السببية بين سوق الأسهم والنمو الإقتصادي؟وهل يسهم سوق الأسهم في النمو الاقتصادي وتطوير المشروعات(الأعمال) الإقتصادية أو العكس صحيح؟ هل من الممكن تعليل إجابتك؟

Question 4: (a) Do you think economic liberalisation policies have had a positive effect on share prices?(b) Should the stock market be opened up for foreign investors?

السؤال الرابع: هل تعتقد أن سياسات التحرير الاقتصادي كان لها تأثير إيجابي على أسعار الأسهم؟ وهل ترى أنه ينبغي أن تكون سوق الأسهم مفتوحة للمستثمرين الأجانب؟

Question 5: What are the main regulative and legal concerns for investors in the Tadawul?

السؤال الخامس:ما هي اهم الاعتبارات التنظيمية والقانونية الأساسية للمستثمرين في تداول (سوق الاسهم السعودي)؟

Question 6: (a) Are there any *shari'ah* compliancy concerns for equity investors in Saudi Arabia?(b) Should the *Tadawul* have its own *shari'ah* board as is the case with the Securities Commission in Malaysia?

السؤال الخامس: هل هناك أية مخاوف تقلق المستثمرين حيال التوافق بين سوق الأسهم و مبادي الشريعة الإسلامية ؟وهل ينبغي لتداول (سوق الأسهم السعودي) أن يكون لها هيئة شرعية خاصة بها كما هو الحال مع لجنة الاوراق المالية في ماليزيا؟

Question 7: (a) Do you think the stock market has played an important role in corporate finance in Saudi Arabia?(b) What are the advantages to Saudi businesses of obtaining equity rather than debt finance?

السؤال السابع: هل تعتقد أن سوق الأسهم قد لعبت دورا مهما في تمويل الشركات في المملكة العربية السعودية؟ ما هي المزايا للشركات السعودية للحصول على التمويل عن طريق الأسهم بدلا من الديون (مثل القروض البنكية)؟

Question 8: (a) Would you please reflect on the 2006 crisis in the stock market? (b) What factors caused the collapse?

السؤال الثامن: هل من الممكن التفكير مليئا في أزمة عام 2006 في سوق الأسهم؟ وذكر أهم العوامل التي تسببت في انهيار السوق؟

Question 9: To what extent was the Saudi stock market vulnerable to the 2007-2008 global financial crisis?

السؤال التاسع: إلى أي مدى كانت سوق الأسهم السعودية عرضة أو مرنة في مواجهة الأزمة المالية العالمية لعامي 2007-2008 ؟

Question 10: (a) How do you see stock prices moving in the next five years? (b) To what extent do stock prices in Saudi Arabia reflect oil price developments?

السؤال العاشر: كيف ترى تحركات سعر السهم(أو أسعار سوق الأسهم) في السنوات الخمس القادمة؟ وإلي أي مدى أسعار الأسهم تعكس التطورات في أسعار النفط؟