

# **An Investigation of the Relationship between Capital Market Development and Economic Growth: The Case of Saudi Arabia**

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**Meshaal Jsem M Alshammary**

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School of Accounting and Finance

College of Business

Victoria University

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## **Abstract**

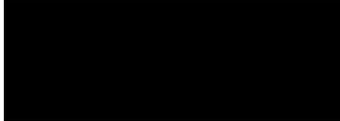
This thesis investigates the long-term and short-term relationships between capital market development and economic growth in the Kingdom of Saudi Arabia (KSA) for the period from 1970 to 2010. It employs a wide range of vector autoregression (VAR) and Vector Error Correction (VECM) models, Unit roots tests, optimal lag tests, Johansen-Juselius cointegration tests and Granger causality tests to evaluate the importance and impact of capital market development on economic growth.

Using real GDP growth rate (RGDPR) and real non-oil GDP growth rate (RNOIL) as proxies for economic growth and LM1, LM2 and bank credit to private sector (LBCP) as proxies for the capital market development. The vector-autoregression models (VAR) indicates significant long-term causal relationship among all the variables in the system. Granger causality tests show a bidirectional causal relationship between the economic growth variable RGDPR and the capital market when proxied by the bank credit to private sector (LBCP). However, Error-correction models results show no relationships in the short-run.

The thesis implications are as follows. Firstly, investment in real economic activities leads to economic growth. Secondly, the stock market might hinder economic growth due to its volatile and international risk sharing nature, low free-floating share ratio, number of listed companies, the domination of Saudi Individual Stock Trades (SIST) characteristics and the small size of the least active and limited bond and ETF markets. Thirdly, policymakers should seek to minimise stock market volatility and fluctuations, increase all the free-floating share ratio, number of listed companies, size and offering in the bond and ETF markets and shift investment domination toward corporate investors by considering its effect on economic growth when formulating economic policies. Fourthly, the banking sector might hinder economic growth due to its lack of small and medium enterprises lending and shareholder concentration issues. Finally, policymakers should seek to encourage banks toward more involvement in small and medium enterprises SMEs' lending, which will strengthen the private sector role.

## **Declaration**

I, Meshaal Alshammary, declare that the DBA thesis entitled 'An Investigation of the Relationship between Capital Market Development and Economic Growth: The Case of Saudi Arabia' is no more than 65,000 words in length, including quotes and exclusive of tables, figures, appendices, bibliography, references and footnotes. This thesis contains no material that has been submitted previously, in whole or in part, for the award of any other academic degree or diploma. Except where otherwise indicated, this thesis is my own work.



**Signature**

28 Feb. 2014

**Date**

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# Contents

Abstract.....	ii
Declaration.....	iii
Acknowledgements.....	iv
List of Figures.....	viii
List of Tables.....	ix
List of Abbreviations.....	x
Chapter 1: Introduction.....	1
1.1 Aims and Context.....	1
1.2 Statement of Significance.....	3
1.3 Capital Market Developments and Economic Growth.....	4
1.4 Conceptual and Analytical Frameworks.....	6
1.5 Data and Scope.....	8
1.6 Overview of the Study.....	8
Chapter 2: The Saudi Arabian Economy, Public Finance and Capital Market.....	10
2.1 Introduction.....	10
2.2 Saudi Arabian Economy and Planning.....	10
2.2.1 Framework.....	10
2.2.2 Strategic Choices.....	10
2.2.3 Planning History.....	12
2.2.4 Privatisation.....	18
2.2.5 Economic Performance.....	19
2.2.6 Saudi Unemployment.....	29
2.2.7 Foreign Direct Investment.....	31
2.3 Saudi Arabian Monetary Agency (SAMA).....	36
2.3.1 A Brief History of the Saudi Arabian Monetary Agency (SAMA).....	36
2.3.2 SAMA: Performance Remarks.....	38
2.4 The Saudi Banking Sector.....	45
2.4.1 History of The Saudi Banking Sector.....	45
2.4.2 Saudi Banking Sector: Performance Remarks.....	53
2.5 The Saudi Stock Market: Tadawul.....	64
2.5.1 A Brief History of the Saudi Stock Market.....	64
2.5.2 Tadawul: Performance Remarks.....	65

2.5.3 Tadawul’s 2006 ‘Bubble’ .....	74
2.6 Saudi Arabia: Islamic Finance .....	75
2.7 Conclusion .....	77
Chapter 3: Theoretical and Empirical Studies of Capital Market Development and Economic Growth .....	81
3.1 Introduction.....	81
3.1.1 Capital market.....	81
3.1.2 Economic Growth .....	82
3.1.3 Capital Market Development and Economic Growth Main Hypotheses (Views)..	82
3.2 Economic Growth and Capital Market Development Theories.....	86
3.2.1 Neoclassical Growth Model.....	87
3.2.2 Endogenous Economic Growth Model.....	89
3.3 Channels to Economic Growth .....	92
3.4 Empirical Studies on the Relationship between Capital Market Development and Economic Growth .....	96
3.4.1 The Independent View .....	97
3.4.2 The Demand-Following View .....	100
3.4.3 The Supply-Leading View .....	100
3.4.4 The Feedback View .....	115
3.4.5 The ‘bank versus stock market’ based variables Empirics .....	118
3.4.6 The Mixed Results Empirics.....	120
3.4.7 Empirics on Saudi Arabia .....	125
3.5 Conclusion .....	129
Chapter 4: Methodology .....	131
4.1 Introduction.....	131
4.2 The Macroeconomic Variables and the VAR Model .....	135
4.2.1 Economic Growth Variables.....	135
4.2.2 Capital Market Development (CMD) Variables.....	137
4.2.3 The Control Variables (CV) .....	141
4.3 VAR and VECM Modelling .....	146
4.3.1 Unit Root Test.....	147
4.3.2 Cointegration Test.....	148
4.3.3 Granger-Causality Test .....	149
4.4 Conclusion .....	150

Chapter 5: Results .....	152
5.1 Introduction .....	152
5.2 Descriptive Statistics .....	152
5.3 Long-Run Analysis .....	156
5.3.1 Unit Root Test Results .....	157
5.3.2 Selection of Optimal Lag lengths .....	160
5.3.3 Results of the Johansen-Juselius Cointegration Tests .....	162
5.4 Short-Run Analysis .....	175
5.4.1 Causality Tests .....	176
5.5 Conclusion .....	187
Chapter 6: Conclusions .....	189
6.1 Overview .....	189
6.2 Thesis Aims .....	189
6.2.1 The First Aim .....	189
6.2.2 The Second Aim .....	193
6.2.3 The Third and Fourth Aims .....	198
6.2.4 The Fifth Aim .....	201
6.3 Thesis Limitation and Suggestions for Future Research .....	202
References .....	203
Appendix A .....	221
Appendix B .....	222

## List of Figures

Figure 2.1	Expenditures during the Saudi Development Plans (% SR in Billion)	15
Figure 2.2	Saudi Population and General Education Students (in million 1970-2010)	18
Figure 2.3	Major Economic Eras GDP (SR billions at constant prices, 1999=100)	20
Figure 2.4	Nominal and Real Oil Prices (Base year 1970)	22
Figure 2.5	Gross Domestic Product of Saudi Arabia (1970-2010 in Million Riyals)	23
Figure 2.6	Nominal GDP and Average Real Non-Oil Growth Rate (1980-2010)	23
Figure 2.7	GDP per capita (current SR)	26
Figure 2.8	Gross Fixed Capital Formation and Level of Investment (1970-2010, in Million Riyals)	29
Figure 2.9:	Foreign direct investment, net inflows (% of GDP)	35
Figure 2.10	The Saudi 3-Month Interbank Interest Rate (Isa3) and the US Treasury Bill Rate	38
Figure 2.11	Saudi Arabia Domestic Money Creation Process	40
Figure 2.12:	Income Velocity of Money (non-oil sector)	41
Figure 2.13	Saudi Arabia Monetary Ratios (%)	41
Figure 2.14	Financial Deepening in Saudi Arabia (%) 1971–2008	42
Figure 2.15	Inflation indicators (1979-2010)	43
Figure 2.16	Inflation Rate (1979-2010)	44
Figure 2.17	Saudi Arabia Banks' Branches and ATMs (1994–2009)	57
Figure 2.18	The Bank Credit to Private Sector (% annual change)	59
Figure 2.19:	Bank credit to private sector (1970-2010)	59
Figure 2.20(a)	Share Market Indicators	69
Figure 2.20(b)	Share Market Indicators	69
Figure 2.21	Average Monthly Contribution to Saudi Stock Market Trades by Category of Investor and % of Value Traded (2009)	74
Figure 3.1	Capital markets and flow of funds relationship	93
Figure 3.2	A Theoretical approach on Finance and Growth	94

## List of Tables

Table 2.1	Economic Development Options for Saudi Arabia	11
Table 2.2(a)	Key Indicators of Saudi Arabia's National Five-Year Development Plans	16
Table 2.2(b)	Key Indicators of Saudi Arabia's National Five-Year Development Plans	17
Table 2.3	GDP by Sector and Types of Economic Activity in Producer's Values at current prices (% in SR millions)	25
Table 2.4	GFCF by Sectors and Type of Assets in Purchasers Values	28
Table 2.5	Status of Banks Holding Licences to Operate in Saudi Arabia (2010)	46
Table 2.6	Saudi Banks' International Branches (2010)	53
Table 2.7	Saudi Specialised Credit Institutions—Outstanding Loans	61
Table 2.8	Consumer And Credit Cards Loans (Million riyals)	63
Table 2.9	Bank credit to private sector by economic activity (SR billion)	63
Table 2.10	Saudi Arabia Shares Outstanding and Those Held by the Public as Free Float (2003–2009)	71
Table 3.1	Empirics Included Saudi Arabia	128
Table 5.1	Statistical features of the Macroeconomic variables (Data in Level)	152
Table 5.2	Statistical features of the microeconomic variables (Mean of the Data in their first Differences)	153
Table 5.3	Correlation Matrix of the Macroeconomic Variables	155
Table 5.4	ADF and PP Unit Root Tests of the VAR Models	157-158
Table 5.5	Optimal Lag Lengths of the VAR Models	160-162
Table 5.6	Johansen-Juselius Cointegration Test	162-164
Table 5.7	Vector Error Correction Estimates	176-182
Table 5.8	Pairwise Granger Causality Tests Between RGDPR, RNOIL, LM1, LM2 and LBCP	185

## List of Abbreviations

ACH	Automated Clearing House
ADF	Augmented Dickey-Fuller unit root test
AIC	Akaike information criterion
ARDL	Autoregressive Distributive Lag
ATM	automated teller machine
BCP	bank credits to the private sector
CCFI	Consulting Centre for Finance and Investment
CMA	Capital Market Authority (Saudi Arabia)
CGE	computable general equilibrium
CMD	capital market development
CML	Capital Market Law (Saudi Arabia)
CPI	Consumer Price Index
CPO	Central Planning Organization
ECM	Error correction model
ECT	error-correction term
EG	economic growth
EMH	efficient market hypothesis
ESIS	Electronic Share Information System
ETF	exchange traded funds
EX	exchange rate
FDI	foreign direct investment
FCM	foreign capital market
FMOLS	Fully Modified Ordinary Least Squares
FPE	final prediction error
G-20	Group of 20
GCC	Gulf Cooperation Council
GDP	gross domestic product
GEDU	general education students
GFCF	gross fixed capital formation
GFI	gross fixed investment
GNP	gross national product

GOSI	General Organization for Social Insurance
HQ	Hannan-Quinn
IMF	International Monetary Fund
INF	inflation
INVR	level of investment
IPO	initial public offering
IR	interest rate
IRF	impulse response functionIsa3 three-month Saudi short-term interest rate
ISE	Istanbul Stock Exchange
KSA	Kingdom of Saudi Arabia
LR	log likelihood ratio
M1	narrow money supply
M2	broad money supply
MC	market capitalisation
MENA	Middle Eastern and North African
MEP	Ministry of Economy and Planning
MoP	Ministry of Planning (Saudi Arabia)
NCFEI	National Centre for Financial and Economic Information
NCB	National Commercial Bank
NEER	nominal effective exchange rate
NOILB	nominal North Sea (Brent) oil prices
OBU	offshore banking unit
OECD	Organization for Economic Co-operation and Development
OIC	Organisation of Islamic Cooperation
OLS	Ordinary Least Squares
OP	oil price
OPEC	Organisation of the Petroleum Exporting Countries
PIF	Public Investment Fund (Saudi Arabia)
PP	Phillips-Perron unit root test
REDF	Real Estate Development Fund
RGDPR	Real GDP Growth Rate
RNOIL	Real Non-Oil GDP Growth Rate
S&P 500	Standard and Poor's 500 Index

SAARC	South Asian Association for Regional Cooperation
SABIC	Saudi Arabia Basic Industries Corporation
SAMA	Saudi Arabian Monetary Agency
SAMBA	Saudi American Bank
SARIE	Saudi Riyal Interbank Express
SEC	Securities Exchange Commission
SIDF	Saudi Industrial Development Fund
SIC	Schwarz information criterion
SIST	Saudi individual stock traders
SMEs	small- and medium-sized enterprises
SMI	stock market index
SPAN	Saudi Payment Network
SSE	Saudi Stock Exchange
SSRC	Saudi Share Registration Company
TASI	Tadawul All Share Index
TNI	total new issues
TR	turnover ratio
UAE	United Arab Emirates
UK	United Kingdom
US	United States
USCB	United Saudi Commercial Bank
VAR	vector autoregression
VDC	variance decomposition
VECM	vector error correction model
VTR	value-traded ratio
WTI	Western Texas Intermediate
WTO	World Trade Organization

# Chapter 1: Introduction

## 1.1 Aims and Context

Economic development and growth issues continue to capture the interests of academics and policy makers around the globe. In recent times, the shift in emphasis has been from the classical concepts of maximising production outputs and wealth distribution towards economic sustainability, as a reaction to globalisation. This has resulted in major economic reforms, especially among developing countries as they expand their markets. Economic sustainability is heavily tied to investment, which in turn relies on the capital market. Hence, development of a stable domestic capital market underpins sustainability. Within the capital market, development of the equity and debt markets is an important part of any economic reform. Securities trading is the dominant capital market function that mobilises saving, allocates capital, exerts corporate control and eases financial risks (Levine and Zervos 1996, 1998).

Saudi Arabia is the world's dominant oil producer and exporter while it controls world's second largest hydrocarbon reserves. It is an active member and one of the founders of OPEC<sup>1</sup>. Saudi Arabia is categorised as a high income economy and is the only Arab country to be part of the G-20<sup>2</sup> major economies. In addition, it is the Land of the Two Holy Mosques' in reference to *Al-Masjid al-Haram* (in Mecca), and *Al-Masjid an-Nabawi* (in Medina), the two holiest places in Islam. Thus, Saudi Arabia plays a leading member of the

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<sup>1</sup> Organisation of the Petroleum Exporting Countries (OPEC), is an international organisation and economic cartel whose mission is to coordinate the policies of the oil-producing countries. The goal is to secure a steady income to the member states and to collude in influencing world oil prices through economic means. OPEC is an intergovernmental organisation that was created at the Baghdad Conference on 10-14 September 1960, by Iraq, Kuwait, Iran, Saudi Arabia and Venezuela. Later it was joined by nine more governments: Libya, United Arab Emirates, Qatar, Indonesia, Algeria, Nigeria, Ecuador, Angola, and Gabon. OPEC was headquartered in Geneva, Switzerland before moving to Vienna, Austria, on September 1, 1965.

<sup>2</sup> The Group of Twenty (also known as the G-20 or G20) is a forum for the governments and central bank governors from 20 major economies. The members, include 19 individual countries—Argentina, Australia, Brazil, Canada, China, France, Germany, India, Indonesia, Italy, Japan, Republic of Korea, Mexico, Russian Federation, Saudi Arabia, South Africa, Turkey, United Kingdom, United States—and the European Union (EU). The EU is represented by the European Commission and by the ECB. Collectively, the G-20 economies account for around 85% of the gross world product (GWP), 80% of world trade (or if excluding EU intra-trade: 75%), and two-thirds of the world population. The G-20 heads of government or heads of state have periodically conferred at summits since their initial meeting in 2008.

Organisation of Islamic Cooperation (OIC)<sup>3</sup>. Moreover, within the Middle Eastern context, Saudi Arabia is an active member of the Gulf Cooperation Council (GCC)<sup>4</sup> and the Arab League<sup>5</sup>.

Saudi Arabia can be considered as a welfare state that offers free health care and education, imposes no taxes, has interest free personal mortgages and many other public services free of charge to the public. However, recently high unemployment rates among the population are becoming a national concern. These public expenditures cannot be sustained under an oil driven economy. Thus, strengthening the Saudi private sector role in the economy has become very important. In the last three Five-Year Saudi National Development Plans (2000–2014), there have been major legal, economic and financial reforms to promote sustainable economic growth. Such reforms were made to diversify the oil-based economy towards greater sustainability in line with international economic practices (Ramady 2010).

Although industrialisation is relatively recent in Saudi Arabia, it has shown a steady development with significant accomplishments that are attributed to the oil related manufacturing sector. It receives support from the government owing to its important role in achieving the strategic and economic goals of the country. The government's support has covered several spheres, including implementation of required infrastructure, construction of Jubail and Yanbu industrial cities, construction of industrial cities in various regions of Saudi Arabia, establishment of the Saudi Industrial Development Fund (SIDF), and continued provision of other industrial support and incentives. The private sector's response to and cooperation with the governmental plans and efforts has had an effect on the actualisation of industrial development.

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<sup>3</sup> The Organisation of Islamic Cooperation (OIC), is an international organisation founded in 1969 consisting of 57 member states. The organisation states that it is "the collective voice of the Muslim world" and works to "safeguard and protect the interests of the Muslim world in the spirit of promoting international peace and harmony".

<sup>4</sup> The Cooperation Council for the Arab States of the Gulf, originally (and still colloquially) known as the Gulf Cooperation Council (GCC), is a regional intergovernmental political and economic union consisting of all Arab states of the Persian Gulf, except for Iraq. Its member states are the Islamic monarchies of Bahrain, Kuwait, Oman, Qatar, Saudi Arabia, and the United Arab Emirates.

<sup>5</sup> The Arab League, formally, the League of Arab States, is a regional organisation of Arab countries in and around North Africa, the Horn of Africa, and Southwest Asia. It was formed in Cairo on 22 March 1945 with six members: Kingdom of Egypt, Kingdom of Iraq, Transjordan (renamed Jordan in 1949), Lebanon, Saudi Arabia and Syria. Yemen joined as a member on 5 May 1945. Currently, the League has 22 members, although Syria's participation has been suspended since November 2011, as a consequence of government repression during the ongoing uprising and civil war.

In addition to the Saudi intention to move the country's income from non-renewable resources, the conservative Islamic investment environment in Saudi prohibits interest on loans, which means a bigger emphasis is on raising capital through capital markets, using initial public offerings (IPOs), *sukuks* (Islamic bonds) and government special lending banks (Ramady 2010).

To date there is no adequate study of the relationship between capital market development and economic growth to provide guidance for decision makers in the anticipated transformation. This research attempts to fill this empirical gap.

The aim of the research is to determine the relationship between capital market development and economic growth in Saudi Arabia. Such a study on capital market development is timely because Saudi Arabia is moving aggressively toward strengthening the private sector role in the economy via privatisation, establishment of the Capital Market Authority (CMA) in 2003, and the creation of the new seven economic cities. The following key aims will be the focus of the thesis:

1. To review the historical development of the Saudi economy and capital market.
2. To investigate the relationship between capital market development and economic growth in Saudi Arabia.
3. To identify existing inefficiencies in the Saudi capital market.
4. To determine the impact of existing inefficiencies of the Saudi capital market on the economy.
5. To articulate policies to improve the efficiency of the capital market for the Capital Market Authority (CMA) and the Ministry of Economy and Planning (MEP).

## **1.2 Statement of Significance**

It should be noted that there has been very little work carried out to determine how capital market development contributes to growth, specifically for the Saudi economy. An examination of the contribution to economic growth is a potentially important aspect. In the meanwhile, in selecting an individual country (i.e. Saudi Arabia), the results of this study will

be appropriate for policy makers in emerging economies in general and Saudi Arabia in particular. Additionally, 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 capital market development in economic growth and open an interesting research topic. Furthermore, the benefits of this research are outlined below:

1. The research will close a significant gap in the literature on the Saudi capital market and its relationship to economic growth.
2. The research will offer updated findings on the relationship between Saudi capital market development and economic growth, as the extant empirical literature is not country specific, applied different methods and variables and used data that predates the radical changes in the capital market that began in 2003.
3. The research findings will provide contemporary information on the Saudi economy as a whole and the capital market, particularly for Saudi policy makers, academics and the industry.

### **1.3 Capital Market Developments and Economic Growth**

The study of the relationship between capital development and economic growth can be traced back to Schumpeter (1912) and Goldsmith (1969), both of whom investigated the effect of capital market development on economic growth (Demirhan, Aydemir and Inkaya 2011; Levine and Zervos 1998). Schumpeter's (1912) important early study proposed a causal link whereby capital markets promote economic growth by funding entrepreneurs and channelling capital to them with higher return investments (Ake and Ognaligui 2010; Demirhan, Aydemir and Inkaya 2011; Dritsaki and Dritsaki-Bargiota 2005; Levine and Zervos 1998). Schumpeter's (1912) view was that economic change could not simply be predicated on previous economic conditions alone, although prevailing economic conditions were a result of this. Similarly, Goldsmith (1969) emphasised the effect of the financial structure and development on economic growth.

According to modern growth theory, the financial sector may affect long-run growth through its impact on capital accumulation and the rate of technological progress. Financial sector development has a crucial impact on economic growth and poverty reduction, especially in

developing countries; without it, economic development may be constrained, even if other necessary conditions are met (DFID 2004).

The causal relationship between capital market development and economic growth was investigated by Jung (1986), who made comparisons between 19 developing and 37 less-developed economies and among the less-developed economies as a group. Jung (1986) found that the less developed countries have a ‘supply-leading’ causality—that is, there is a causal relationship from capital market development to economic growth—and developing economies had a ‘demand-following’ causality—that is, there is a causal relationship from economic growth to capital market development.

The literature review shows that the debate continues in both theoretical and empirical studies regarding the importance and causality directions of the relationship between capital market development and economic growth.

There is evidence of a direct relationship between capital market development and economic growth. Large capital markets can lower the cost of mobilising saving and thereby facilitate investment in productive technologies (Greenwood and Smith 1997). Bencivenga, Smith and Starr (1996) and Levine (1991) find that capital market liquidity is important for growth. Efficient capital markets may increase investment through enhancing the flow of information on firms, which also improves corporate governance (Holmstrom and Tirole 1993; Kyle 1984). International risk sharing through internationally integrated stock markets improves resource allocation and increases the economic growth rate (Obstfeld 1994).

There is also country-specific evidence of a strong relationship between capital market development and economic growth (Ghali 1999). Hondroyiannis, Lolos and Papapetrou (2005) used monthly data sets over the 1986–1999 period to empirically assess how the development of the banking system and the stock market relates to economic performance in Greece. They used vector autoregression (VAR) models and showed that there was bidirectional causality between capital market development and economic growth in the long run. Error-correction models show that capital markets promote economic growth in the long run: for example, Ghali’s (1999) study on Tunisia, Khan Qayyum and Sheikh’s (2005) study on Pakistan and Agrawalla and Tuteja’s (2007) study on India.

However, large and well-developed capital markets are insignificant sources of corporate finance (Mayer 1988). Capital market liquidity will not enhance incentives for acquiring information about firms or exerting corporate governance (Stiglitz 1985, 1993). Risk sharing through internationally integrated capital markets can actually reduce saving rates and slow economic growth (Devereux and Smith 1994). Capital market development can harm economic growth by easing counter-productive corporate takeovers (Morck, Shleifer and Vishny 1990a, 1990b; Shleifer and Summers 1988).

Demirhan, Aydemir and Inkaya (2011) resolved previous inconsistencies in empirical data on Turkey by providing evidence of bidirectional causality between capital market development and economic growth. There are similar inconsistencies in empirical data on Saudi Arabia: on one hand Darrat (1999) investigated empirically the relationship between financial deepening and economic growth for three developing Middle-Eastern countries (Saudi Arabia, Turkey and the UAE). His empirical results suggested that the economic stimulus of more sophisticated and efficient financial markets in Saudi Arabia become noticeable only gradually as the economies grow and mature in the long-run, and financial deepening may influence only some, but not all, sectors of the economy. On the other hand Naceur and Ghazouani's (2007) analysis of data from 1991 to 2003 found that developing financial structures is not as important to the economies in 11 Middle Eastern and North African (MENA) countries, including Saudi Arabia, due to their underdeveloped financial systems and unstable growth rates. Thus, there appears to be no existing research on the proposed topic of this study.

#### **1.4 Conceptual and Analytical Frameworks**

This study investigates the effect of capital 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 relationship between the capital market development and economic growth.

This analysis is informed by the contributions of the literature on endogenous growth, for example, Romer (1986) 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 are examined using 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. 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 this study, a VAR model is adopted to estimate the effects of the capital market development on economic growth. In order to test the causal relationships, the following multivariate model is estimated:

$$Y = f(\text{CMD}, \text{CV}) \quad (1.1)$$

Where:  $Y$  = economic growth variables.  
 CMD = capital market development variables.  
 CV = control variables.

The CMD and  $Y$  variables used in this study were compiled by Levine and Zervos (1996, 1998), Caporale, Howells and Soliman (2005) and Ndako (2010). Controlling variables from prior studies are also used (see Chapter 4 for more information).

The analytical framework of this study can be modelled in VAR form for the proposed empirical investigation:

$$\mathbf{y}_t = \alpha + \Phi \mathbf{y}_{t-1} + \varepsilon_t \quad (1.2)$$

$$\varepsilon_t \sim \text{IID}(0, \Omega)$$

Where:  $\Phi$  = a matrix of AR (1) coefficients  
 $\Omega$  = a covariance matrix of the error terms  
 $\mathbf{y}_t$  = a vector, which contains GDP, CMD, INV and CV

Many researchers used the Vector Autoregression (VAR) modelling technique (Agrawalla and Tuteja 2007; Ake and Ognaligui 2010; Demirhan, Aydemir and Inkaya 2011; Khan, Qayyum and Sheikh 2005). The VAR model, according to Juselius (2006), is a flexible model for the analysis of multivariate time series. It is a natural extension of the univariate autoregressive model for dynamic multivariate time series. The VAR model is especially useful for describing the dynamic behaviour of economic and financial time series. Due to these advantages, VAR and vector error correction models (VECMs) were generally used in previous studies. However, VAR models may require a large lag length to adequately describe a series; thus, there is a loss of precision due to the extent of the parameters estimated.

### **1.5 Data and Scope**

This study investigates the relationship between capital market development and economic growth of the Saudi economy over the period 1970 to 2010. The secondary annual data (41 observations) for the variables selected for the VAR models are collected from the International Monetary Fund (IMF), Saudi Arabian Monetary Agency (SAMA) and the Saudi stock exchange Tadawul. The vector autoregression (VAR) model and vector error correction model (VECM) offer a feasible approach for this investigation due to the robustness and rigour of the data.

### **1.6 Overview of the Study**

This thesis is structured as follows. This chapter has provided an introductory discussion of the subject matter. Five other chapters will follow logically; each one will deal with one specific issue that will assist the reader to follow the logic of the study.

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 gives an overview of the Saudi economy, with an emphasis on the five-year national plans, and presents the history and performance of the Saudi monetary system, the banking sector, the stock market and Islamic finance.

Chapter 3 first reviews theories of the relationship between capital market development and economic growth before highlighting the related empirical studies in the literature. It is divided into two parts. The first part deals with theoretical considerations of capital market development and economic growth. The second part will review the empirical research and highlight different views in terms of capital market development and economic growth. Note, the terms “capital market development”, “financial development”, “financial intermediation” are used interchangeably in this study. Capital market development, however, should be thought of as a broader concept that also includes financial innovations that occur outside the banking system. Because of the lack of data regarding non-bank financial innovation in developing countries like Saudi Arabia, the level of financial intermediation effectively measures the degree of capital market development by the banking system (see section 3.1.1).

Chapter 4 presents the material, model, variables and methods used in the study. The theoretical backgrounds of the methods are discussed. These methods are unit root tests, optimal lag tests, Johansen’s cointegration test, Vector-Error Correction Model (VECM), Granger causality tests.

In Chapter 5, the characteristics of the data are examined using a number of empirical analysis methods. Firstly, the data are tested for the existence of unit root. Second, a series of OLS regression results will be presented. Thirdly, these results are further examined by using Johansen’s cointegration tests. Fourthly, Vector-Error Correction Model (VECM) and finally, the direction of causality between the variables is examined by using the Granger causality test.

Finally, Chapter 6 outlines the conclusions and discusses the policy implications of this study, as well as other research possibilities.

## **Chapter 2: The Saudi Arabian Economy, Public Finance and Capital Market**

### **2.1 Introduction**

This chapter aims to present a historical review of the Saudi Arabian economy, public finance and the capital market. A statistical review of the performance of the Saudi economy, public finance and capital market over the period of 1969 to 2010 is also provided.

### **2.2 Saudi Arabian Economy and Planning**

#### **2.2.1 Framework**

Saudi Arabia adopted a very sophisticated development planning process compared to other developing world nations (Cordesman 2003). This planning process is allied with technical expertise and advice provided by the World Bank (Ramady 2010). According to Chadhury (1989, 1997) and Auty (2001), the Saudi Arabia economic development path can be described as a '*Rentier*' economy, where governments attempt to maximise revenues from natural resources such as oil in the case of the Saudi Arabia and then distribute its wealth to its population (Ramady 2010). This process occurred during the oil boom of the 1970s and early 1980s when the Saudi government acted as an oil revenue or 'rents' distributive agent for the citizens and that created the exclusive role of the public sector in driving the economy (Chadhury 1997). This oil boom combined with the Saudi public sector precondition of limited experience and infrastructure led to strategic investment decisions that shaped the future of the economy.

#### **2.2.2 Strategic Choices**

The Saudi Arabian government together with its key planner and consultants devised a strategic mission to manage the future of the economy in the early 1970s during the oil boom. This era was highlighted by the government's lack of both planning experience, and data availability along with the high expectations of its society (Ramady 2010). Table 2.1

illustrates Ramady's view of the strategic development options and the possible positive and negative consequences Saudi planners faced during this planning process.

Saudi Arabia was rushing to develop, so in-depth discussions concerning the strategic choices to be followed were few at that early planning stage (Al-Farsi 1982). This resulted in taking the 'large-scale domestic industrialisation and for diversification of the national economic base' strategic option. This meant that Saudi Arabia was aiming to shift the economic base dependency from oil exporting towards a more diverse industrial economy with less emphasis on oil revenue to cover public spending in the future (Al-Farsi 1982).

**Table 2.1: Economic Development Options for Saudi Arabia**

<b>Development Option</b>	<b>Positive Factors</b>	<b>Negative Factors</b>
<b>Large Oil Production</b>	<ul style="list-style-type: none"> <li>• Large foreign investments and surplus financial resources</li> <li>• Balance of payment surpluses</li> <li>• No incentive to fund crude oil substitutes</li> </ul>	<ul style="list-style-type: none"> <li>• Economic dependency</li> <li>• International and domestic inflation</li> <li>• Rapid consumption of non-renewable national resources</li> <li>• <i>Rentier</i> economy</li> </ul>
<b>Oil production based on domestic needs</b>	<ul style="list-style-type: none"> <li>• Moderate investments abroad leading to paced development and equilibrium between domestic development needs and financial resources</li> <li>• Large oil reserves for future generations</li> </ul>	<ul style="list-style-type: none"> <li>• World oil shortages</li> <li>• High international inflation and world recession</li> <li>• Strong incentive to find crude oil substitute and suppliers</li> </ul>
<b>Large scale domestic industrialisation and diversification of economic base</b>	<ul style="list-style-type: none"> <li>• Potential economic independence</li> <li>• Skills acquisition and new working habits</li> <li>• Exports potential</li> <li>• Technology transfer</li> <li>• Education base widened</li> <li>• No oil economic diversification</li> </ul>	<ul style="list-style-type: none"> <li>• Large imports</li> <li>• Need for expatriate labour increased</li> <li>• Balance of payments problems with a large element of exported salaries and profits</li> <li>• Domestic inflation</li> <li>• Institutionalised inefficiency due to subsidy policy (important substitution industry)</li> </ul>

Source: Ramady (2010, p.20)

### 2.2.3 Planning History

Saudi Arabia's planning changed dramatically since the first five year plans were initiated. They started as an experiment from which many Saudi planners gained greater experience (Al-Farsi 1982). Therefore, some critics do exist regarding the actual contribution of these plans towards the nation's progress (Cordesman 2003). For example, the macroeconomic nature of the developing plans neglected important microeconomic issues. The development plans also relied heavily on the nation's oil revenue that is allocated towards government expenditure. This dependence caused problems in the mismatch of economic resources. For example, public projects were delayed or even suspended when oil revenues fell short.

In addition, Saudi development plan models lacked the use of qualitative outputs and targets, mainly depending on quantitative outputs and targets (Ramady 2010).

According to Ramady (2010) economic and social development in Saudi Arabia has been guided since 1970 by comprehensive five-year national development plans. As the economy expanded and grew in complexity and diversification, the planning and fiscal management processes became ever more demanding and called for more sophisticated policy instruments, stronger analytical capacities and diverse approaches to problem-solving and resolution. Furthermore, as the role of the private sector in the overall economy grew in size and importance, the planning process tracked this evolution by changing the planning paradigm from the directive to the indicative. This movement is expected to continue in the future as the government goes forward with its privatisation programme and its role, focused on providing the appropriate institutional, legal and regulatory environment most conducive to social and economic development, and for protecting the economically and socially disadvantaged. The following are the key bodies that were responsible for the planning process:

- \* 1950-1960: Planning exercises depended heavily on external bodies and consultants such as the Ford Foundation, the United Nations Team for Social and Economic Planning and the World Bank.

- \*1960: A Planning Board was established in Saudi Arabia and in 1965 it was incorporated into the Central Planning Organisation (CPO), which drafted KSA's First Five-Year Plan in 1969.

\*1975: The CPO became the Ministry of Planning (MoP), reflecting the importance national planning was being assigned, although some argue that the MoP in effect took a back seat to the actual implementation policies undertaken by the more powerful spending ministries such as Commerce, Industry and Electricity (Wilson et al. 2004)

\*1999: the Supreme Economic Council was established to reinforce the importance of involving Saudi Arabia's key decision-makers in the planning and implementation process.

Every development plan is designed to reach different goals. Figure 2.1 and Table 2.2 (a and b) show the goals and expenditures of all the five-year development plans.

Actual and planned expenditures made by the Saudi government over the whole planning period from 1970 to date have been impressive, standing at around SR 3,135 billion or \$836 billion. This is set out in more detail in Figure 2.1 for each planning period, organised by broad expenditure categories.

From Figure 2.1, it becomes evident how closely government expenditure patterns follow the fortunes of the Saudi oil revenues, with the current Eighth Development Plan (2005–2009) surpassing the peak “boom years” of the Third Development Plan period (1980–1984).

The expenditure trends of the Saudi development plans over time have become more evident: a focus on human resources development and education which accounted for 57.1 per cent of the actual expenditures of the Seventh Development Plan (2000–2004) and reached 55.6 per cent in the latest Eighth Development Plan (2005–2009). Saudi Arabia has recognised the fundamental importance of human development to the realization of sustainable economic and social goals. Saudi Arabia provides free education in its public schools, colleges and universities and, from the Seventh Development Plan, has made primary and secondary education compulsory with the aim of achieving universal primary education by 2015. According to the World Bank, adult literacy stood at 79 per cent in 1999 and 88 per cent in 2008. Another large sectoral expenditure item has been social and health development.

Social welfare and solidarity have been among the pillars of the development strategy of the Kingdom of Saudi Arabia. This important objective is pursued by ensuring that all citizens share the fruits of economic development across the various segments of society in all regions. Provision of public services and basic commodities at affordable prices has been one

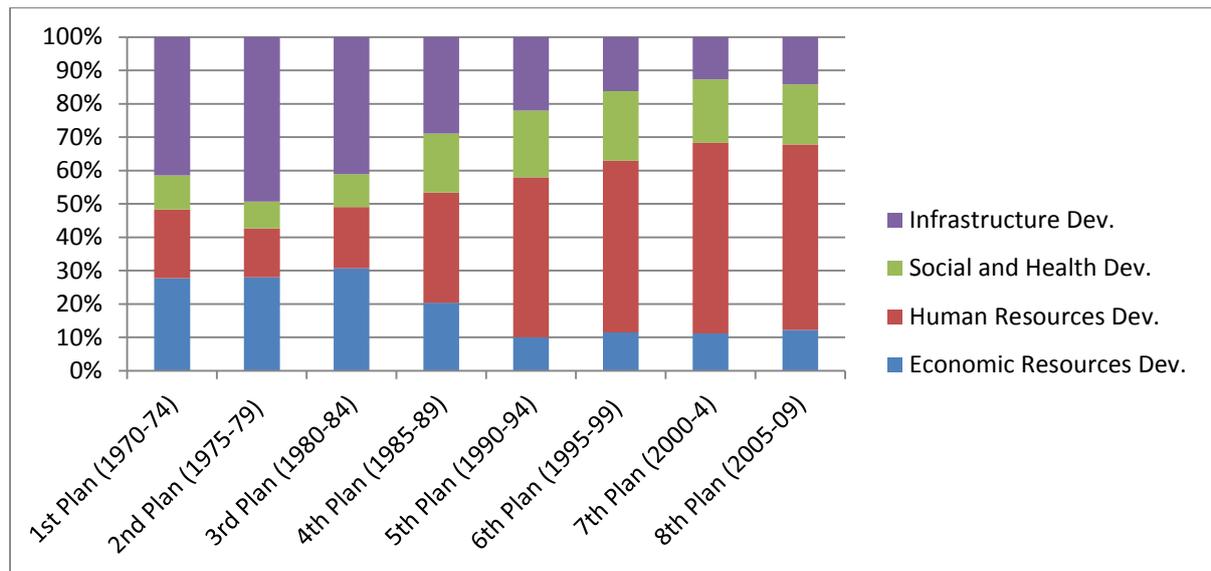
of the main components of this strategy. Furthermore, for segments of society at risk of being left behind or handicapped to equitably share the fruits of development, publicly and privately run programmes are in place to offer them the necessary help and assistance. Families and individuals in distress are assisted through a number of programmes conducted by the Deputy Minister of Social Affairs of the Ministry of Labour and Social Affairs.

An important factor that contributes to a low incidence of extreme poverty in Saudi Arabia is one that is rooted in the culture and social traditions of the country. Strong family solidarity which permeates not only the nuclear family but also the larger and more extended family relations stretching as far as tribal boundaries in the rural areas helps protect those segments most at risk of poverty and need: the elderly, the orphaned and the young. Estimates of national poverty levels do not yet exist for lack of up-to-date survey data. No urban, rural or national poverty lines have yet been estimated.

It is important to analyse the different emphases placed during each planning period, reflecting national priorities. This is set out in Table 2.2 (a and b), which captures key “planning indicators” for each plan, including the most recent Ninth Development Plan (2010–2014). It demonstrates that the planning focus has shifted towards allocative efficiency, human skill upgrading and private sector participation in economic diversification. The principal underlying themes of all plans continue to emphasise raising the standard of living of the people, improving the general quality of life and enhancing their skill capabilities. The Eighth Development Plan constituted a new methodological departure for Saudi Arabia, as it defined more precise targets quantitatively wherever possible and set out implementation schedules and assigned responsibilities for implementation agencies.

Saudi Arabia, in its Eighth and Ninth Five-Year Plans, has adopted strategic planning to complement the medium-term planning system and the shorter fiscal management process. This development has been motivated by the need to properly address some vital national issues that are characteristically of long-term nature such as resource development and utilisation. Issues such as economic restructuring, human resource development, technology development (R and D), water and land management in a semi-arid environment and optimal utilisation of the oil and gas resources, among others, all require long-term analysis and perspective.

**Figure 2.1: Expenditures during the Saudi Development Plans (% SR in Billion)**



Source: Ramady (2010)

As Table 2.2 (a and b) indicates, one of the primary objectives over the last three plans has been an urgent insistence that the private sector play a greater role in the diversification of the economy. Saudi Arabia has realised that having rich natural resource endowments does not necessarily bring about sustained economic growth. In fact, other oil rich economies, such as Venezuela and Nigeria, experienced negative rates of per capita income growth between 1965 and 1996 (Ramady 2010).

The importance of safeguarding Islamic values, cultural heritage and traditions continues to be emphasised at the outset of each plan. The intention was to promote economic development, but not ‘Westernization’– something which other traditional societies undergoing rapid development have found difficult to avoid. The Internet revolution makes maintaining a social status quo even harder, and Saudi society is no exception (Ramady 2010). The recent advances made by Internet and global communication have broken down barriers; the IT revolution is one that few Saudi planners can ignore in the future. The impact of this flow of information has been researched in other Arab societies with social customs and traditions similar to that of Saudi Arabia; IT access has had a profound societal shaping effect (Azzam, 2002).

The Ninth Development Plan makes gender equality and women’s empowerment issues more explicit, and Saudi Arabia has gone a long way to completely eliminate gender disparity at all

levels of education. Expansion of female education has encouraged many Saudi females to join the labour force and seek employment and try to move away from the traditional sectors of education, health and social services. Expenditures during the latest Ninth Plan for the period 2010–2014 are forecasted at a record SR 1444 billion, more than the combined previous three plans, with around 50 per cent allocated for human resources development.

**Table 2.2(a): Key Indicators of Saudi Arabia’s National Five-Year Development Plans**

<b>Overall national priorities</b>	<b>First 1970–79</b>	<b>Third 1980–84</b>	<b>Fourth 1985–89</b>
* Safeguard Islamic values in conformity with <i>Shariah</i>	* Focus on provision of modern infrastructure, basic government services	* Expanding infrastructure economic resources	* Concentration on operation and maintenance
* Improve standard and quality of life	* Expansion of human resources and beginning of infrastructure growth	* Human resources and educational base expansion	* Reconstructing the economy to allow more private sector participation
* Develop human resources, increase productivity and replace non-Saudis with qualified Saudis	* Starting hydrocarbon industries	* Hydrocarbon base expansion	* Human resources and health expenditure rose
* Realise balanced growth in all regions	* Establishment of modern administrative infrastructure	* Undertaking regional economic initiatives	*Shift from central planning projects approach to program planning approach
* Diversify economic base and reduce dependence on production and export of oil			
* Provide favourable environment for activities of the private sector to encourage it to play a leading role in development			

*Source:* Ramady (2010:26)

**Table 2.2(b): Key Indicators of Saudi Arabia’s National Five-Year Development Plans**

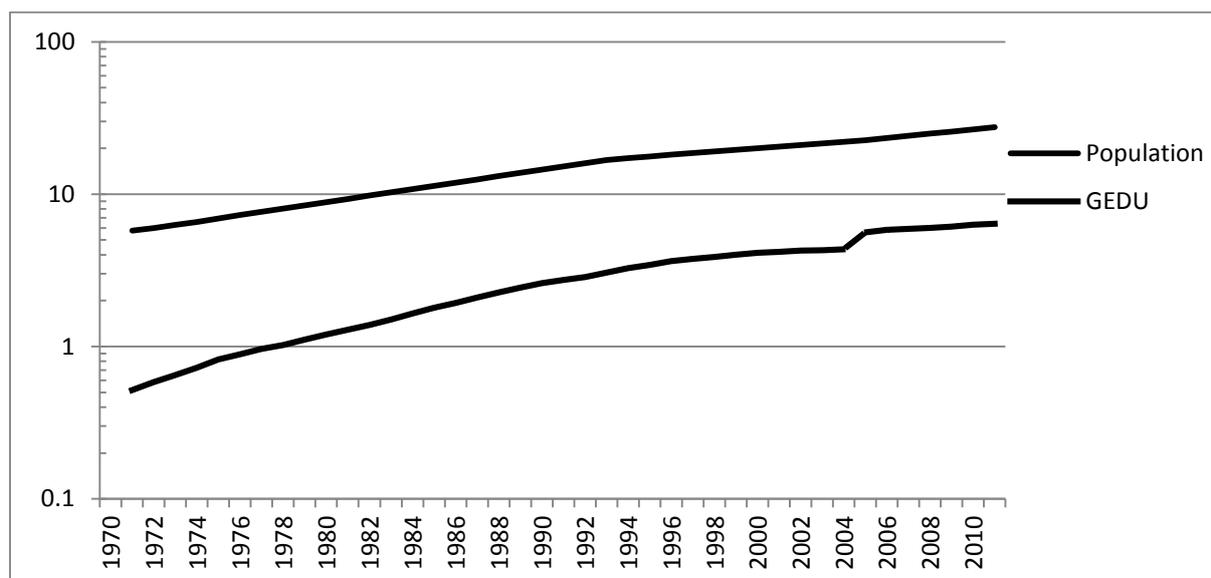
<b>Sixth 1995-99</b>	<b>Seventh 2000-04</b>	<b>Eight 2005-09</b>	<b>Ninth 2010-14</b>
* Human resources emphasis as well as social and health	* Solving human resource problems	* Increase number of new entrants to labour market	* Raise standard of living of citizens
* Aiming for balanced budget	* Diversify the economy	* Develop human resources and upgrade efficiency	* Diversify economic base
* Reduction in foreign labour	* Increasing Gas production	* Enhance national economic competitiveness and integrate into international economies	* Move towards knowledge – based economy
* Private sector expansion	* Consolidating efficiency to production, refining and distribution	* Enhance private sector participation	* Strengthen role of private and public sector cooperation
*Beginning of partial privatisation	* Reducing state budget deficit	* Develop science and technology system as base for economy	*Continue institutional reforms
* Reduction of subsidies	*Increasing Saudization	* Reduce regional development disparities	* Develop SME sector
	*Preparing for globalisation, WTO	* Upgrade human capabilities and remove constraints that impede participation	*Bolstering Human rights
	* Privatisation as strategic option		* Achieve balance regional development
			* Promote economic integration with GCC and other powers

Source: Ramady (2010:26)

## 2.2.4 Privatisation

The Saudi government's intention to privatise, if not lose control of oil rents, was first publicised in 1994 upon release of its sixth five-year development plan, 1995–1999 (Al-Omar 1996). In 2002, plans were announced to privatise 20 economic sectors; telecommunications, civil aviation, desalination, highway management and construction, railways, sports clubs, health services, municipality services, water and sewage, airport services, postal services, grain and flour silos, hotels, seaport services and industrial city services. The purpose was to open up the country's public services and infrastructure to increase socio-economic development and work towards adoption of international standards such as the World Trade Organization (WTO) (Ramady 2010; Shoult and Anwar 2009). By the ninth five-year plan from 2010 to 2014, Sheik Kamel, chair of the Saudi Council of Chambers, said that 'the focus of the plan [was] on economic, social and institutional reforms in addition to transparency, accountability and support of non-governmental organisations [that would] reinforce the favourable atmosphere for investments and . . . boost world confidence in the Saudi economy' (cited in Shaheen 2010). The plan was consistent with the current phase of development with an emphasis on information technology and education as a means to diversify the economy to make Saudi Arabia more competitive and reliable (see Figure 2.2).

**Figure 2.2: Saudi Population and General Education Students (in million 1970-2010)**



- GEDU = the total number of student in the general education (primary, intermediate and secondary).

Source: SAMA (2013).

There is another issue implicit in privatisation and that is the willingness of private equity to take up government offers. According to the country's economists at Banque Saudi Fransi and Shuaa Capital, an example of this is King Abdullah Economic City, one of five planned for the country and the largest Saudi project due for completion by 2024, a target which is unlikely (Shuaa Capital 2008). The city comprises an industrial zone, a sea port and residential community; however, there is a lack of private sector funding that resulted in revision of the project's development goals. Sfakianakis (2011) summed up the situation facing the government in managing the effects of the global crisis by increased cash spending on its massive infrastructure projects as having the contrary effect of 'crowding out' bank credit and restraining private investment. While the private sector GDP growth exceeded five per cent between 2004 and 2007, it slowed thereafter to below four per cent and this rate is insufficient for job creation for the new cohorts of graduates from the increasing emphasis on education. Sfakianakis notes that the Saudi banks estimate 6.5 per cent private sector GDP growth is necessary to drive job growth, and that for 2011 public sector growth will again exceed the private sector (5% and 4.2% respectively). Whilst the rebound in oil prices can comfortably support the massive expenditures, the long-term emphasis on privatisation through private investment is lagging. Since 1990, the private sector's contribution to non-oil real GDP has barely moved. It accounted for 66.7 per cent of non-oil GDP in 2010, just 2.3 percentage points more than its contribution 20 years earlier (Sfakianakis 2011). A further effect is that real income growth for Saudis lags global averages due to the combination of the country's youthful demographics and the lack of private sector momentum.

The dilemma of economic uncertainty and privatising its economy for long-term sustainability according to Ramady (2010) can be achieved through equity markets 'The government sells part or all of its shares on the local or international stock markets' (Ramady 2010:328). Thus the model that the Saudi government selected for privatisation is well known for broadening and deepening a country's stock market whilst transferring future investment burden to the private sector.

### **2.2.5 Economic Performance**

Saudi Arabia's GDP is still dwarfed by the leading industrialised countries. The GDP figures for the various countries do not necessarily reflect the quality of life in each country, as only

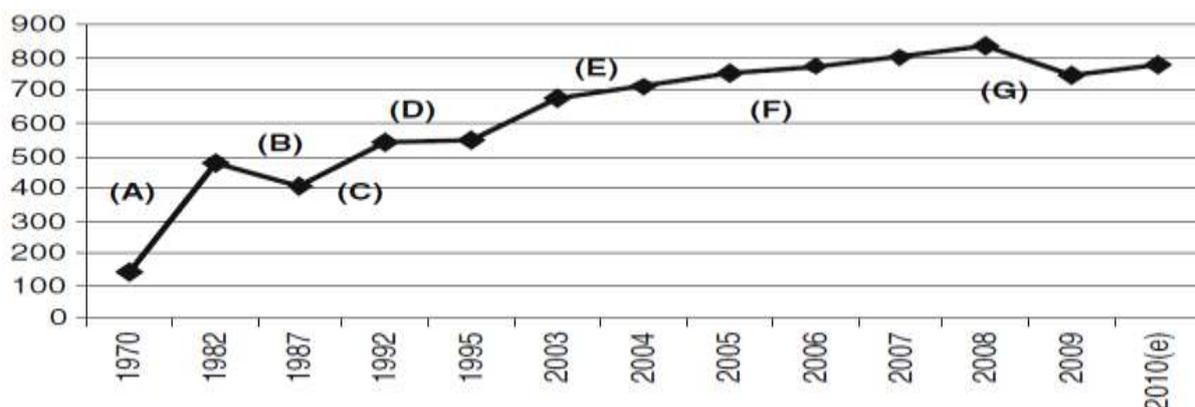
‘economic’ factors are included in GDP estimates, despite recent attempts to include qualitative measures. Despite massive government spending over the past three decades, the Saudi economy seems insignificant compared to the world’s giants, such as the United States (US) or Japan, and is in fact smaller than medium-sized industrialised countries such as Belgium or Switzerland. It is sometimes noted that a GDP the size of the Saudi economy is added to that of the US every seven to eight months when the US economy grows at a real rate of 3 per cent per annum (Ramady 2010). The basic reason for the lag in Saudi GDP growth is simple: the US economy is diversified while Saudi Arabia’s is not.

To date all of Saudi Arabia’s economic reform efforts and development plans centre around the fact that its economy is essentially oil-driven, with the resultant strengths and weaknesses. The performance of the Saudi economy has been heavily influenced by two major factors: first, the level and growth of oil revenues and second, the government budgetary policies. The latter function as the main link between the oil sector and the rest of the economy on one side, and economic growth in case of reduced or increased oil revenue on the other.

The result has been identifiable major Saudi economic eras, each with its own characteristic. The following major economic eras are identified (see Figure 2.3):

- A. An oil-boom era from 1970 to 1982
- B. An oil bust era from 1983 to 1987
- C. A recovery era from 1988 to 1992
- D. A stagnation era from 1993 to 1995
- E. A restructuring era from 1996 to 2002
- F. An oil-boom era from 2003 to 2008
- G. A retrenchment era from 2009

**Figure 2.3: Major Economic Eras GDP (SR billions at constant prices, 1999=100)**



Source: SAMA 2013, (e = estimated)

The first era was characterised by high oil prices, rapid economic growth, elevated government expenditure on infrastructure, high per capita income and private sector demand. The second era—the oil bust era—saw the Saudi economy take a dramatic downturn. Crude oil production declined from an average of 9.81 million barrels per day in 1981/1982 to an average of 3.2 million barrels in 1985. Oil prices dropped from peaks of \$34 a barrel in 1981 to \$11.5 a barrel in 1986 (see Figure 2.4). Government revenues fell drastically to around SR 50 billion in 1986 compared to nearly SR 400 billion in 1981. As a result, imports fell and there was a reduction in investment expenditure by both the government and private sectors. The third phase—or recovery economic era—showed a reversal of fortunes due to an improvement in world oil markets, but was followed by a relatively stagnant economic era affected by declining oil prices and fiscal constraints.

The period between 1992 and 1995 was characterised by budget cuts across the board, a freeze on capital expenditure and a slowdown in government cash disbursements, which caused some problems to private contractors. From the oil bust era, the Saudi government started to draw down on its overseas liquid reserves, resulting in growing budget deficits and debt service payments.

The fifth era from 1996 to 2002 was a critical one, in which economic reforms and major restructuring efforts took place. During this time the government attempted to make the private sector become the main engine of growth. This era saw progress in the fields of privatisation, liberalisation and capital market reforms. The idea was to attract foreign direct investment (FDI) and Saudi capital held abroad.

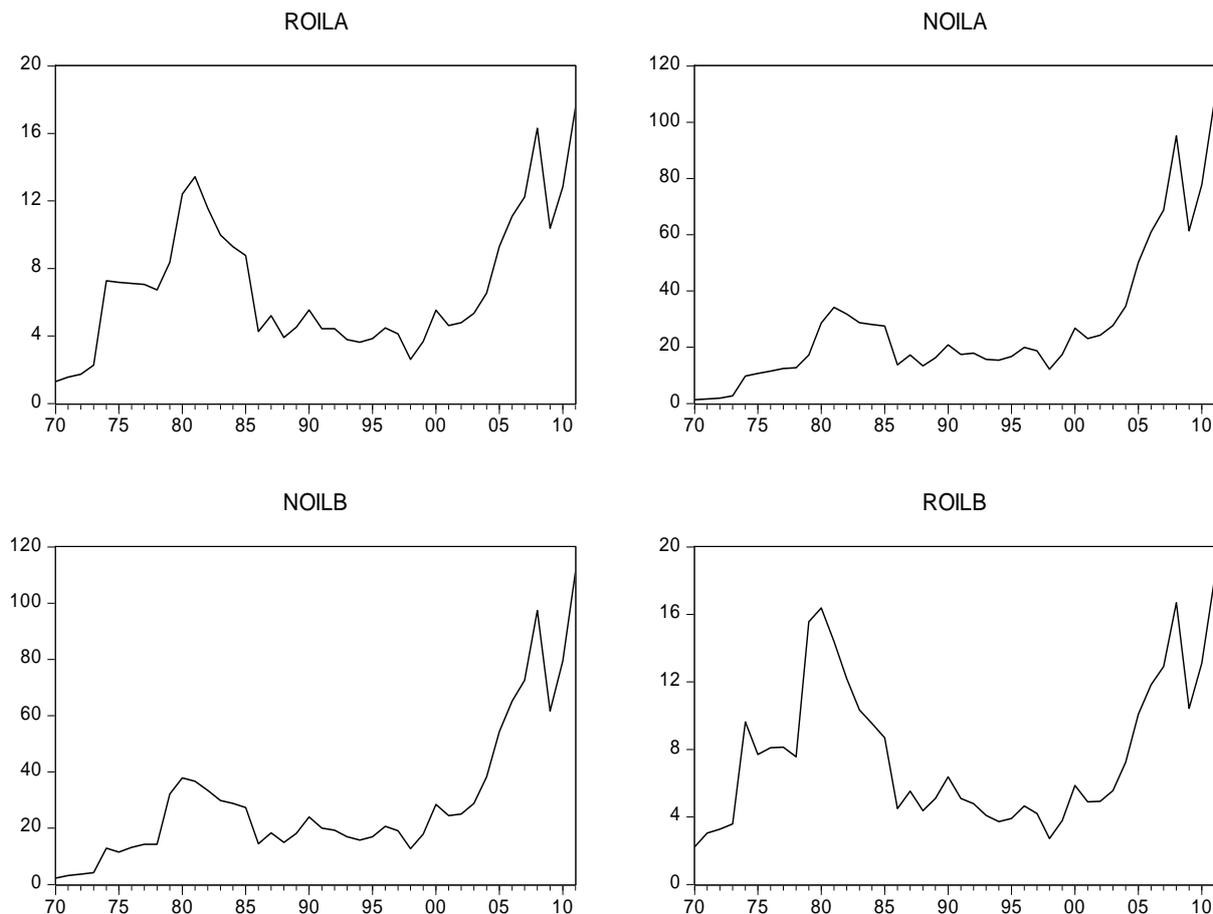
The period from 2003 to 2008 was the second longest economic boom period in Saudi Arabia with real GDP growth increasing by an average of 5 per cent a year, the strongest for a decade. Record oil prices and abundant liquidity characterised the period, with oil prices reaching \$147 per barrel in mid-2008, but falling back to an average of \$55–60 per barrel in 2009 and an average of \$68–75 per barrel in 2010 (see Figure 2.4). The current era from 2009 can be viewed as another period of retrenchment and restructuring for the Saudi economy, which also witnessed the unfolding global financial and credit crisis. Although KSA has been less affected by the direct impact of the global financial crisis of 2008/2009 and economic recession, the indirect impact affected the real economy through reducing government

revenues, tighter credit and investor risk aversion in international markets to the Arabian Gulf region, leading to reductions of foreign capital and declines in local asset prices.

### 2.2.5.1 Composition of Saudi GDP

The next set of figures and tables sets out in more detail the composition of Saudi GDP, from the pre-oil boom period to the ‘restructuring’ era. It provides a closer examination of the ‘realities’ of economic diversification and how far the private sector has taken over from the government in the key areas of consumption expenditure, investment and exports. Figure 2.6 illustrates the historical GDP growth of Saudi Arabia from around \$150 billion in 1980/1981 to around \$300 billion in 2009.

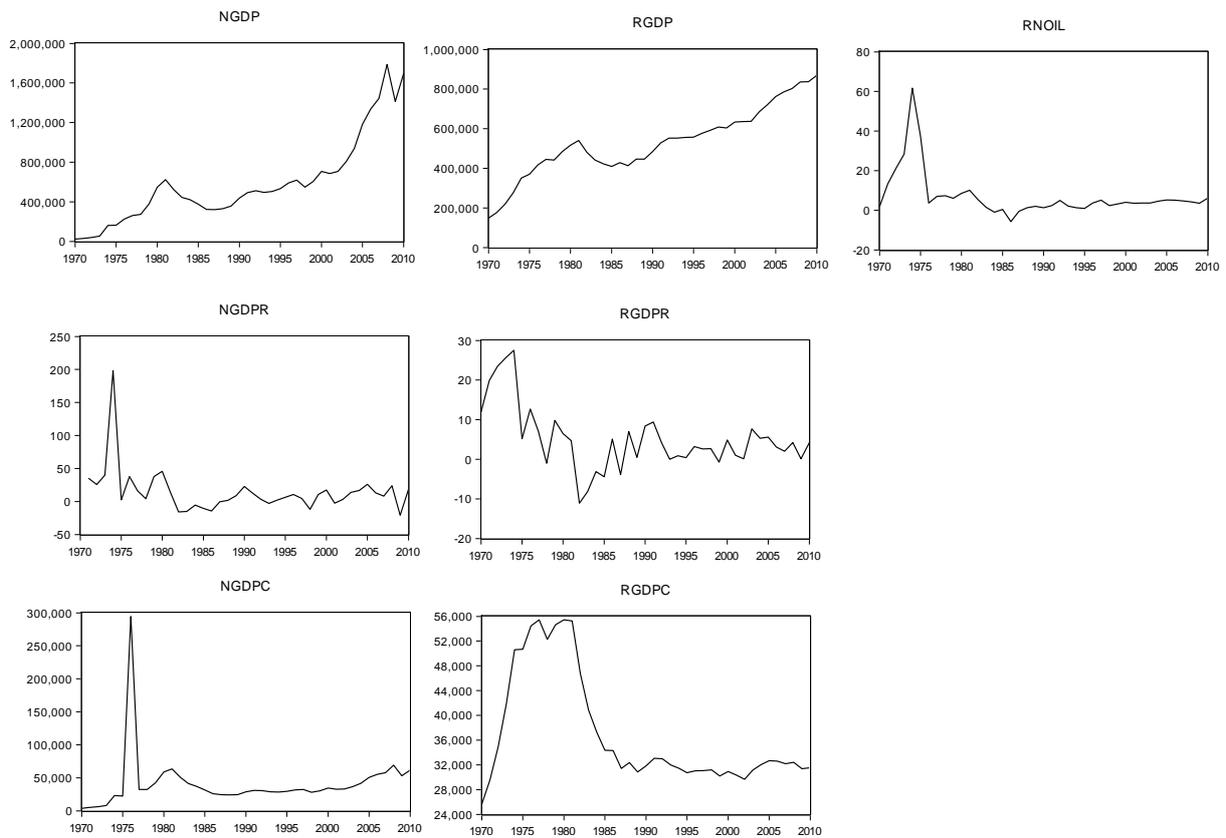
**Figure 2.4: Nominal and Real Oil Prices (Base year 1970)**



- NOILA = Nominal Oil Price Arabian Light
- NOILB = Nominal Oil Price North Sea (Brent)
- ROILA = Real Oil Price Arabian Light - base year 1970
- ROILB = Real Oil Price North Sea (Brent) - base year 1970

Source: SAMA 2013.

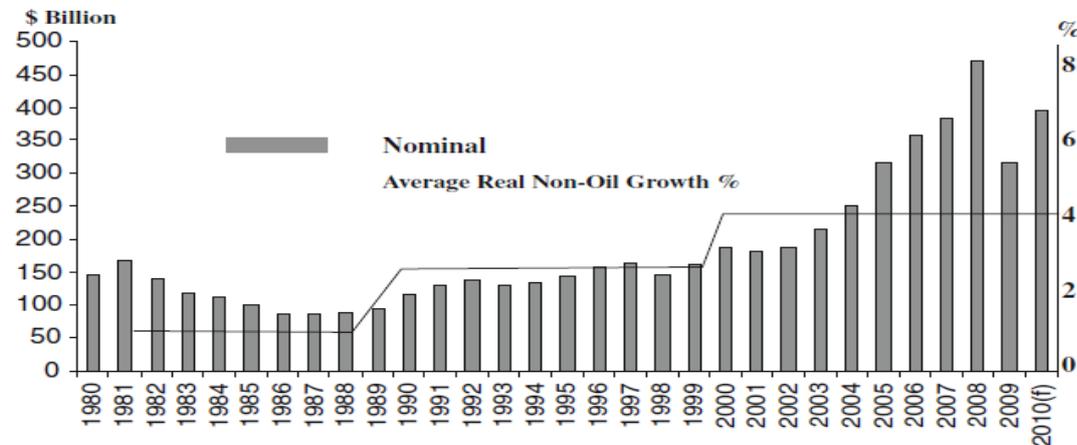
**Figure 2.5: Gross Domestic Product of Saudi Arabia (1970-2010 in Million Riyals)**



- NGDP = nominal GDP
- RGDP = real GDP (1999 prices)
- NGDPC = nominal GDP per capita
- RGDPC = real GDP per capita (1999 prices)
- NGDPR = nominal GDP growth rate
- RG DPR = real GDP growth rate (1999 prices)
- RNOIL = real non-oil GDP growth rate (1999 prices)

Source: SAMA 2013.

**Figure 2.6: Nominal GDP and Average Real Non-Oil Growth Rate (1980-2010)**



Source: SAMA (2011), Author estimates

A closer breakdown of the GDP by economic activity reveals the gradual rising value of manufacturing and the services sector in the Saudi economy since the modern economy started to take shape. This is illustrated in Table 2.3.

As a percentage share of the Saudi GDP, however, manufacturing continues to hover at around 10 per cent, with petroleum refining and petrochemicals representing almost half of the manufacturing contribution to GDP. The service sector accounts for less than 30 per cent of the GDP, with finance, insurance and real estate expanding their share, as well as the general trading sector. Construction activity seems to be affected by general business cycle movements but is still an important segment of the economy at around 8 per cent of GDP. Agriculture, despite massive subsidy support in the early boom period, accounts for around 5 per cent of the GDP, with Saudi Arabia a net importer of food products.

The data in Table 2.3 reflect the growing importance of wholesale, retail and restaurant activity. However, this activity consists largely of the marketing of imported goods and growth has been linked to Saudi demographic factors and changing consumer tastes and fashion. The community, social and personal services sectors, and the water and electricity sectors have also grown steadily, but have lagged behind population growth; however, the growth in the Saudi financial sector has been impressive and now accounts for around 13 per cent of the GDP compared with 5–7 per cent levels in earlier periods.

The accession of Saudi Arabia to the WTO and the liberalising of FDI regulations have given the financial sector a boost, attracting foreign entry as well as added depth to existing market segments such as insurance. On the expenditure side, investment and private consumption were the main sources of growth in recent years, which were supported by the range of economic reforms mentioned earlier in this chapter. Investment, both private and public, has steadily risen from around 20 per cent levels of GDP in 2004/2005 to nearly 30 per cent of GDP in 2008. Weaker oil prices in 2009 affected the level of both public and private investment to take it back to under 27 per cent (Ramady 2010).

Saudi Arabian national income data are more difficult to obtain than GDP data. This is due to the high level of data aggregation. National data analysis will help explain who gets what of the national revenue. Intuition would suggest that the government obtains the major

component of revenue through oil income. The rest is composed of profits made by business and wages and salaries as well as transfer payments for individuals.

**Table 2.3: GDP by Sector and Types of Economic Activity in Producer's Values at current prices (% in SR millions)**

	1970	1985	2000	2005	2010
<b>A - Industries &amp; Other Producers Except</b>					
<b>Producers of Government Services:</b>					
1. Agriculture, Forestry & Fishing	4.3	3.7	5	3.2	2.4
2. Mining & Quarrying :	36.5	24.2	37.6	46.8	41.8
a) Crude Petroleum & Natural Gas	36.3	23.7	37.3	46.5	41.4
b) Other	2	0.5	0.3	0.3	4
3. Manufacturing:	8.3	8	9.8	9.6	10.2
a) Petroleum Refining	5.6	2.7	3	3.2	2.8
b) Other	2.7	5.3	6.7	6.4	7.8
4. Electricity, Gas & Water	10.7	0.7	1.2	1.3	1.3
5. Construction	3.4	8.9	6	4.8	4.6
6. Wholesale & Retail Trade, Restaurants & Hotels	4.5	8.3	6.8	6.3	8.9
7. Transport, Storage & Communication	4.5	5	4.1	3.5	5.1
8. Finance, Insurance, Real Estate & Business Services:	17.5	21	11	8.9	9.3
a) Ownership of Dwellings	15.4	15	6.2	4.3	4.5
b) Other	2.1	6	4.8	4.6	4.8
9. Community, Social & Personal Services	1.5	4.2	3.2	2.3	1.9
10. Less: Imputed Bank Services Charge	0.2	1.6	2	1.3	1
<b>SUB - TOTAL</b>	21818	307505	577884	1044306	1680011
	(91%)	(82%)	(83%)	(86%)	(86%)
<b>B - Producers of Govt. Services:</b>	2093	64903	119123	176350	280863
	(9%)	(18%)	(17%)	(14%)	(14%)
<b><u>Total Except Import Duties</u></b>	<u>23911</u>	<u>372408</u>	<u>697007</u>	<u>1220656</u>	<u>1960874</u>
<b>Import Duties</b>	286	3910	9650	10115	14669
<b>Gross Domestic Product (GDP)</b>	<b>24197</b>	<b>376318</b>	<b>706657</b>	<b>1230771</b>	<b>1975543</b>

Source: SAMA (2014)

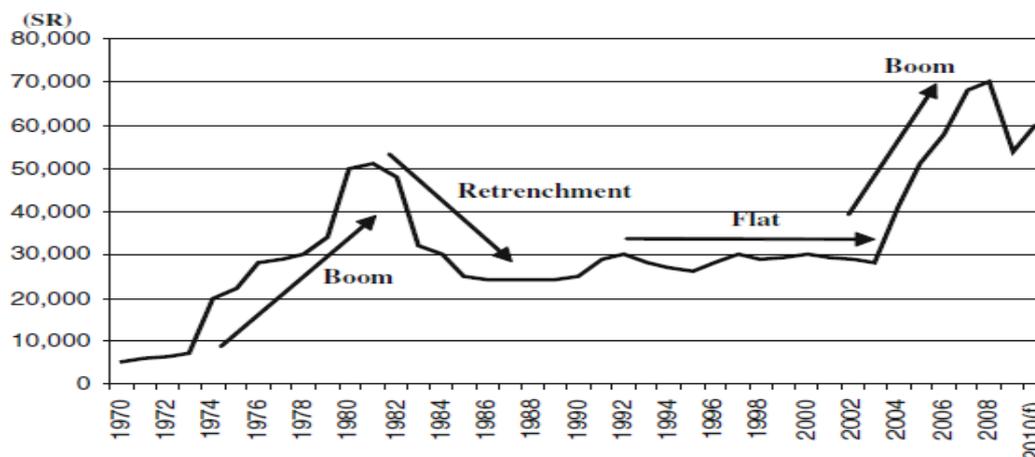
In Saudi Arabia there is also a large element of 'transfer payments' through the form of subsidies and subsidised products, especially agricultural products. However, per capita

income, in which GDP is divided by population, can provide another proxy for how Saudi Arabian citizens have been doing over the past few decades, as it is one measure of national income. Figure 2.7 uses the information from Figure 2.5, which illustrates GDP per capita over the period 1970–2009 and the forecast for 2010.

The per capita income has mirrored the erratic oil revenue business cycles highlighted earlier in the chapter, to stand at roughly SR 70,000 (\$19,000) in 2008 compared with SR 5,000 (\$1,500) levels in the pre-oil boom era of the early 1970s. However, Saudi GDP per capita includes non-Saudis who, according to the latest data, accounted for 6.69 million or 27 per cent of a total 2008 population of 24.81 million (SAMA 2009:298). If one takes into account inflation over the years since 1970, Saudi GDP per capita figures in real terms fell sharply to around SR 35,000 (\$9,300), using 1999 as a base year.

In analysing Saudi Arabia’s national income data, the distinction between ‘stock’ and ‘flow’ of income becomes important. Saudi Arabia has what seems to be a flow of income, although erratic, from oil and oil-based revenues, but seems to be ‘stock income poor’ compared to other developed economies (Chenery 1979). It takes time to convert ‘income flows’ into ‘stocks of wealth’, which include infrastructure, capital goods, technical skills and ‘quality’ education output (Chenery 1979). Social awareness, work ethics and civic participation are also other ‘intangibles’ of a nation’s stock of wealth that may stimulates sustainable growth (Ramady 2010).

**Figure 2.7: GDP per capita (current SR)**



- f = forecast

Source: SAMA (2011), Ramady (2010:36)

While Saudi Arabia has made progress in many areas, the measures the government seems to have taken so far have ‘lacked the scale and speed’ needed to restructure the economy at the rate required (Cordesman 2003). Economic theory stipulates the importance of capital accumulation in economic development, with special emphasis on both ‘capital deepening’ and ‘capital diffusion’. The former requires additional input of capital, while the latter involves changes in technology (Bernstein 1973; Thirwall 1994; Todaro 1994). The large oil revenue surpluses Saudi Arabia amassed during its earlier boom years allowed it the luxury of investing and expanding its capital stock. With the rush to modernise and spend the windfall gains, Saudi planners appear to have neglected to take the time to ask essential questions about such concerns as the optimum rates of investment in domestic capital formation (Askari 1990; Karl 1997; Looney 1989). Should these investments have been in tangibles—or intangibles such as quality education—so that a knowledge-based economy built on capital diffusion would become the engine of growth? Given the luxury of earlier capital surpluses, Saudi Arabia could seemingly have chosen both options, as evidenced from the previous analysis of budgetary expenditures on human resource development in the five-year plans. However, expenditures mask qualitative allocations and their economic effectiveness in the long run. The lack of disaggregated data on gross fixed capital formation (GFCF) makes it difficult to make a judgement, but as Table 2.4 and Figure 2.8 highlights, the major element of GFCF has been in the construction sector. This is not surprising given the relatively young population of Saudi Arabia, but the expenditure on machinery and equipment has also been impressive as Saudi Arabia has built some large-scale hydrocarbon-based industries.

The oil sector GFCF has risen over the past few years to reach around 17–18 per cent, but is still considerably below the 24 per cent levels of the first Saudi oil boom infrastructure investment of 1974.

Given Saudi Arabian intentions to produce oil at an increased capacity to reach 11.5 million barrel per day as of 2011, as well as plans for expanding the gas sector, investment in these areas will have to involve either greater government expenditures or foreign investment to meet expansion plans. It is not a coincidence that Saudi Arabia has tried to attract international oil companies as partners and several large joint Saudi Aramco and foreign

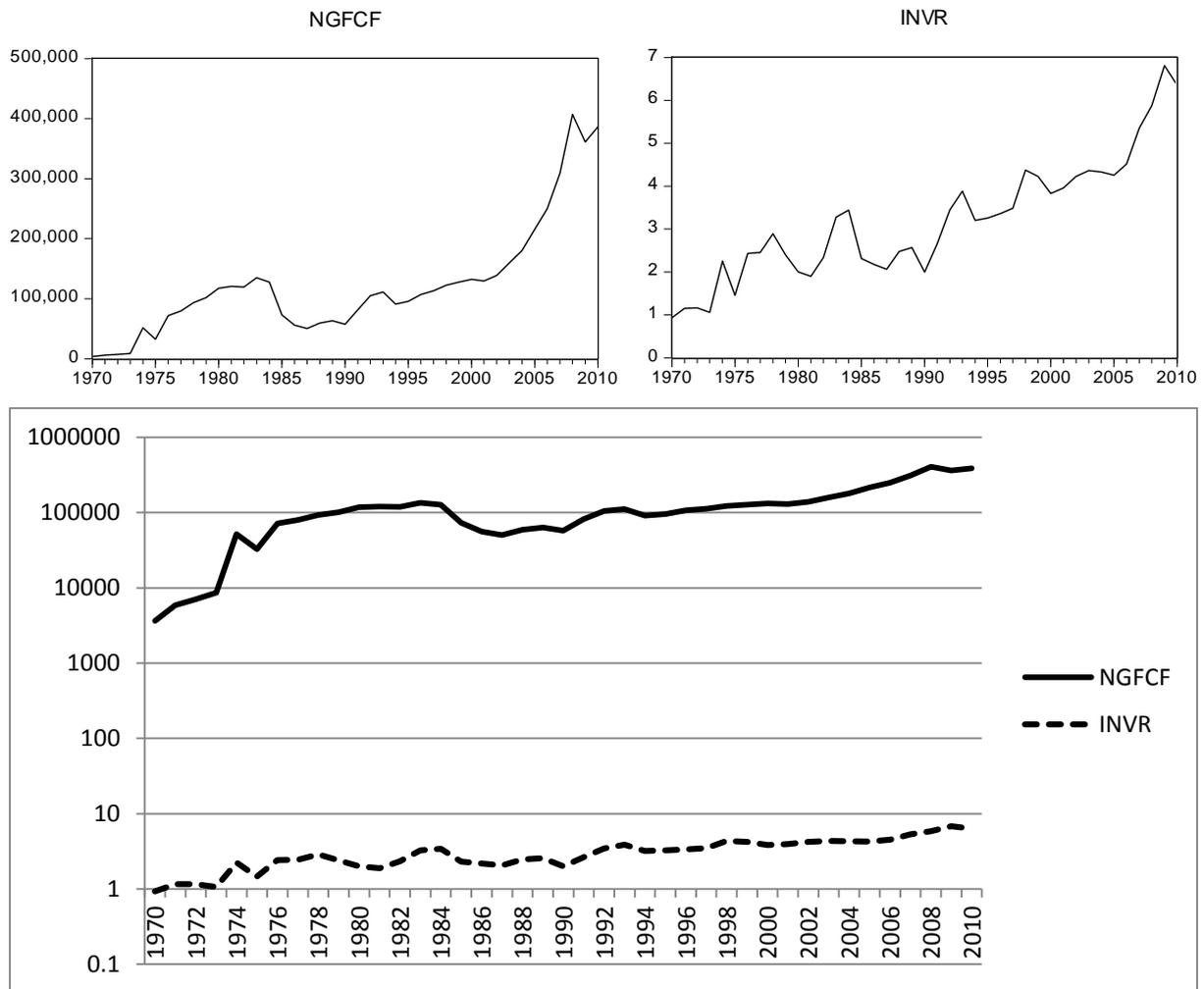
company projects were signed during 2008/2009. The government data indicate gross investments and there are no reliable estimations as to actual net investments that Saudi Arabia is making after taking account of depreciation in the capital stock. The problem of depreciation accounting is well recognised in country GDP estimations, but it is also important to bear in mind that GFCF figures could provide an overly optimistic picture when the true net fixed capital formation figures are much lower. Given that the stock of Saudi capital formation is relatively new, having been built up over the period 1976–1986, the rate of depreciation might be lower compared to other countries. This, however, is offset by the relatively harsh environmental conditions under which Saudi projects operate, which could, in theory, accelerate both the rate of depreciation and replacement.

**Table 2.4: GFCF by Sectors and Type of Assets in Purchasers Values**

	<b>1969</b>	<b>1974</b>	<b>2001</b>	<b>2005</b>	<b>2007</b>
<b>(a) By sector (Million SR)</b>					
<b>Total GFCF</b>	<b>2, 700</b>	<b>12, 830</b>	<b>126, 095</b>	<b>195, 632</b>	<b>286, 243</b>
Oil Sector	350	3, 180	14, 240	22, 231	50, 700
Non-oil Sectors	2, 350	9, 650	111, 855	173, 401	235, 543
Private	1, 000	4, 300	94, 347	118, 461	140, 304
Government	1, 350	5, 350	17, 508	54, 940	95, 239
<b>(b) By Type of assets (Million SR)</b>					
<b>Total (GFCF)</b>	<b>2, 700</b>	<b>12, 830</b>	<b>126, 095</b>	<b>195, 632</b>	<b>286, 243</b>
<b>Construction</b>	2, 100	9, 520	57, 909	93, 620	138, 627
<b>Residential Buildings</b>	610	2, 320	28, 302	31, 973	37, 823
<b>Non-residential</b>	1, 490	7, 200	29, 607	61, 647	100, 804
<b>Transport equipment</b>	290	1,470	21, 004	28, 804	35, 168
<b>Machinery and Equipment</b>	310	1, 840	37, 472	55, 922	87, 504

*Source: SAMA (2011)*

**Figure 2.8: Gross Fixed Capital Formation and Level of Investment (1970-2010, in Million Riyals)**



Source: SAMA 2013

- NGFCF = Nominal Gross Fixed Capital Formation
- INVR = Level of Investment (Nominal GFCF divided by Nominal GDP)

## 2.2.6 Saudi Unemployment

There are a multitude of reasons (i.e. economic, social and political) for the Saudi Arabian government's serious approach to the current state of the labour market and to Saudi unemployment issues. Unemployment means less output, a lower standard of living and a high and worrying dependency rate. Some studies have put the number of Saudi dependents as high as 56 per 100 Saudi workers, 2.4 times the world average (Alsheekh 2001). Thus, any

major decline in income per worker, or a total lack of work, could have a dangerous effect on living standards and social cohesion.

Recently, there has been some more information released by Saudi Arabia about the level of official unemployment rates for Saudis and non-Saudis. According to SAMA's latest figures, the Saudi unemployment rate stood at 10.5 per cent for 2009, compared with a peak of 12.0 per cent in 2006. The comparable figures for non-Saudis were 0.3 and 0.8 per cent, respectively (SAMA, 2013:362). If the total workforce (Saudis and non-Saudis) is included, the unemployment level falls to 6.3 per cent in 2006 and 5.4 per cent in 2009, but this is not a good indicator, as migrant workers are in Saudi Arabia to work and most are obliged by law to leave the country when their work permit expires. There are many migrant workers whose permits expire but who remain in the country as illegal workers and become as a class of disguised unemployment without being added to the official statistics. Hence, unemployment data are only available annually from 1999 till 2009 (SAMA 2013).

The truth of the matter is that there is no precise way to measure the rate of Saudi unemployment; there is no "signing-up benefit" system similar to other countries that register those who are involuntarily unemployed and who are able and willing to take up jobs. From time to time, some figures are released about the number of Saudi job-seekers registering with the Ministry of Labour offices, reported at around 155,000 for 2006 and at 500,000 levels for 2010 (Saudi Press Agency, 22 Jan. 2010). At such, in the absence of a formal unemployment compensation scheme, unemployment numbers cannot be estimated through benefit claimants. For social reasons, many in Saudi Arabia do not count themselves as unemployed but being engaged in looking for a job while being dependent on their families (Ramady 2010).

The Saudi *Majlis Al Shoura* Consultative Council presented proposals in January 2010 to King Abdullah to pay an unemployment allowance of SR 1,000 (\$267) per month to the estimated 500,000 jobless Saudis mentioned in the press, as long as they are registered with the Ministry of Labour until they find a job. This initiative breaks yet another social taboo in the Kingdom. There used to be a social stigma attached to accepting such unemployment benefits, and this complicated matters when trying to establish precise data on voluntary and involuntary unemployed. While unemployment rates may vary with each announcement, the

greatest challenge remains the same: the labour force is increasing faster than the available jobs, based on the demographic structure of Saudi Arabia.

The growing unemployment numbers, whether official or voluntary, are having an impact on poverty levels in Saudi Arabia. Again, no official statistics exist on what constitutes a national poverty level, nor of the total number of those depending on social security assistance, but there are some official figures to illustrate the magnitude of the problem. According to figures released by the Ministry of Social Affairs in January 2010, there were 692,508 social security beneficiaries receiving monthly financial support of just under SR 1 billion a month in total, or an average of SR 1,400 per beneficiary (Al-Tamimi, 2010). Recipients include orphans, disabled people and widows, as well as those with changed circumstances. Assuming that each recipient has a dependency ratio of 2, which is a conservative dependency ratio, then the number of Saudis dependent on monthly state support is around 2.1 million people or around 11.3 per cent of an estimated 18.5 million Saudi population in 2010.

The issue of poverty is one of the concerns of the Saudi government, and the 2008 and 2009 national budgets allocated increased social security benefits. The government would bear, for a period of 3 years from 2010, 50 per cent of the fees relating to passports, vehicle licences and ownership transfers and renewal of residence permits for domestic workers for those depending on domestic help, in effect reducing the level of indirect taxation for Saudi citizens.

### **2.2.7 Foreign Direct Investment**

Foreign direct investment (FDI) is an investment of foreign assets into domestic structures, equipment and organisations. It does not include foreign investment into the stock markets. FDI is thought to be more useful to a country than investments in the equity of its companies because equity investments are potentially “hot money” which can leave at the first sign of trouble, while FDI is durable and generally useful whether the economy is doing well or badly (Aitken et. al., 1997, Liu et. al., 2000). An example of this is the 1988/1989 Asian financial crisis that resulted in a deficiency of short-term debt finance, but did not have a significant impact on the level of foreign direct investment in the Asian region. Also, the

return to direct investment is dependent on profitability, unlike debt finance where the capital and interest must generally be repaid, regardless of performance (Helpman et. al., 2004).

When analysing FDI, it is important to know what the strategic drivers are for organisations to invest in other markets. According to some analysts, there are two main patterns of internationalisation, the first being firms who want to move production to foreign countries in order to reduce their overall production costs. This type of FDI is referred to as vertical FDI and is generally influenced by differences in labour costs (Buch et. al., 2005). Vertical FDI is beneficial to the organization investing by achieving a reduction in costs but also beneficial to the country receiving the investment. Not only is there infrastructure and capital being invested into the economy of the developing country, but more importantly there are specialist skills and knowledge that the organisation must transfer to their local workforce that will spill over to be shared within and between industries in the local market (Kugler, 2006).

The second type of FDI identified by Buch, Kleinert, Lippioner and Toubal (2005) is horizontal FDI, and this is where organisations invest in other countries as a means to gain better access to foreign markets, get closer customers and avoid trade costs. The majority of FDI between developed nations is predominantly some form of horizontal FDI in order for multinational organisations to operate efficiently in a global context (Buch et. al., 2005).

There are also political factors that can influence a firm's decision to invest as FDI, including the avoidance of trade barriers as well as economic development incentives that may be available from governments wishing to build up infrastructure in their country (Fisher et. al., 2006).

Foreign direct investment is a major component of today's global business environment and a clear way for large multinational companies to achieve strategic advantages. This can occur through vertical FDI, where the benefits are mainly reduced costs, or horizontal FDI, where the benefits are mainly access to new markets. There is evidence to show that FDI into a nation has a wide array of benefits for both the organisation and the country being invested in, which also equates to knowledge and productivity spill-overs (Aitken et. al. 1997, Harrison, 1997).

Saudi Arabia's WTO accession in 2005 helped to bring changes to the Kingdom's investment environment under the Agreement on Trade Related Investment Measures (TRIMs). However, prior to WTO accession, the Kingdom had been taking some measures to attract FDI and a new Foreign Investment Law was enacted in 2000 to replace and liberalise the 1979 Foreign Investment Law. The 2000 law established the Saudi Arabian General Investment Authority (SAGIA) as responsible for approving foreign investment projects; SAGIA also serves as the enquiry point on laws, regulations and procedures relating to foreign investment.

Reflecting the impact of WTO negotiations on Saudi legislation over the past several years, Saudi Arabia confirmed to the WTO that the 2000 Foreign Investment Law is fully consistent with the WTO Agreement on TRIMs and that Saudi Arabia would not apply any measures prohibited by that agreement.

This agreement recognises that certain investment measures can have trade- restrictive and distorting effects. TRIMs state that no WTO member shall apply a measure that is prohibited by the provisions of GATT Article III (regarding national treatment) or Article XI (regarding quantitative restrictions). An example of inconsistent measures includes local content requirements. The agreement contains transitional arrangements allowing members to maintain TRIMs for a limited time following the entry into force of the WTO (2 years in the case of developed country members, 5 years for developing country members and 7 years for least developed country members). The agreement also establishes a committee on TRIMs to monitor the operation and implementation of these commitments.

Saudi Arabia reduced the maximum income tax rate for foreign firms to 30 per cent (from 45 per cent) in April 2000, and in January 2004 a new tax law reduced the rate to 20 per cent. Business travel into Saudi Arabia has become more relaxed with less onerous requirements for business visas.

To ensure compatibility with WTO rules, in April 2005 Saudi Arabia removed the minimum foreign requirements for foreign investors, which had been SR 25 million for agricultural projects, SR 5 million for industrial projects and SR 2 million for services businesses. Technology transfer was not a condition for investment under the new law.

Since 2000, the number of activities prohibited to foreign investors has been reduced to exploration, drilling and production of petroleum, manufacturing of military equipment and uniforms and civilian explosives. In the service sector, foreigners are not allowed to invest in military catering, security or real estate in Makkah and Madina nor can they invest in real estate brokerage television and radio stations, advertising and public relations, recruitment and employment services and transport.

By all accounts, FDI can be a critically important ingredient to long-term sustainable growth for developing countries, especially if the FDI is channelled into neglected productive sectors, or internationally underperforming, but potentially profitable sectors. FDI can play an important “spill-over” effect as demonstrated by other countries’ experiences (Aitken et. al. 1997).

In 2008 Saudi Arabia became the largest FDI flow by an Arab country, as per figures released by the Inter- Arab Guarantee Corporation (IAIGC). The UAE investment in Saudi Arabia was more than double the total FDI channelled by the UAE into other Arab countries in 2008, and nearly 45 per cent of the total investments received by Saudi Arabia from other Arab League nations.

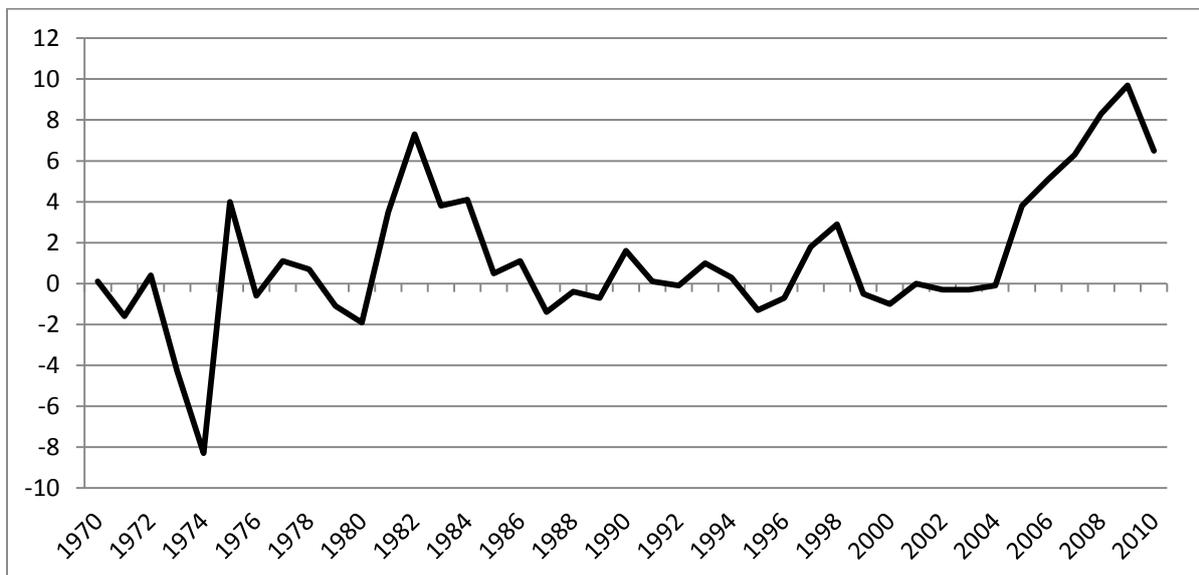
Until 2005, Saudi Arabia had not seemed to match inward investments with its undoubted economic size and potential compared to other Arab and Islamic countries. The reasons were; sluggish bureaucracy, uncompetitive incentives and taxation regime, multiple layers of governmental approvals and seeming inflexible labour and sponsorship laws. The general feeling in Saudi Arabia was that the domestic market had ample surplus liquidity, unlike other “capital-poor” Arab countries. Continued government spending on mega projects would make up for any capital shortfall (Ramady 2010). This rosy picture could not last forever in the face of persistent budget deficits during the period 1983–2001, the advent of privatisation as a strategic tool for private sector participation and Saudi Arabia’s accession to the World Trade Organization (WTO) in 2005.

In 2007, Saudi Arabia’s inward FDI flow as a ratio to GDP was 6.3 per cent, but this had risen to 9.7 per cent in 2009, despite the record oil revenues of that year which saw GDP rise to \$465 billion levels. However, this FDI inflow as a ratio to GDP was 6.5 per cent in 2010 (see Figure 2.9).

By 2005, the cumulative FDI stock was around \$40 billion, but this had risen to \$115 billion by 2008 for both fully foreign licensed and joint venture projects. To put the 2008 data in perspective, the total world FDI stock in 2008 was \$14,909 billion and Saudi's share represented less than 1 per cent. Similarly, in 2008 Saudi Arabia's record FDI inflow of \$38.15 billion represented around 2.18 per cent of the world's total of \$1,744 billion, according to the United Nations Conference on Trade and Development (UNCTAD 2011).

Most neutral observers commend Saudi Arabia's recent economic reforms, including the adoption of the new Foreign Investment Law allowing foreigners to own land, and the introduction of a comprehensive and inspiring privatisation strategy. Most observers also agree that the pace of reform in the privatisation and the FDI areas has been impressive, leading to tangible movement on both fronts, more so on the FDI sector where Saudi Arabia is now an attractive FDI destination (Ramady 2010). The Saudi WTO accession in 2005 has

**Figure 2.9: Foreign direct investment, net inflows (% of GDP)**



*Source:* The World Bank (2013).

spurred this reform, but Saudi Arabia is also an attractive target for international investors which felt that the Kingdom had not been widely affected by the 2008/2009 international financial crisis and that the Arab world's largest economy and its ongoing mega projects were an attractive investment proposition.

Saudi Arabia has now been successful in attracting sizeable FDI due to the size of its economy, market depth and more recent enhancements to the Foreign Investment Law, such as a reduction to 20 per cent in foreign corporate profit tax. However, cross-border mergers and acquisitions are still not common in the Middle East. Investor perception is that more is needed to enhance the legal and operating frameworks such as labour, company and bankruptcy laws (Ramady 2010).

## **2.3 Saudi Arabian Monetary Agency (SAMA)**

### **2.3.1 A Brief History of the Saudi Arabian Monetary Agency (SAMA)**

In order to better understand SAMA's current roles and responsibilities, one must also understand the historical trajectory of the monetary agency in order to better appreciate the significant developments that have taken place in Saudi Arabia's financial history in comparison with other nations. When analysing Saudi Arabia's current position, it is sometimes easy to forget just how fast and how far Saudi Arabia has had to travel in a short period of time, 'learning by doing' along the way.

According to SAMA (2004), the last five decades can be classified into four broad eras, each characterised by distinctive features:

**1960–1972:** In this era, SAMA focused on establishing the basis for commercial banking regulations against a background of expanding domestic banking business and of Saudi Arabia's acceptance of full convertibility of the SR in March 1961, in accordance with Article VIII of the IMF Articles of Agreement.

**1973–1982:** During this period, SAMA was preoccupied with containing the inflationary pressures of a booming Saudi economy fuelled by the massive oil price rises of 1973/1974, and with managing the expansion of the banking system to cover most of the country. SAMA also saw itself catapulted into the international limelight through its management of substantial Saudi foreign exchange reserves, which built up during the boom period. These have been estimated at around \$170–180 billion by 1984 (IMF 1999). During this period, SAMA was the magnet to all international bankers hoping to 'recycle' some of these 'petrodollars'.

**1983–2004:** During this time, SAMA’s priorities were to introduce financial market reforms and advise the government in managing the public debt. Both SAMA and Saudi commercial banking came of age with the completion of the so-called Saudisation of the local branches of foreign banks operating in Saudi Arabia and the introduction of a wide range of new financial products domestically. The issue of advising the government on the level of public debt was certainly of some concern to SAMA during the period 2000–2003, when the level of national debt rose to almost 100% of GDP. During this period, SAMA also took the lead in encouraging Saudi banks to invest in and use advanced technologies. Today Saudi banking is at the cutting edge of technology usage with automated cheque clearing systems, electronic fund transfer and ‘transaction plus zero’ days share trading settlement system— probably one of the most advanced in the world.

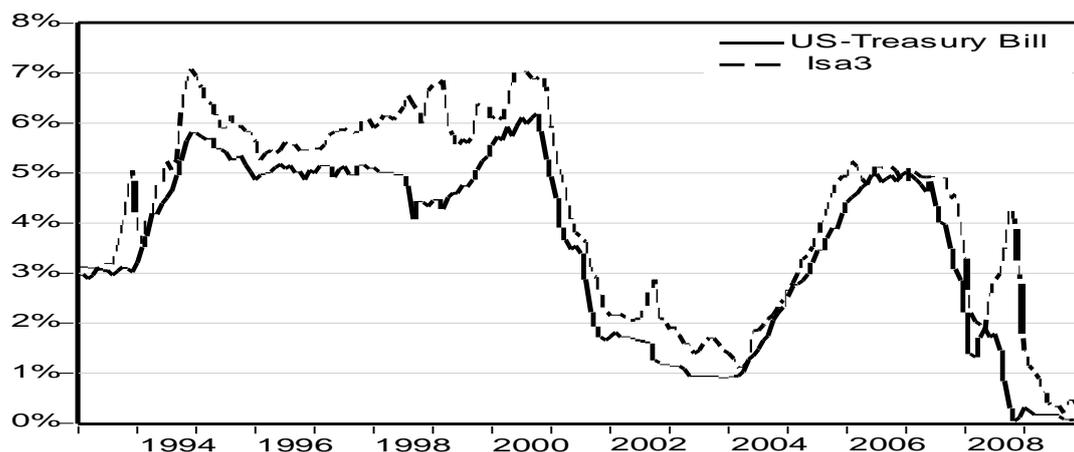
**2005–ongoing:** Unlike the previous period, which was characterised by a global monetary easing triggered by the Internet bubble burst in 2000 and fears of deflation, the period from 2005 was a period of monetary tightening. SAMA raised its repo rates from 2.5 per cent levels in early 2005 to 5.50 per cent levels in 2007 and inflation considerations predominated the later years. It set out commercial bank prudential guidelines to slow the pace of consumer and margin lending and raised the cash reserve requirements. Following the collapse of Lehman Brothers in September 2008, SAMA lowered its repo rate to around 2 per cent in January 2009, and injected liquidity into the banks by lowering the cash reserve ratios. This period can be characterised as one that saw a more proactive interventionist stance by SAMA in ensuring that the Saudi banking system was not affected by the world’s financial crisis and remained solvent. SAMA also oversaw the orderly settlement of some high profile Saudi corporate debt defaults and requested Saudi banks to take on appropriate reserves and strengthen their capital base. In this period, it also oversaw the growth of the Saudi insurance sector and introduced a regulatory framework for the sector. The Saudi accession to the WTO in 2005 also presented SAMA with added regulatory oversight responsibilities for the ‘new wave’ foreign banks that entered Saudi Arabia and which is still ongoing in terms of new licences applied.

## 2.3.2 SAMA: Performance Remarks

### 2.3.2.1 The Exchange Rate Policy

According to analysts, economic theory suggests that when a country fixes its exchange and interest rate and is subject to high capital mobility, it loses its ability to conduct an independent monetary policy. In terms of economic policy, this means that in Saudi Arabia, fiscal, not monetary, policy is the primary instrument for economic growth management. Fiscal policy—or more precisely government expenditures—can be used to increase or decrease GDP, while monetary policy is focused on fixing the exchange rate and interest rates (Abalkhail 2002; Jasser and Banafe 2003; NCB 2001a,b). Monetary policy is used to fine-tune the effects of fiscal policy. With the SR pegged to the US dollar since 1986 at a rate of 3.75 to the dollar, there have been limitations to Saudi monetary policy on interest rate adjustments. In effect, the SR interest rates closely track dollar interest rates, often with a small premium. This is illustrated in Figure 2.10, which sets out US and SR three-month deposit rates for the period 1993–2009. SR premiums reflect periods of sharp falls in oil prices, cuts in government expenditures and regional tensions.

**Figure 2.10: The Saudi 3-Month Interbank Interest Rate (Isa3) and the US Treasury Bill Rate**



Source: SAMA (2011)

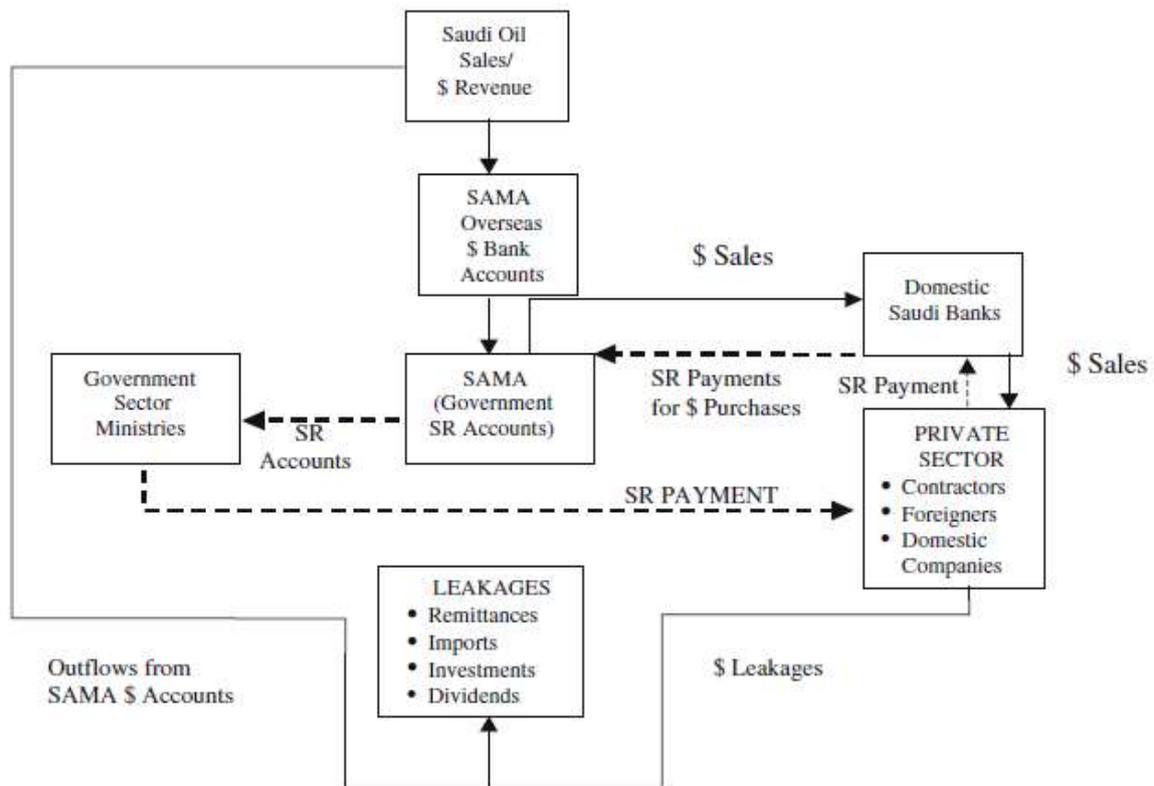
### *2.3.2.2 Money Supply Creation and Monetary Policy*

As discussed above, when exchange rate policy becomes the main plank of Saudi Arabia's monetary policy, it seems difficult to pursue a counter-cyclical monetary policy that is independent of the role of fiscal policy on Saudi GDP growth, money demand/supply and inflation. Conventionally most economies with fixed exchange rates run complementary monetary policies. Thus, the major factors influencing monetary aggregates in Saudi Arabia are the government's fiscal operations and private-sector balance-of-payments deficits.

In an oil-based economy like Saudi Arabia's, the creation of money typically proceeds as follows (see Figure 2.11). The government maintains its accounts with SAMA. The receipt of oil revenues by the government, nearly all in US dollars, directly produces a rise in government deposits held in SAMA's international bank accounts. These foreign oil revenues have no immediate impact on domestic liquidity, since by definition domestic liquidity is held only by the private sector. Only when the government makes payments to contractors is the inflow of foreign exchange translated into domestic liquidity. When expenditures are made, the government draws checks on SAMA, which means SAMA's liabilities are shifted to the banks, thus facilitating credit creation by the banks.

SAMA effectively transforms the dollars held by it on behalf of the government into SRs, while still holding the dollars as backing for the 'created' SR money supply. It is the private sector's transactions with the rest of the world that affect domestic liquidity. Given that the Saudi economy is an open economy, and that there are no capital restrictions, a large fraction of the domestic riyals received by households, contractors and foreigners operating in Saudi Arabia are converted into foreign currencies to pay for imported goods, remittances and investments abroad. This reverses the process of money supply creation, and partially offsets the money creation effects of the government.

**Figure 2.11: Saudi Arabia Domestic Money Creation Process**



Legend:

SR Flows - - - - ->  
 \$ Flows - - - - ->

Source: Ramady (2010:95).

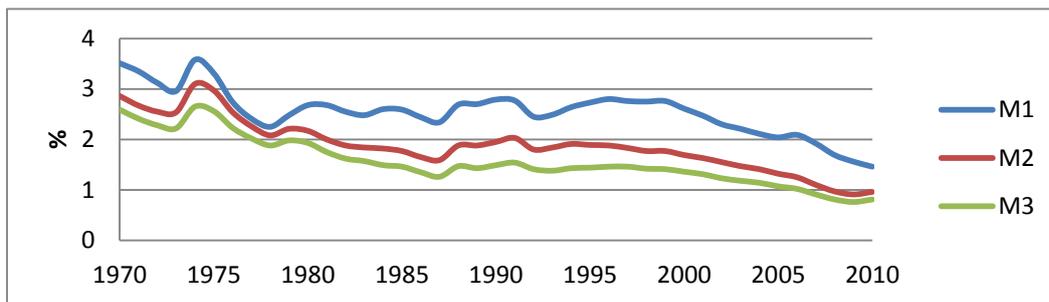
### 2.3.2.3 Composition of Saudi Arabia's Money Supply

Evidence from many countries that have developed their capital markets seems to suggest that people will gradually shift towards saving and other yield-bearing instruments and away from cash and current accounts over time. A shift from a cash-orientated society is taking place in Saudi Arabia, as illustrated in Figures 2.12 and 2.13.

While Figure 2.13 shows a downward trend in currency held outside banks over time (currency/M3), seasonal fluctuations occur in Saudi Arabia each year around the two major Muslim calendar events: the Ramadan month of fasting and the Hajj or pilgrimage season. Demand for cash increases sharply during these periods, as well as to a lesser extent during the summer school vacation, when currency outside banks reaches its peak.

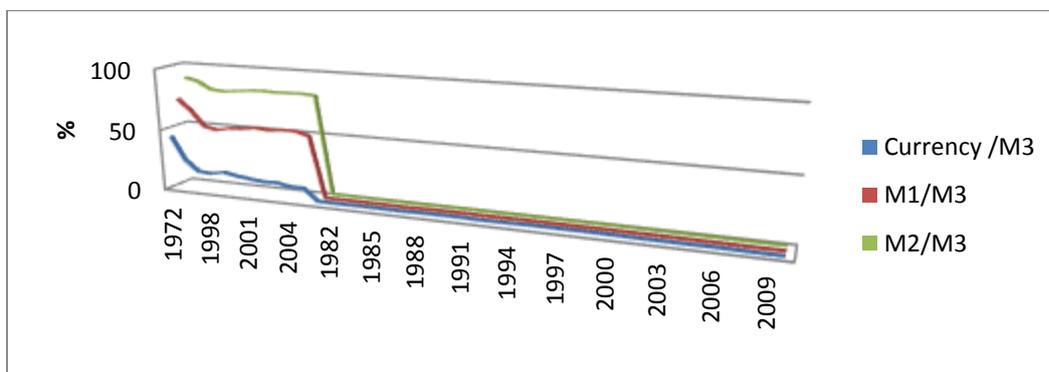
Ramady (2010) stated that a key factor in the steady rise in demand deposits is the increase in such deposits as bank customers feel more confident about the monetary stability of the country and the soundness of the banking system. The expansion of the use of credit, debit and direct payment cards will also necessitate the use of such accounts to satisfy the transaction motive for holding money. The growth in time and saving accounts also indicates that the population's general reluctance and inhibition to receive interest payments due to religious reasons is somewhat diminishing, thereby increasing the investment motive for holding money. The increase in time deposits over the years has had a more significant effect on the Saudi banking industry, as this has encouraged Saudi banks to increase the maturity profile of their loans to longer periods and to improve the terms of such longer-term loans. They can more easily match their assets with a longer liability base, further monetising the Saudi economy.

**Figure 2.12: Income Velocity of Money (non-oil sector)**



Source: SAMA (2013).

**Figure 2.13: Saudi Arabia Monetary Ratios (%)**



Source: SAMA (2013).

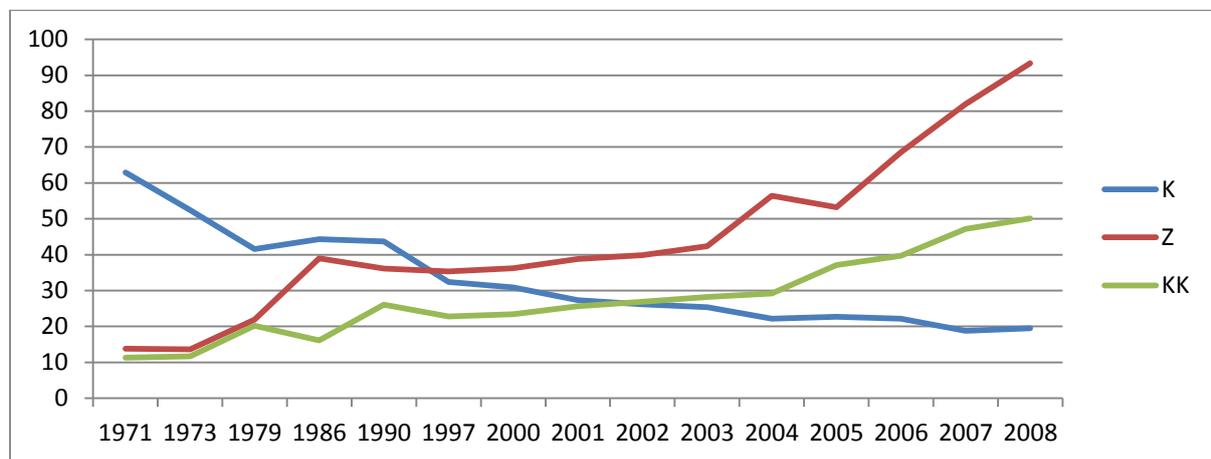
#### 2.3.2.4 Financial Deepening

‘Financial deepening’ is sometimes difficult to quantify, and different measures have been used for other Arab Gulf countries that can be applied to Saudi Arabia (Eltony 2003). The measures used are as follows:

- K: Currency ratio (cc/M1)
- Z: Monetisation ratio (M2/GDP)
- KK: Mobilising longer-term assets (M1/GDP)

Figure 2.14 shows the results of this financial deepening over the period 1971–2008, encompassing the pre-boom, boom and adjustment periods of Saudi Arabia’s economy.

**Figure 2.14: Financial Deepening in Saudi Arabia (%) 1971–2008**



\*K=currency ratio (cc/M1); Z=monetisation ratio (M2/GDP); KK=mobilising long-term assets (M1/GDP)

Source: SAMA (2011)

The currency ratio (K) reflects the degree of sophistication of the domestic financial sector. The Saudi data show that it followed a decreasing trend, similar to Kuwait data over the same period for the Eltony’s (2003) study. This indicates a high degree of diversification of financial institutions and greater use of non-currency forms of transaction media, such as other bank accounts. The ratio fell from nearly 63 per cent in 1971 to around 20 per cent in 2008.

The monetisation ratio (Z) reflects the size of the financial market. This ratio has increased significantly from 14 per cent levels in the early 1970 period to 93 per cent in 2008, indicating further expansion in the financial market relative to non-financial markets. This in

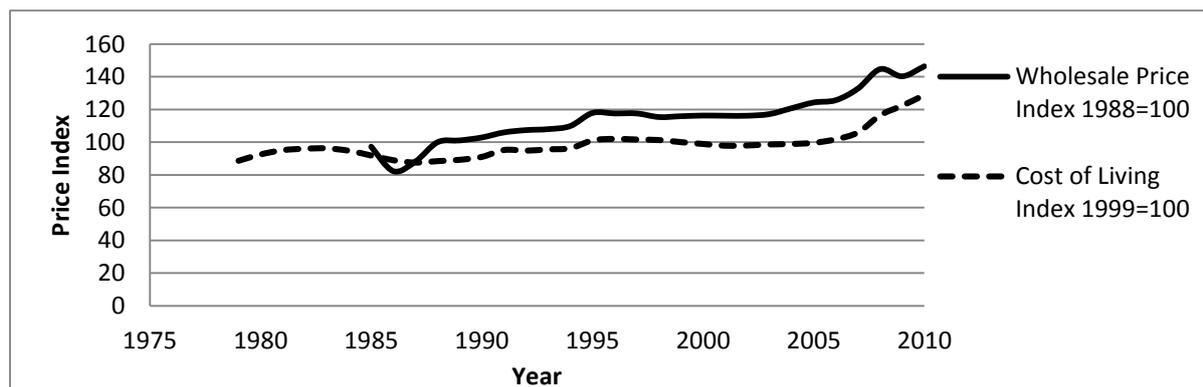
turn implies a faster accumulation of a wide range of financial assets, such as savings accounts.

KK is a measure of the extent of monetisation and mobilisation of long-term assets. It reflects the degree of sophistication of the financial market shown by the level of dependency on cash or liquidity preferences in the Saudi economy. This has also significantly improved over the period of the study. In summary, the Saudi financial sector is showing substantial improvement in achieving financial deepening.

### 2.3.2.5 Inflation Control Policies

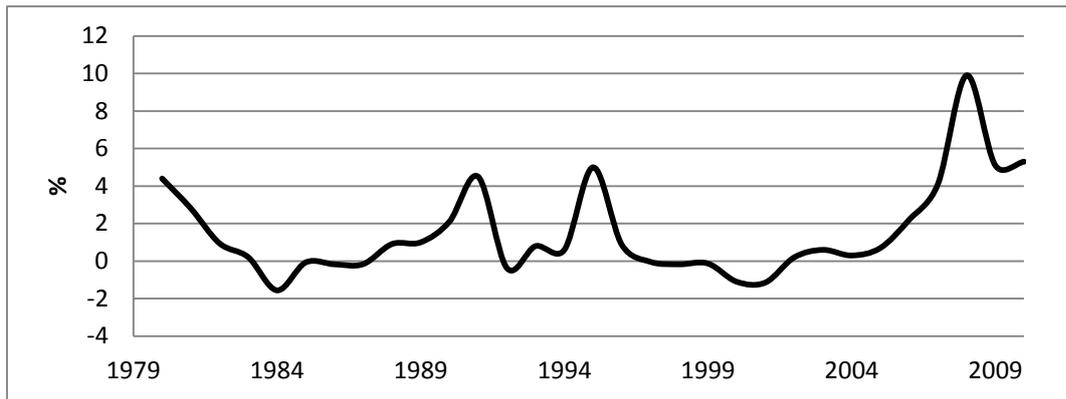
According to SAMA, monetary policy continued to be ‘geared to the objective of maintaining domestic price and exchange rate stability’. The considerable inflation witnessed by Saudi Arabia during the early ‘boom’ years of 1974–1976, when inflation reached around 30 per cent per annum, has been effectively tackled (Johany et al. 1986), but it became a major concern during the period 2007–2009 before subsiding again. As illustrates in Figures 2.15 and 2.16, a sharp rise in the cost of living index in Saudi Arabia from almost negligible levels of under 1% in 2005 to nearly 10% by 2008. By end 2009, this had fallen to around 4.6% levels.

**Figure 2.15: Inflation indicators (1979-2010)**



Source: SAMA (2013).

**Figure 2.16: Inflation Rate (1979-2010)**



Source: SAMA (2013).

The pick-up in Saudi inflation according to Ramady (2010) was seemingly accentuated by the following factors:

1. Supply bottlenecks in 2007/2008, especially in the real estate sector where residential demand for a young population was strong. The rental element of the consumer price index was a key factor. Rent rose by 18.3 per cent during 2008, impacting the CPI index due to the heavy weighting this item has in the index.
2. During the oil-led boom of 2007/2008, Saudi Arabia and many of the Arabian Gulf countries suffered from shortages of skilled labour, causing salaries to rise, especially in the construction and finance sectors.
3. Global food prices were a contributing factor during 2008, with the price of wheat and rice forced up by the shift in biofuels in some countries, restrictions on rice exports by some key exporting nations in order to combat their own domestic shortages and unusual global weather patterns affecting food production.
4. Trading partners' inflationary pressure, with imports from non-dollar regions affecting Saudi imports from such regions.

By 2009, some of these strains began to unwind and price pressures subsided as illustrated earlier.

High rates of inflation can have several consequences on nations, as they tend to operate on different channels (Moody's 2008):

1. **Fiscal:** Inflation, if unanticipated, can have a beneficial effect on a government's debt burden as the stock of local currency debt is eroded in real terms. This played a role in the past when some countries (e.g. some Latin American countries in the 1980s) attempted to "inflate their debt away." This effect is often offset over the longer term, however, by a range of negative developments. Governments can find it difficult to maintain fiscal discipline during inflationary periods as citizens demand

compensatory increases in salaries, subsidies and welfare payments to offset their declining purchasing power. Governments' creditors can demand higher and more flexible interest rates. Inflation can also undermine confidence and cause an exchange rate depreciation which can swell the cost of servicing foreign currency debt in local currency terms.

2. **Political:** High rates of inflation often raise social tensions as the purchasing power of citizens, especially those on lower incomes, is undermined. Governments and public and private employers are sometimes reluctant to raise wages, subsidies and welfare payments quickly enough in order to offset this, partly because of a justified fear that such increases will exacerbate inflationary pressures and lead to further demands. The social impact of inflation can be particularly harmful if surging inflation damages the real sector and causes higher unemployment.
3. **Economic:** High rates of inflation can jeopardize growth by deterring productive investment, perverting market incentives and encouraging wage hikes. The free functioning of markets can also be hampered by the introduction of unorthodox economic measures such as price controls as governments attempt to stem inflation through alternative means.

Elements of all the above inflation control measures were introduced by Saudi Arabia in 2008/2009 and included cuts in custom tariffs on food such as foreign poultry, dairy products and vegetable oils from 20 to 5 per cent, reduction in levies on building materials such as paints, electrical cables and plastic pipes to 5 per cent and complete elimination of duties on wheat products. The government, besides introducing the staggered 15 per cent salary rise for government employees, also introduced subsidies on rice imports, other cost-of-living allowances and welfare payments (Saudi Press Agency, May, 2008).

## **2.4 The Saudi Banking Sector**

### **2.4.1 History of The Saudi Banking Sector**

The historical development of the Saudi banking sector will be reviewed as Ramady (2010) highlighted in his book *The Saudi Arabian economy: policies, achievements, and challenges*. He categorised this into five periods; 1) The Early Years (1940s–1960s) 'Infancy' Period. 2) The 1970s 'Adolescence' Period. 3) The 1980s 'Young Adulthood' Period. 4) The 1990s 'Maturity' Period. 5) The 2000s and onward Period. These periods are discussed as follows (see Table 2.5).

**Table 2.5: Status of Banks Holding Licences to Operate in Saudi Arabia (2010)**

<b>Bank Ownership</b>	<b>Status</b>
<b>(A) Optional</b>	<ul style="list-style-type: none"> <li>• Wholly owned Saudi private sector Al Rajhi, Al Bilad</li> <li>• Saudi private sector and government ownership: Riyad Bank, NCB, SAMBA, Al Inma</li> <li>• Joint venture banks: Saudi Fransi, Saudi British, Arab National, Al Jazira, Saudi Hollandi, Saudi Investment Bank</li> <li>• Foreign banks: Gulf International Bank, Bahrain, Emirates International Bank, Dubai, National Bank of Kuwait, Deutsche Bank, Muscat Bank, National Bank of Bahrain, J.P. Morgan Chase, BNP Paribas</li> </ul>
<b>(B) Licensed but non-operational</b>	<ul style="list-style-type: none"> <li>• HSBC, UK</li> <li>• National Bank of Pakistan</li> <li>• T.C Ziraat Bankasi</li> <li>• State Bank of India</li> </ul>

*Source:* Ramady (2010: 113)

#### 2.4.1.1 *The Early Years (1940s–1960s): The Infancy Period*

The few financial houses that existed in the pre-1950s era primarily served the pilgrim trade in Jeddah and Makkah, as well as imports and some export finance. The first branch of a foreign commercial bank, the Netherlands Trading Society (today the Saudi Hollandi Bank), was established in 1927 and concentrated on import and export finance from the city of Jeddah. These foreign banks were initially unpopular because of social and religious stigma, and there was strong resistance to paying and receiving interest. The result was effectively a cash-oriented society until the early 1970s. Money-changers, who carefully avoided the word ‘bank’, flourished in those early days, and provided strong competition to foreign banks.

The newfound Saudi oil revenues of the 1950s brought a rise in government expenditure that resulted in an unprecedented escalation in demand for currency, outstripping supply. This oil wealth attracted foreign banks that soon opened branches in Jeddah: *Banque Indochine*, British Bank of Middle East, National Bank of Pakistan and Egyptian *Misr* Bank. The late 1950s saw yet more arrivals: *Banque du Caire*, First National City Bank and *Banque Du Liban*. In 1937, the Mahfouz and Kaki families successfully petitioned King Abdul Aziz to establish Saudi Arabia’s first locally owned bank, but it was not until 1953 that the Mahfouz-Kaki Company was transformed into what became the National Commercial Bank (NCB). In 1957, a second locally owned bank, Riyad Bank, was established.

The refusal of many depositors to receive interest meant that profits were sufficiently attractive for commercial banks to operate during this period. Banks were also able to provide loans with service charges, without upsetting Islamic sensitivities. However, the bubble soon burst. The lack of available expertise led to incorrect loan processing and bad loan administration and some banks ran into trouble, including the Riyadh Bank. The government became a shareholder to restore confidence. This required more direct involvement from the *de facto* central bank, SAMA, which came of age in the 1960s and enacted the Banking Control Law in 1966.

#### 2.4.1.2 *The 1970s: The Adolescence Period*

This was the beginning of the era of Saudi planned development with the first 5-year plan launched in 1970. The 1970s marked the start of the adolescence of the Saudi banking sector, with an increase in direct regulation and supervision.

Complementing the private sector banks, six major government lending institutions were also established during this period: Saudi Arabian Agricultural Bank, Saudi Credit Bank, Public Investment Fund (PIF), Contractors Fund, Saudi Industrial Development Fund and Real Estate Development Fund (REDF). Their aim was to provide medium- and long-term loans instead of the short-term loans extended by the commercial banks. Bank assets grew from SR 3 billion in 1971 to SR 93 billion in 1974. Deposits rose from SR 2 billion to SR 68 billion over the same period.

The year 1976 was a watershed year for the Saudi banking sector, as the policy of *Saudisation* of foreign banks operating in Saudi Arabia was first introduced, with far-reaching effects to this day. This policy required converting branches of foreign banks into publicly traded companies with majority Saudi ownership.

A primary reason for *Saudisation* was that branches of foreign banks in Saudi Arabia were using policies drawn up by their foreign parent banks. These policies might not always be in harmony with local development plans, for they mostly concentrated on short-term foreign trade, with no priority for long-term loans. Foreign banks were also concentrated in Jeddah

and Riyadh and provided no service in the under-banked rural areas. In addition, they were not reporting to SAMA as their final regulator, and their high profits were repatriated abroad.

Conflicts were bound to intensify as the Saudi economy expanded rapidly starting in the late 1970s, and Saudi Arabia saw a large part of the financial sector virtually outside its control. Given the enormous profits that foreign bank branches were making in Saudi Arabia there was little choice but to comply with *Saudisation*, which was made palatable through long-term management contracts and tax breaks.

By 1980, *Saudisation* of the major foreign bank branches had been completed. Citibank NA of the US was the final one. The process boosted Saudi banks' capital base and branch expansion in other parts of Saudi Arabia and also ensured an opportunity to benefit from foreign expertise and technology transfer.

The total number of bank branches rose to 247 from 145 by 1980. There were several other advantages flowing from the policy of *Saudisation* of the foreign-owned bank branches. In competitive terms, the public had a wider choice of banks with which to deal, as well as receiving more competitive services at lower costs. *Saudisation* helped to spread the country's new wealth among a wider section of its citizens through dividend payouts and stock ownership. This in effect laid the foundation for share ownership and its acceptance by the Saudi public.

A new and lucrative employment sector opened up for Saudis, with the opportunity to rise through the banks and manage such *Saudised* banks, as well as 'cross-fertilising' their banking skills with wholly Saudi-owned banks. The increase in capital and reserves of the newly *Saudised* banks enhanced the banking sector's ability to lend large amounts to individuals and companies. As a result, offshore lending to Saudi Arabia, mostly from Bahrain-based offshore banking units (OBUs), was less effective (Bisisu 1984). Finally, the broader national objectives of the Saudi economy would be harmonised with the banking policies of these *Saudised* banks. This alignment of interests was quite an improvement on the pre-*Saudisation* era, when foreign banks' interests were more tightly tied to those of their home countries.

The Saudi banking system is preparing to welcome back foreign banks. This reflects the domestic banks' self-confidence in their capacity to effectively compete. It also reflects SAMA's ability to regulate these 'new-wave' foreign banks. The situation facing the new foreign banks is different this time, with an extensive branch network, a sophisticated range of banking products and a cadre of well-trained Saudi banking professionals in place. It is likely that the new foreign banks will concentrate on niche investment and merchant banking activities such as IPOs and mergers and acquisitions, and position themselves to provide financing for the large infrastructure project the Saudi government has planned for the years ahead.

#### *2.4.1.3 The 1980s: The Young Adulthood Period*

This period proved to be the real test of strength and resilience of the Saudi banking system and SAMA's supervisory skills. As discussed above, oil prices fell sharply after the 1981 boom; the mid-1980s was a period of sharply reduced government revenues, which fell from SR 368 billion in 1981 to SR 104 billion in 1987.

The decline in government revenues meant significant pressure on the quality of bank assets, and several banks suffered non-performing loans (Al-Dukheil 1995). A judicial system that seemed to side with defaulters on interest payment issues did not help either (Wilson 1983). In 1982, SAMA successfully overcame supervisory and regulatory challenges brought about when irregularities emerged in the operations of Saudi Cairo Bank. These irregularities involved unauthorised trading in bullion, with the bank concealing accumulated losses that exceeded its share capital (Al-Suhaimi 2002). A new share capital was issued, which was taken up by the government-owned PIF. This helped to restore confidence and liquidity to Saudi Cairo. This bank eventually merged with the United Saudi Commercial Bank (USCB) in 1997 to form the United Saudi Bank.

The 1980s were characterised by bank mergers. USCB itself was born in 1983 of a merger of the branches of foreign banks, namely United Bank of Pakistan, Bank *Melli* Iran and *Banque due Liban et d'Outremer*. In 1999, United Saudi Bank merged with Saudi American Bank (SAMBA).

During this period, SAMA came of age and employed a number of measures in reaction to the problems the sector faced (Al-Dukheil 1995). SAMA required prior approval for declaration of bank dividends, extended the tax holiday period for banks, introduced tax breaks to encourage provisioning of doubtful debts and insisted on improvement in corporate governance. Finally, the monetary agency created an unofficial ‘blacklist’ of defaulting clients through the creation of a banking disputes settlements committee.

Other significant policy changes were also introduced in this period, including legislation to control the activities of the money exchangers. Since 1982, SAMA had required that they obtain a licence to operate and that they maintain specified capital and reserves, and that they do not take deposits and issue loans. This followed the spectacular collapse of the Al Rajhi Trading Establishment in the Eastern Province in 1984 due to silver speculation.

In addition, the Saudi government, through SAMA, introduced the first public borrowing instrument—the Bankers Security Deposit Account (BSDA) —later replaced by bonds and treasury notes. Further, SAMA advised that prior permission was needed for Saudi commercial banks to invite foreign banks to participate in SR loan syndication. Finally, equity trading on the Saudi stock market could be conducted only through the local commercial banks.

By the end of the decade, bank branches rose from 247 to 1,036 and employees from 11,000 to 25,000 (Al-Suhaimi 2002). Total assets rose to SR 253 billion by 1989, a 150 per cent increase over 1979. Saudi banks also ventured onto the international stage, with branches opened in London, Bahrain, Geneva, Beirut and Istanbul.

#### *2.4.1.4 The 1990s: The Maturity Period*

This era started traumatically for the whole Gulf. The Iraq–Kuwait crisis of 1990–1991 was a severe external shock to the banking system, characterised by outward capital flight. SAMA, however, once again proved adept at crisis management and reacted by providing domestic banks with adequate liquidity in the form of foreign exchange swaps and deposits. Confidence was restored to the financial sector.

Following the resolution of the 1991 Gulf crisis, there was a boom in the Saudi economy. Banking activity picked up, showing its resilience despite the foreign exchange crisis sweeping other parts of the world, notably the 1994 Mexican and 1997 South East Asian currency crises. The 1990s saw Saudi banks begin to reap the benefits of their large investment in technology, which had been introduced in the late 1980s as an antidote to the insufficient number of qualified Saudi banking personnel. The impact of the use of new technology to deliver banking services has been enormous, the most popular being the use of automated teller machines (ATMs) for cash withdrawal and other consumer transactions such as utility payments, account transfers and general enquiries.

This period also saw the rapid spread of the use of debit cards, credit cards and stored-value cards (point of sale), and Saudi banks competed fiercely in this new market segment. The cash-oriented society seemed to be gradually changing its transaction habits.

The technological advances made by the Saudi banks have been remarkable compared to the 1950s when the public was reluctant to use anything but silver riyal coins and foreign gold coins. Under the guidance of SAMA, Saudi commercial banks now enjoy a number of sophisticated payment and settlement systems. In 1997, the Saudi Riyal Interbank Express (SARIE) system was introduced, which is a gross settlement electronic fund-transfer system, operating in real time. It is the backbone of the Saudi payment infrastructure between banks. Other advances included the Automated Clearing House (ACH) and Saudi Payment Network (SPAN), which supported the ATMs and point-of-sales terminals, as well as the Electronic Share Information System (ESIS).

All of these systems have been linked to SARIE, enabling banks to make and receive payments directly from their accounts with SAMA on a real-time basis and to credit beneficiary accounts with transfers of funds on the same day. Another electronic share trading and information system, Tadawul, has recently been enhanced to provide T+O (transaction plus zero days) settlement capability and to permit the trading of government bonds, treasury bills and mutual funds in addition to corporate shares (Al-Suhaimi 2002). Few countries in the developing or developed world can boast of such an array of sophisticated payment systems.

Such technological developments have contributed significantly to improving the level and quality of consumer services, reducing costs, enhancing efficiency and strengthening banking control. The Saudi banking sector had a solid base on which to meet the challenges of information technology in the new millennium.

#### *2.4.1.5 The Year 2000 Onwards*

The Saudi banking sector entered the new millennium on high hopes but major events characterised this period, bringing about some significant challenges. The new millennium saw Saudi banks faced with competitive pressures from regional and international banks that began to market the Saudi market more aggressively following the turnaround in Saudi Arabia's fiscal fortunes from 2002 onwards. At the same time, competition from foreign banks was brought nearer to home as some significant global foreign banks opened branches in Saudi Arabia after its WTO accession in 2005, forcing some Saudi banks to reposition themselves in a more focused manner in the Saudi market. At the same time, the international environment of low interest rates in the later part of the decade affected Saudi banks' margins as the cost of funds fell faster than lending rates, eroding lending margins.

Saudi banks began to search for non-interest investment income and to diversify their product range to reduce dependency on interest income (or commission income as it is termed in Saudi Arabia). Domestic banks also faced the prospect of losing out on their lucrative brokerage commission fees, acting as brokers from share trading, as the Saudi CMA started to license both local and foreign brokers and investment management companies in the later part of the decade, thus putting pressure on Saudi banks' earnings. Some reacted by creating their independent brokerage and investment advisory companies under names such as SABB Securities Ltd. Company, SAMBA Capital, Riyad Bank Capital, NCB Capital, Fransi Capital, Saudi Hollandi Capital, Al Rajhi Financial Services, Arab National Investment Company.

With foreign licensed banks eyeing the investment income market in Saudi Arabia, the domestic banks realised that they needed to develop more expertise and deliver more products if they are to effectively compete in this market segment in the future. The current period was also characterised by the growth in Saudi Islamic banking services from existing

market participants, as well as the entry of two new Saudi banks that are compliant with Islamic law (*Shariah*) —*Al Inma* and *Al Bilad*—to cater to this fast-growing market segment. Al Bilad was the result of the amalgamation of the Saudi money brokers into a new bank and brings to a close the long history of this rather exotic money broker segment. At the same time, most Saudi banks either converted some of their retail branches to offer *Shariah*-compliant products or opened ‘Islamic’ windows. The new millennium also saw SAMBA’s transition to full Saudi ownership with Citibank selling its remaining share in this joint-venture entity and foregoing its management licence. *Saudisation* had indeed come full circle, at least for SAMBA, indicating that local bankers and senior management felt more confident in running their banks without direct technical support from overseas joint venture partners, although many Saudi banks continue to draw upon technical, IT and training cooperation from foreign counterparts.

The period also witnessed the venturing abroad of some Saudi banks either through acquisitions or direct branch openings, the most visible being Al Rajhi Bank’s acquisition in 2007 of a Malaysian bank’s 12-retail-branch network to enable Al Rajhi to enter the profitable Malaysian financial market and to have access to the latest Islamic finance market instrument developments, given Malaysia’s lead in this area. As of 2010, the Al Rajhi network in Malaysia increased to 20 branches. Table 2.6 illustrates the current Saudi bank’s international presence.

**Table 2.6: Saudi Banks’ International Branches (2010)**

<b>Bank</b>	<b>Country Location</b>
<b>Al Rajhi</b>	Malaysia, Kuwait (licence obtained)
<b>National commercial Bank</b>	Turkey (60% of Turkiye Finans Bankasi), Singapore
<b>Arab National Bank</b>	London
<b>Riyad Bank</b>	London, Dubai, Singapore
<b>SAMBA</b>	London, Dubai, Pakistan, Qatar
<b>Saudi Fransi</b>	Banque BEMO Saudi Fransi, Syria (60%)

*Source:* Ramady (2010:120)

## **2.4.2 Saudi Banking Sector: Performance Remarks**

### *2.4.2.1 Shareholder Concentration and Ownership*

The issue of shareholder concentration is one of the major concerns for the Saudi banking sector, as it is for most other publicly listed Saudi joint stock companies (Abdullatif 2002; Al-

Dukheil 1995). Since the late 1980s, there has been a significant concentration of shareholders in the banking sector. The increase in the number of shareholders for certain years, such as witnessed for the Saudi British Bank in 1998, was tied to capital increases, while for SAMBA in 2001 it followed the merger with United Saudi Bank in 1999. However, the unmistakable trend towards far fewer shareholders has several implications. First, a higher concentration of shares in fewer hands might enable some business groups to influence day-to-day operations and bank management through board representation. Second, the concentration of shares in a few hands with block votes ‘de-democratises’ the role of annual general meetings in joint stock companies. Concentration eliminates transparency and leads to joint stock companies operating like partnerships.

The issue became a concern to the regulators in 2009 following the default of two prominent Saudi family groups—the Saad Group, owned by Maan Al Sanei, and the Al Gosaibi Group, which had large exposure to Saudi and international banks, some of loans were seemingly extended on a ‘name-lending’ basis from banks where both groups held significant share holdings. SAMA moved quickly to reinforce existing regulations that requested more transparent bank corporate governance and disclosure in cases of direct and indirect shareholder loans.

The concentration level is also reflected in other wholly Saudi-owned banks such as Riyadh Bank and the NCB through the government’s major ownership participation. Since 1961, the Saudi government has held a 38 per cent stake in Riyadh Bank, and 80 per cent of the NCB since January 2003. In 1999, the PIF, the Saudi government’s domestic investment vehicle, acquired 50 per cent of the privately owned NCB from the Mahfouz and Kaaki families. The PIF went on to sell 10 per cent of its share to the government-owned General Organization for Social Security (GOSI) in 2001. GOSI acquired Citibank’s share when it sold out its participation in 2007. The issue of large government ownership in banks raises concerns of a possible ‘moral hazard’ arising, whereby banks with substantial public ownership might be tempted to take on a greater risk, knowing that they will always be bailed out. In Saudi Arabia, there has been no evidence of systemic banking crises and bank failures over the last few decades, but this is mainly due to the application of either a ‘purchase and assume’ policy of mergers and acquisitions of one institution with another (such as Saudi Cairo with USCB when the former was having difficulties), or the government’s direct participation in the Arab world’s largest bank, NCB.

Of the original *Saudised* banks, only the Saudi British, Saudi Hollandi and Arab National banks have maintained their original 40% foreign joint venture partner shareholding, with others, such as Saudi Fransi, Saudi Investment and SAMBA, either selling part of their holdings or being diluted through new capital increases.

Historical reasons explain the high level of Saudi bank concentration, especially for the joint venture banks. These banks usually started life through a founding group of investors who were granted a certain percentage of the founding share capital, with the remaining shares distributed between the foreign joint venture partner and the general public. Because there were few shares distributed to the smaller investors, over time they sold out to the larger investors and founding shareholders. This also happened for the latest Saudi banks to be floated—Al Inma bank issued 1.5 billion shares valued at SR 15 billion, 70 per cent of which were sold to the public in 2007. By 2010, an estimated 40 per cent of the original shareholders had sold their shares.

Although some Saudi banks have been affected by the global financial crisis, specifically in some of their domestic loan portfolio, they are still in a better shape compared to many others in the world (Ramady 2010).

As analysed below, core banking income remains solid and has increased for many of the banks; total assets continue to grow and profitability ratios remain satisfactory with return on average assets (ROAA) standing at around 2.3 per cent and return on average equity (ROAE) at around 18 per cent. Furthermore, Saudi banks enjoy high levels of capitalisation with their Tier 1 capital adequacy ratios at around 16 per cent for year-end 2009, well above the eight per cent minimum recommended by Basel II guidelines (Ramady 2010).

Potential risk remains for Saudi banks following the global and regional financial crisis of 2008/2009. To the extent that some Saudi banks might have exposure to international debt and derivative markets, any further fall in asset prices might prompt banks to increase provisioning to safeguard their balance sheets. This will result in lower profits and the higher perception of financial risk, and in turn manifest in tighter bank lending measures, coupled with a weakening business environment and rising non-performing loans. This was noticeable in 2009 when non-performing loans (NPLs) rose to 1.5 per cent compared with 1.4 per cent

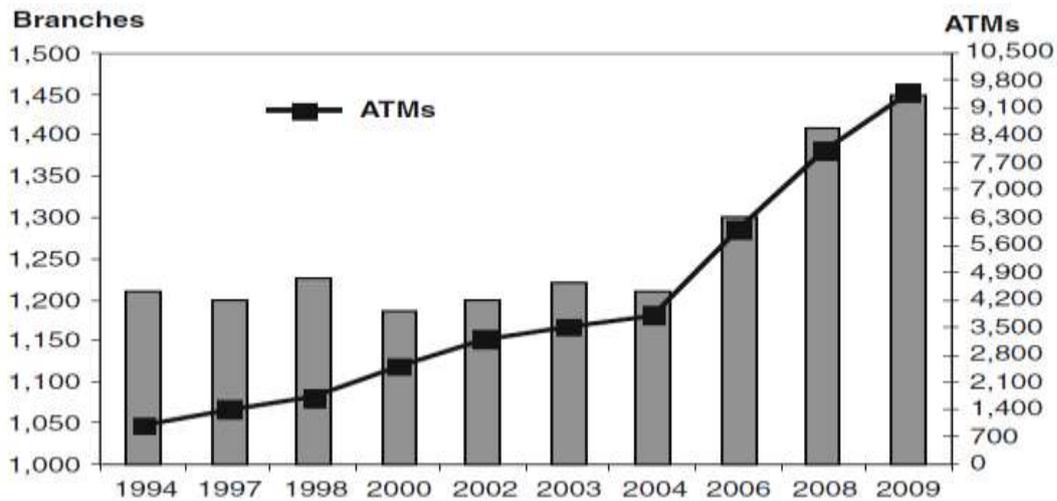
in the previous year, which is still far lower than the 2.3 per cent level of 2004. Saudi banks' NPL coverage ratio is still fairly high at around 150 per cent level and the Saudi banking sector entered the global financial crisis in a strong position with high capital adequacy ratios, ample liquidity and an enviable demand deposit ratio of around 40 per cent, comparable with under five per cent for most European banks (Ramady 2010).

According to SAMA (2010) all seven Saudi banks maintain healthy capital adequacy ratios (CARs), with Al Rajhi Bank and Riyadh Bank (RB) being the most capitalised. The Saudi Hollandi Bank (SHB) is the least capitalised bank with a Tier I ratio of 9.8 per cent. With total assets of SR 1,370 billion as of December 2009, the Saudi banking sector is estimated to be the second largest in the GCC, just behind the UAE, growing from SR 655 billion in five years, or nearly 110 per cent growth (Ramady 2010).

According to SAMA (2010) of the 12 local banks that make up the Saudi banking sector, 11 are listed on the Tadawul stock market with an aggregate market capitalisation (excluding Al Inma Bank) of SR 268 billion (\$77 billion) as of December 2009, down from SR 405 billion (\$108 billion) as of December 2007. The total distribution network of the Saudi banking sector extended to 1,430 branches and 9,258 ATMs in December 2009, up from 1,060 and 1,400, respectively, as of December 1994. The growth in both is illustrated in Figure 2.17, which demonstrates the increased popularity of ATMs.

Most Saudi banks have found it more cost-effective to install ATMs rather than invest in a brick-and-mortar branch network (Ramady 2010). They had bet on Saudi society's acceptance of electronic banking and ATMs and points of sale becoming more accepted in what had traditionally been a cash-oriented society. Their strategy seems to have been correct. While the number of ATMs has increased, so has the number of transactions and point of sales over the period 2003–2009 to reach nearly one billion transactions in 2009, compared with under 200,000 for 2003, while the value of cash withdrawn reached SR 380 million for 2009.

**Figure 2.17: Saudi Arabia Banks' Branches and ATMs (1994–2009)**



Source: SAMA (2011)

The above trend has been helped by the heavy investment in technology in the financial sector since the late 1980s. Under SAMA's auspices, the Saudi banking sector is one of the world's most technologically sophisticated using advanced interbank clearing house operations in SAMA's regional branches and the SARIE payment system that was introduced in 1997. SARIE's systems at SAMA and the banks have been replaced and upgraded in stages to cope with increasing volumes of payments from the existing and newly licensed banks and to ensure compatibility with new technology. This is particularly important in such areas as information security, network technology and applications of software systems. In 2004 the SADAD central payment system was introduced for presenting and paying bills and other payments electronically. All forms of outlets such as ATMs, telephone banking and the Internet can be used to make SADAD payments.

#### 2.4.2.2 Shareholders Concentration Ratios

The effects of shareholders concentration levels have been researched for the Saudi market (Essayad, Ramady and Al Hejji 2003). Studies conducted in the area of bank concentration and economic efficiency indicates that high concentration ratios may induce banks to charge borrowers with higher interest rates than when there is a low banking concentration. According to Saudi studies, the non-interventionist policy of SAMA in this area of bank regulation could hamper the growth of companies, particularly small- and medium-sized

enterprises (SMEs), due to more restrictive credit conditions by the banks within a system of imperfect competition (Essayad, Ramady and Al Hejji 2003).

#### *2.4.2.3 Lending Profile*

Saudi banks have traditionally a low loans-to-deposit ratio and thus more liquidity compared to other Western institutions (Azzam 2002; NCB 2001a,b). SAMA maintains a 65 per cent loans-to-deposit ratio level due to its requirement that commercial banks maintain liquid reserves of at least 20 per cent of their deposit liabilities in the form of cash, gold, Saudi government bonds or qualifying assets that can be converted into cash within a period of no less than 30 days.

During the period 2007–2008, the Saudi banks' loans-to-deposit ratio rose significantly to reach nearly 91 per cent level by October 2008, and then easing back as SAMA started to introduce monetary tools such as reserve requirements to curb on lending. By the end of 2009, the loans-to-deposit ratio had declined to just under the 80% level. The two largest Saudi national banks, NCB and Riyadh Bank, had different ratios, with NCB being more conservative at 63 per cent and Riyadh Bank at 92 per cent, and the joint venture banks also being more aggressive lenders.

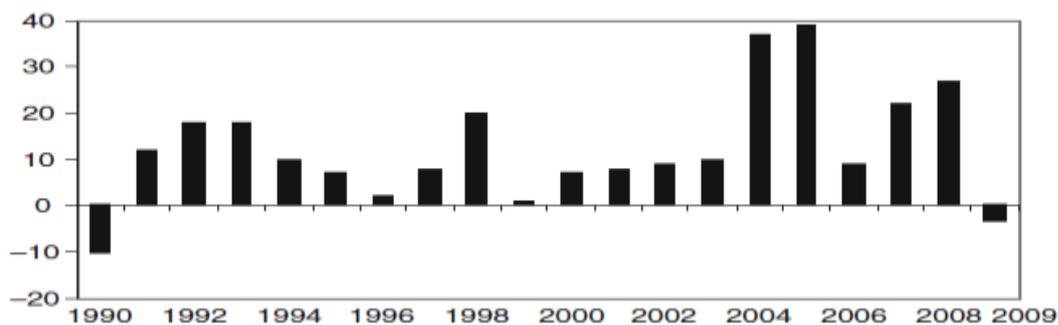
Although SAMA's conservative ceiling on loans-to-deposit ratio has shielded the Saudi banking sector in times of global downturn, such a strict measure could undermine the industry's growth moving forward. This could be one option for SAMA as it reconsiders the effect of Saudi bank lending policies during boom periods, as was the case during 2007/2008, in order to ease a liquidity pressure in KSA, without having the government to pump in liquidity as a fiscal measure (Ramady 2010).

While this high-liquidity cushion of Saudi banks might be looked upon favourably from the regulatory aspect of a central bank, it raises some other issues. First, the low ratio imposes a restriction on domestic lending opportunities, and excess liquidity is absorbed through the acquisition of foreign deposits or local investments. This could be profitable when foreign interest rates are higher than domestic rates, and if domestic investment opportunities are positive. The downturn in international interest rates, specifically US dollar interest rates, as

well as uncertainties in the international stock markets has prompted some repositioning of lending to the domestic markets. However, the majority of bank lending was of less than 1 year's duration.

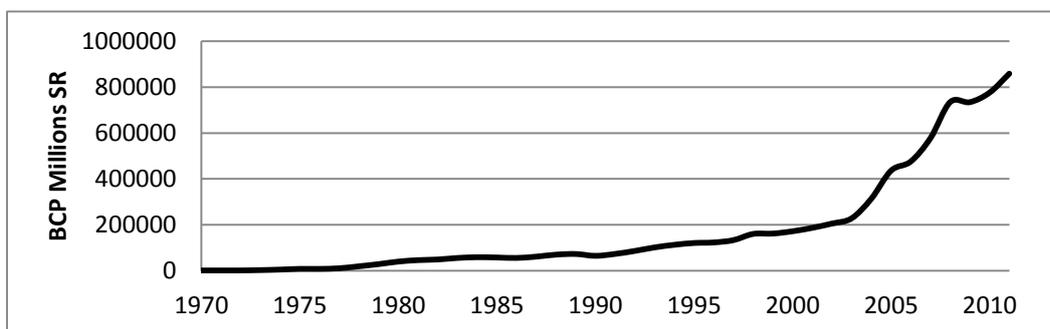
This type of lending structure is not conducive to long-term industrial investment and planning. Filling a need for long-term investment capital was the prime reason for the Saudi government's establishment of its own lending agencies. It will be interesting to see if some of the newly licensed foreign banks spot a market niche and establish long-term credit relationships with Saudi corporations. By all accounts, 2009 was a watershed year for Saudi banks, which saw bank credit to the private sector fall for the first time since 1990 during the tension of the Second Gulf War. This is illustrated in Figures 2.18 and 2.19, which sets out the amount and annual change in bank lending to private sector.

**Figure 2.18: The Bank Credit to Private Sector (% annual change)**



Source: SAMA (2011), Author estimates

**Figure 2.19: Bank credit to private sector (1970-2010)**



Source: SAMA (2013).

#### *2.4.2.4 Asset-Liability Management*

Saudi banks, similar to other GCC markets, suffer from widening asset-liability maturity mismatch, raising major concerns about banks' liquidity risk as well as credit risk. Adverse global and domestic market conditions can also affect the asset-liability mismatch by having depositors opt for shorter maturities (Ramady 2010).

The above loans and deposits maturity gap is a major impediment to the Saudi banks' ability to fulfil medium- and long-term commitments that are funded primarily by short-term deposits. Given this current reality, Saudi banks can either tap into medium- and long-term debt markets by issuing bonds, or use interbank liabilities as liquidity buffers to meet medium- and long-term obligations.

Due to the Saudi banks' market constraints, and cognisant that some of the major Saudi projects, especially in the basic industries and petrochemical sectors, will require long-term funding, the government-owned PIF announced new measures in 2008 to increase funding to such projects. It raised the cap on lending for each project in which it participates from 30 per cent to 40 per cent of its value, and extended the loan duration from 15 to 20 years (including a 5-year grace period). Of more significance, the PIF announced raising its lending limit on each project from the current level of SR 3.8 billion (just over \$1 billion) to SR 4.9 billion (\$1.6 billion).

It has not only been the PIF, the Ministry of Finance's investment arm, but also other specialised government financing institutions that were set up to provide much-needed longer-term financing sources. Table 2.7 examines the outstanding loans disbursed by the five major Saudi specialised credit institutions which went a long way in assisting the modern Saudi economic infrastructure to be built up.

Besides the PIF, the largest disbursements have been carried out by the REDF and the SIDF. The REDF was established to provide long-term personal home-building assistance for Saudi citizens, with grants of SR 300,000 being given on 20-year terms at virtually nil interest rates. This amount remained unchanged since REDF's establishment but was raised to SR 400,000 in 2009 due to inflationary pressures and rising construction cost, but still remains insufficient to meet the needs for building an average Saudi villa, which costs around SR

800,000–1,500,000. The possible introduction of a Saudi mortgage law and mortgage financing through Saudi banks aims to release funding to this sector. The SIDF provides loans to Saudi industries, joint venture companies and foreign entities operating in Saudi Arabia under the liberalised foreign direct investment laws on concessionary basis based on a project’s business viability and ability to repay.

**Table 2.7: Saudi Specialised Credit Institutions—Outstanding Loans**

<b>Institution</b>	<b>1987</b>	<b>1993</b>	<b>2002</b>	<b>2006</b>	<b>2008</b>
	SR Billions				
Agricultural Development Fund*	11.7	8.7	9.4	9.5	9.5
Saudi Credit and Saving Bank	0.5	0.7	0.8	1.3	9.8
Public Investment Fund	43.0	31.9	25.5	17.8	28.7
Saudi Individual Development Fund	42.0	5.2	9.2	11.1	17.2
Real Estate Development Fund	69.4	66.7	68.7	71.2	75.4
<b>Total</b>	<b>166.6</b>	<b>113.2</b>	<b>113.6</b>	<b>110.9</b>	<b>140.6</b>

\*Formerly Saudi Arabian Agricultural Bank

Source: SAMA (2011)

The SIDF is run by professionals, many of whom had completed the much sought Chase Manhattan Bank intensive credit evaluation course. It applies rigorous credit evaluation procedures and standards and has a very low rate of loan default, often self-financing from loan repayments as Table 2.7 illustrates. The recent rise in disbursements of the Saudi credit and savings bank—popularly known as the ‘marriage’ bank for giving out marriage loans to Saudis—was due to extending loans to Saudi SMEs, as part of the government’s strategy to support them due to the perceived lack of traditional bank financing and interest in this market segment.

#### 2.4.2.5 Consumer Lending

Figures 2.18 and 2.19 illustrates the Saudi bank credit to private sector (BCP) and Tables 2.8 and 2.9 the Bank credit to private sector by economic activity, revealing the growing importance of consumer lending. Consumer loans represented around 27<sup>6</sup> per cent of all private sector loans, compared with 38 per cent in 2009. According to SAMA, the majority were for financing motor vehicles and ‘other’ unspecified personal loans; real estate and

<sup>6</sup> The consumer loans percentage of all private sector loans is calculated from Table 2.9 as follow: Miscellaneous (41,955) divided by Total (151,976) = 0.27.

credit-card financing remained steady. This situation is unlikely to change in the foreseeable future, at least not until Saudi banks feel they have more legal certainty over extending real estate loans. At present they cannot hold mortgages. Credit-card facilities are normally backed up by appropriate cash collateral, mostly time deposits. Given such uncertainties, foreign banks are not likely to be competing in this market segment in Saudi Arabia.

What is more worrying for Saudi manufacturing growth prospects is the relative decline in the share of lending to this sector, which has registered a drop from around 15 per cent in 1999 to 11 per cent, for current years, as set out in Table 2.9. This fall, combined with the short-term nature of lending in Saudi Arabia, is a matter of concern if the Saudi private sector is to be able to meet the challenges of diversifying the economic base of the country.

In order to protect Saudi banks from potential consumer loan losses based on asymmetrical information from borrowers – the withholding of information by borrowers from banks – the Saudi government has encouraged financial institutions to share credit information through a common credit reference bureau. In 2002, the Saudi Credit Information Company (SIMAH) was established under the supervision of SAMA. By 2008, SIMAH credit information had membership not only of the Saudi banking sector but also the automobile financing sector, telecommunications, and foreign banks operating in Saudi Arabia, besides government disbursing agencies. Insurance companies joined in late 2008 and SAMA has received applications from many other potential members and studies each request rigorously in order to protect both creditors and lenders. SIMAH has been enhanced and introduced a credit rating or scoring system based on the assessment of an individual's solvency and potential credit risk, while the creation of the Commercial Credit Bureau of SIMAH aims to provide the banking sector with a more scientific risk weighted assessment on lending to SMEs. Further developments included a register of checks returned without sufficient funds, and identifying risks of companies with no previous credit history.

**Table 2.8: Consumer And Credit Cards Loans (Million riyals)**

End of Period	Consumer Loans				Total Credit Card Loans*	Maturity Terms Of Personal Loans**			
	Real Estate Finance	Cars and Equipment	Others	Total		Short Term	Medium Term	Long Term	Total
1998	1,778	2,001	5,246	9,025	2,143	5,556	2,383	3,230	11,168
1999	2,081	2,500	7,711	12,292	2,316	5,695	3,530	5,384	14,608
2000	2,724	7,719	14,312	24,756	2,112	8,325	4,993	13,550	26,868
2001	3,295	13,893	21,259	38,447	2,222	5,526	10,574	24,569	40,669
2002	4,506	25,568	22,800	52,873	2,857	10,533	14,044	31,153	55,730
2003	5,191	28,859	39,255	73,305	2,579	10,643	20,347	44,894	75,884
2004	8,790	27,926	78,590	115,306	3,295	11,075	21,740	85,786	118,601
2005	13,656	29,025	138,174	180,856	4,259	16,063	29,914	139,138	185,115
2006	13,690	34,262	132,726	180,678	7,349	21,753	29,938	136,336	188,027
2007	14,137	37,588	126,683	178,408	9,251	24,387	49,492	113,780	187,659
2008	14,906	37,261	121,817	173,985	9,452	25,249	54,590	103,508	183,347
2009	17,860	38,134	123,924	179,918	8,621	28,307	58,024	102,109	188,440
2010	23,088	42,209	133,538	198,835	8,400	31,821	64,875	110,427	207,123

\* Includes Visa, Master Card, American Express, and Others.

\*\* Loans granted by commercial banks to natural persons for financing personal, consumer and non-commercial purpose.

Note: (Short Term: Less than one year, Medium Term: 1 - 3 Years and Long Term: Over 3 Years).

Source: SAMA (2014)

**Table 2.9: Bank credit to private sector by economic activity (SR billion)**

Sector	1999	2003	2004	2008	2009
Agriculture/fishing	1,458	2,549	2,638	10,980	10,681
Manufacturing	23,753	26,604	26,149	70,333	79,090
Mining/quarrying	1,799	650	614	4,265	4,613
Electricity/water	1,454	1,837	2,038	10,629	12,631
Building/construction	19,373	21,955	21,647	54,371	52,641
Commerce	38,966	51,886	50,811	176,858	179,741
Transport/communication	6,858	12,803	11,491	37,814	43,312
Finance	6,469	11,877	17,128	16,812	13,968
Services	9,891	8,839	9,627	32,324	37,230
Miscellaneous	41,955	82,124	91,550	289,351	274,047
<b>Total</b>	<b>151,976</b>	<b>221,123</b>	<b>233,692</b>	<b>712,737</b>	<b>707,953</b>

Source: SAMA (2011)

## **2.5 The Saudi Stock Market: Tadawul**

### **2.5.1 A Brief History of the Saudi Stock Market**

Since 1935, the Saudi stock market can be classified, for study purpose, into three development stages depending on its structure, operations, and regulation. The first stage, the initial stage, covers the period of time from 1935 to 1982. This stage started when the Arab Automobile company's shares were made available to the public for the first time in Saudi Arabia in 1935 and ended 1982 when the Ministerial Committee, which consists of the Ministry of Finance and National Economy, SAMA and the Ministry of Commerce, was formed to regulate and govern the Saudi stock market (SAMA Annual Report 1997).

The second stage, the established stage, began when the Ministerial Committee started to formulate the Saudi Stock market in 1983 and ended in 2002 when the Capital Market Law (CML) was issued by Royal Decree No (M/30) on 31 July 2003.

The present modernised stage started when the Capital Market Authority (CMA) began to enforce the CML in 2003.

On the 19th of March 2007 the Saudi Council of Ministers approved the establishment of the Tadawul Company as a joint stock company (Tadawul 2013). Tadawul electronic system was implemented in 2001 and by contracting with OMX (Swedish stock market software company specialise in stock markets systems) in 2006, the new system enabled Tadawul to further expand with great flexibility in its services.

The two main rules of Tadawul are depository and trading services along with its sharing role of surveillance with CMA.

Capital Market Authority of Saudi Arabia established a bond and *sukuk* market in the 13 June 2009 (Tadawul 2013). At present, Tadawul deals in Islamic bond issues, by offering only seven *sukuks* through only six listed companies - Saudi Electricity, Saudi Hollandi Bank, Sadara Basic Services Company, Saudi ORIX Leasing Company, Saudi International Petrochemical Company and Arabian Aramco Total Services Company. Hence, the Saudi government owns the majority of these companies' stakes (Karam 2009). Recently, Tadawul

launched its new ETFs market in 28th March 2010 with only four ETF available to date (Tadawul 2013).

In July 2009 the Dow Jones Indexes of the USA became the first international index provider to offer indexes on the Saudi Tadawul. This encouraged other international companies such as Standard and Poor's and Bloomberg to consider Saudi indexes (Tadawul 2013).

## **2.5.2 Tadawul: Performance Remarks**

Compared to other stock markets such as the London Stock Exchange, the New York Stock Exchange (NYSE), the Istanbul Stock Exchange (ISE), and the Egyptian Exchange (EGX), the Saudi stock market is very young; it was formally established in 1984 (SAMA, 1997). Ever since its beginning, the Saudi stock market has received a great deal of attention from the government because of its vital role in lessening Saudi Arabia's dependence on oil. Figure 2.20(a) reports the movement of the Saudi stock market indicators, i.e., the number of shares traded, value of shares traded, the market value of shares and the general share price index (TASI), from 1985 to the end of 2010 (see Appendices A and B).

### *2.5.2.1 The Number of Listed Companies*

In 1986, there were 46 listed companies in the market and by 2010 the number had increased to 146 (SAMA 2013). The annual changes of the number of listed companies remained relatively low between 1986 and the end of 2005. In the 19 years from 1986 to 2005, the Saudi stock market added only 31 new companies, for a total of 77 companies in 2005, and the number of listed companies decreased in 2002 as a result of a merger between the electricity companies into a single company. This translates into less than two companies each year, on average, or a 3% average annual growth.

However, the total number of listed companies jumped from 77 in 2005 to 146 in 2010, representing an addition of 69 new companies or a 90% increase in only five years. The remarkable increase during those the last four years suggests that the CMA has succeeded in attracting funds for new investment, which has deepened the Saudi stock market by increasing the number of listed companies.

### *2.5.2.2 The Number of Shares Traded*

Along with the growing number of listed companies in the Saudi stock market, the number of shares traded also increased significantly. Figure 2.20(a) indicated that the number of shares traded grew remarkably from 1985 to 2010. It should be noted, however, that the growth trend line displayed in Figure 2.20(a) indicates volatile positive movements from 1986 until the end of 2010 with the few exceptions of 1995, 1998, 2007, 2009, and 2010. Following the introduction of the Tadawul trading system in October 2001, there was an increase in the number of traded shares, especially from 2002 to 2006. This suggests a positive effect associated with the advancement in technology as represented by the new trading system. From 2001 to 2006, the number of shares traded grew at an average rate of 187 per cent each year.

However, the number of shares traded experienced an extraordinary growth rate of 458 per cent in 2006 compared to the previous year. This may have contributed to the split of the nominal values of the listed company's shares to be ten Riyals per share instead of 50 Riyals. The reduction in the price of shares helped deepen the market by allowing more participants to enter the market. However, because the collapse of the Saudi stock market occurred at the end of 2006 and again in 2008, the number of shares traded decreased by 16 per cent in 2007, 3 per cent in 2009, and 42 per cent in 2010.

### *2.5.2.3 The Value of Shares Traded*

The data in Figure 2.20(a) suggest that the Saudi stock market was active with respect to the value of shares traded and the number of executed transactions. The value of traded shares significantly increased from 1985 to 2010. The number of executed transactions also greatly increased, which suggests an increase in investor confidence during this time period. Given that the 2006 and 2008 collapses in the Saudi stock market were followed by a sharp decline in the number of executed transactions, on average a 30 per cent decrease, the Saudi stock market failed to maintain its tremendous level of growth in its activities.

#### 2.5.2.4 *Tadawul All Share Index (TASI)*

As can be seen in Figure 2.20(a), the Saudi stock market, Tadawul, witnessed constant price appreciation after 1986, and experienced an unprecedented price appreciation between 2002 and 2006. During the time period under consideration, the TASI witnessed six major collapses that resulted in significant depreciation of the general price index during the years of 1986, 1990, 1993, 1994, 1998, 2006, and 2008. At the end of 1986, the TASI lost 6 per cent of its value compared with the previous year. After that, the TASI gained an average of 19 per cent per year for the following three years. In 1990, the TASI decreased by 10 per cent compared to the previous year due to Gulf War II. Immediately following the end of Gulf War II, the TASI grew sharply by 80% but then decreased by 5 per cent and 28 per cent in 1993 and 1994, respectively. In the three years following 1994, the TASI witnessed notable improvements compared to the previous years. This can be attributed to the positive development in the Saudi economy, including an increase GDP growth rate, i.e., 7 per cent on average, a rise in government expenditure, declines in the average returns rates on deposits, and a balance of payments (SAMA Annual Report, 1997). In particular, the TASI made up its losses by increasing 17 per cent, on average, each year. From the data, it appears that the TASI was not immediately affected by the Asian financial crisis that affected most of Asia in July 1997. Instead, TASI increased by 28 per cent during 1997 compared to its value in 1996, which suggests that the Saudi stock market was not linked to the international stock market. While the TASI lost 28 per cent of its value in 1998 compared to 1997, it maintained a remarkably high growth rate of 35 per cent, on average, each year for the next seven years. Figures 2.20(a) indicate that the growth rate of the TASI was not constant from 1999 to 2005.

By the end of 2002, the TASI had mostly stabilised and had an average growth rate of 22 per cent, but from 2003 to 2005, the TASI's average growth rate significantly increased by 88 per cent, each year. According to the SAMA Annual Report (2006), this robust performance, especially from 2003 to 2005, may have been attributed to a number of factors such as (1) continued growth of the non-oil private sector due to structural reforms recently adopted by the government; (2) strong financial performance of most joint-stock companies; (3) strong the price of oil, and (4) the rise in the number of investors entering the market. Al-Twaijry (2007) argued that this boom was due to the large increase in shares' demand caused by the

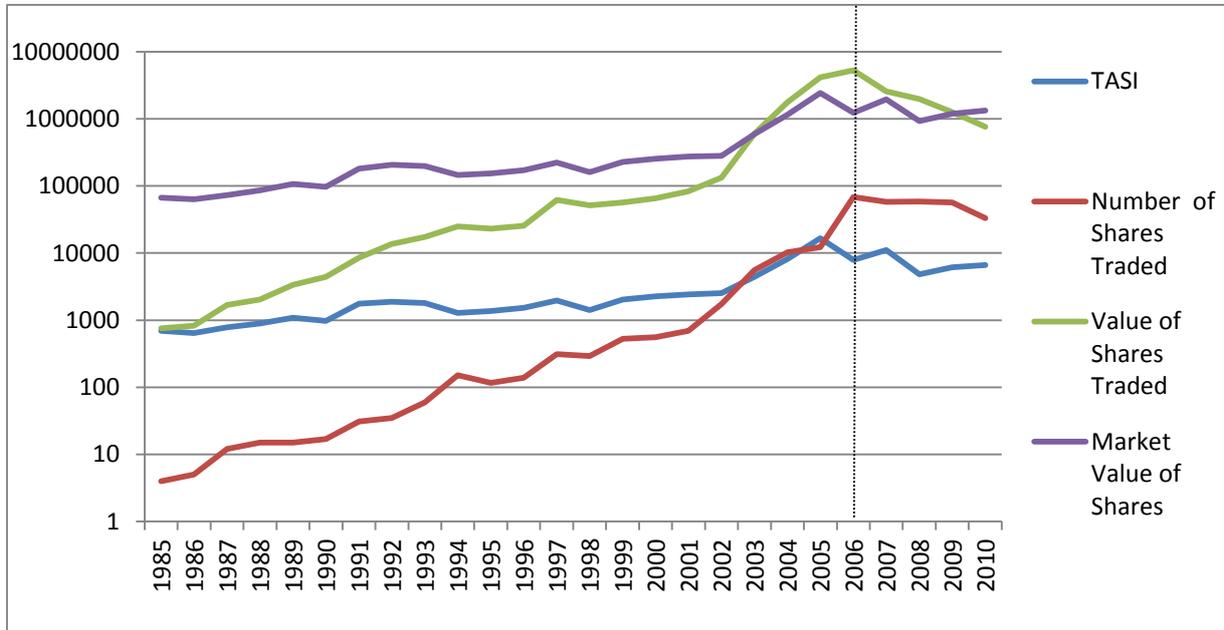
large number of people investing in the stock market either directly or indirectly through various types of portfolios provided mainly by banks. This argument is justified because of the low percentage of the free-floating shares in the Saudi stock market; at most 35 per cent during the period from 2002 to 2005, compared to the total number of issued shares in the market.

The TASI registered its highest close ever at 20,634.86 on February 25, 2006. However, by the end of 2006 the Saudi stock market had collapsed, dropping by 12,701.57 points to its final level of 7,933.29 (a 61.6 per cent decrease). During this time, the Saudi stock market eliminated tens of billions of Riyals. Also, by the end of 2006 the total assets of investment funds in domestic and foreign currencies decreased by 52.8 billion Riyals (or 38.5 per cent) to 84.2 billion Riyals (SAMA Annual Report, 2007). Consequently, thousands of stock market investors lost substantial amounts of their personal wealth, and a large majority of them accumulated some degree of financial debt. In 2007, the Saudi stock market experienced a rise in most of its indicators and recovered some of its losses from 2006. For instance, the TASI increased by 3105.37, or 39 per cent, to 11038.66. Also, total assets of investment funds went up by 21 billion Riyals, or 25 per cent, to 105.1 billion Riyals (SAMA Annual Report, 2008). At the end of 2008, the Saudi stock market experienced another collapse as the TASI closed at 4802.99 compared to 11038.66 at the end of 2007; decreasing by 56 per cent. As a result, the total assets of investment funds decreased by 30.3 billion Riyals, or 29 per cent, to 74.8 billion Riyals (SAMA Annual Report, 2009). The global financial crisis in 2008 may have contributed to the collapse of the Saudi stock market. In fact, most of the global financial markets indices declined by more than 30 per cent in 2008, and the Saudi stock market was no exception.

In the last two years, the Saudi stock market has recovered some of its losses from the 2006 and 2008 financial collapses (see section 2.5.3), but it is far from being fully recovered. The collapse of 2006 may have been a type of normal correction or adjustment for the great appreciation of the Saudi stock market in the preceding years, 2003-2005, as opposed to an actual collapse given that the Saudi Authority was in the early phase of regulating and enhancing the operating conditions of the stock market. It should be noted that collapses in

the Saudi stock market are not surprising since it well established that emerging markets are more volatile than developed markets (Harvey 1995).

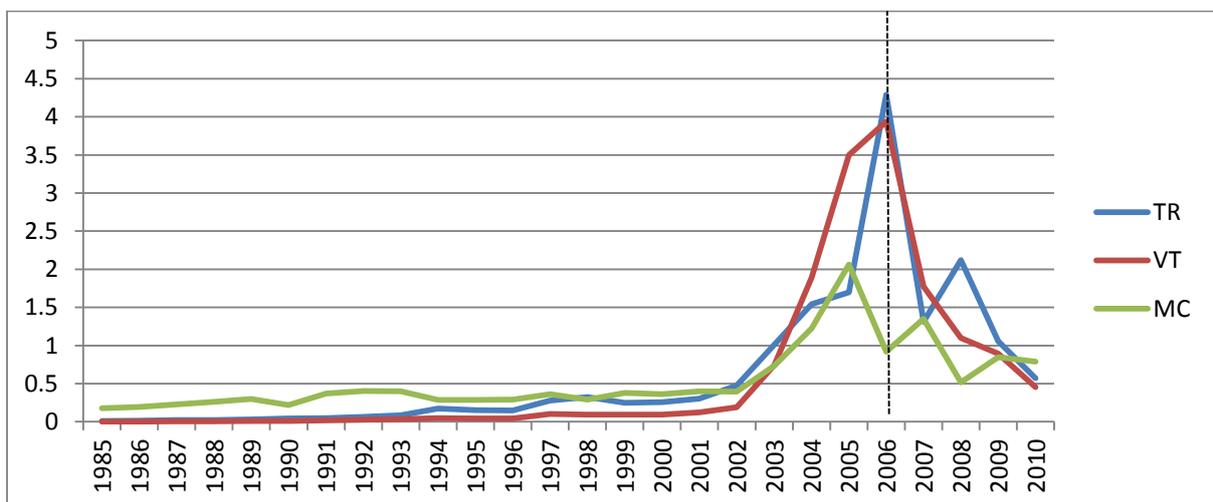
**Figure 2.20(a): Share Market Indicators**



\* 2006 (share market crisis 'bubble')

Source: SAMA (2013).

**Figure 2.20(b): Share Market Indicators**



TR (turnover ratio), VT (value traded ratio) and MC (market capitalisation ratio).

\* 2006 (share market crisis 'bubble')

Source: SAMA (2013).

#### *2.5.2.5 Free Share Float*

Being liquid is one matter. Having enough ‘free float’ shares available for trading is just as important to enable markets to operate efficiently without distorting prices based on trades in a few shares. Earlier studies on the Saudi stock market (Azzam 1997) had estimated the level of free float to be around 47.7 per cent for 1995. By the end of 2009, according to Tadawul, the level of free float had fallen to just under 38 per cent for the whole market (see Table 2.10), but with significant sectoral differences.

Table 2.10 indicates that the lowest free float was in the multi-investment sector at just 8.4 per cent, while the highest free float was in the retail services and transport sectors at around 71 per cent. The primary reason for the low float in the multi-investment sector was the fact that only five per cent or 315 million shares were available for trading out of 6,300 million issued by Kingdom Holding Company owned by Prince Al Waleed bin Tallal bin Abdul Aziz. This skewed the sector average considerably, but the energy/utilities, telecommunications and insurance sectors had low free float shares. As noted earlier in the chapter, there is a need to list more Saudi companies on the exchange to enable a larger float of shares and avoid undue price movements affecting the overall market due to trades in a few shares of closely held sectors.

**Table 2.10: Saudi Arabia Shares Outstanding and Those Held by the Public as Free Float (2003–2009)**

Sector	2003*			2009		
	Total outstanding shares (Millions)	Shares held by public free float (Millions)	Free float as % of total shares outstanding	Total outstanding shares (Millions)	Shares held by public free float (Millions)	Free float as % of total shares outstanding
1. Banking and financial serv.	378.9	226.8	60	8,903.9	4,711.5	52.9
2. petrochemical industries	455.7	186.8	41	8664.7	3,533.7	40.8
3. Cement	118.9	80.8	68	828	569.9	68.8
4. Retail Services	177.5	127.8	72	302.5	215.8	71.3
5. Energy and Utilities	765.7	290.9	38	4,241.6	766.9	18
6. Agriculture and Food	36	30.6	85	939.4	666.2	70.9
7. Telecommunication	300	249	83	4,200	1,400	33.3
8. Insurance	N/A	N/A	N/A	661	254.3	38.5
9. Multi-investment	N/A	N/A	N/A	6,616.6	552.4	8.27
10. Building and construction	N/A	N/A	N/A	666.2	447.6	67.2
11. Real Estate Development	N/A	N/A	N/A	3,136.2	1,427.6	47.2
12. Transport	N/A	N/A	N/A	476.3	339.5	71.3
13. Media and Publishing	N/A	N/A	N/A	155	91.8	59.3
14. Hotel and Tourism	N/A	N/A	N/A	79.3	46.5	58.8
15. Industrial Investment	N/A	N/A	N/A	1,352.4	586.5	43.4
<b>Total Sectors</b>	<b>2,232.7</b>	<b>1,192.7</b>	<b>53.4</b>	<b>41,223.10</b>	<b>15,660.2</b>	<b>37.9</b>

\* By 2007, the CMA had introduced 15 sub-sectors compared with seven N/A: Not available as not segregated

Source: SAMA (2011), CMA (2012)

#### *2.5.2.6 Sectorial Performance*

Like any other stock market in the world, the Saudi TASI composite stock market index masks sectorial differences. The Saudi stock market has 15 sectors and, in order of size, finance and basic materials are the dominant sectors, together accounting for just under 70 per cent of market capitalisation, with the two biggest companies Saudi Arabian Basic Industries (SABIC) and Al Rajhi Bank accounting for around 11 per cent of the market.

What is of some concern for the Saudi capital market is that while some of the smaller sectors have a larger number of companies, they only account for a smaller per cent of the market capitalisation. As such, a small movement in the highly capitalised sectors will unduly influence the whole market index.

#### *2.5.2.7 Investor Behaviour*

Anecdotal evidence suggests that the Saudi stock market is currently driven by irrational exuberance and herd-like mentality characterised by rumours and bouts of buying followed by panic selling (Al-Twajjry 2007, Ramady 2010). Over time, with investor experience and CMA investor awareness programmes, such investment behaviour could change towards a long-term investment outlook and asset holding. It is important to highlight that there are differences in Saudi individual investors' behaviour based on education, gender and age. Field research results carried out by Khoshhal (2004) showed some interesting differences amongst Saudi individual stock traders (SISTs), indicating the following:

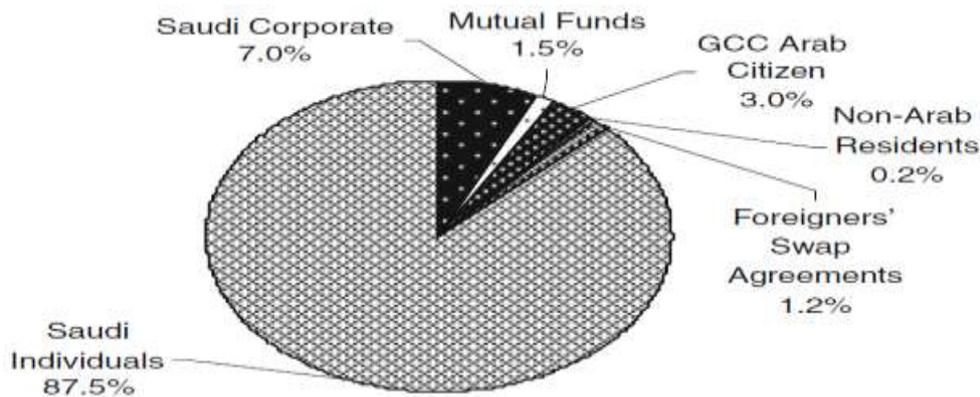
- The level of financial and technical knowledge among the SISTs were below average; 80 per cent had no formal training in stock trading.
- The majority of SISTs were risk-takers who believed that they would continue to make high profits on the Saudi stock market, despite falls.
- In picking stocks, some 40 per cent of SISTs depended on technical analysis, some 32 per cent depended on financial analysis while 25 per cent depended on other people's opinions and Internet forums. Only 3 per cent went with their personal feelings.

- The 25–35 age group seemed to make the most profit on the Saudi stock market, which the research survey correlated to higher levels of education and formal course training.
- The lowest level of profits were found amongst those who depended on others' opinions, while the highest was achieved by those who depended on technical analysis.
- Respondents with the highest education levels (masters and doctorates) depended on financial analysis and made medium to high profits. Those with lower levels of education depended on others' opinions and made the lowest profits.
- Respondents with lower risk aversion depended solely on financial information in their decision-making and realised medium profits.

Research conducted for other developed markets seemed to corroborate the above Saudi field research findings (Ackert et al. 2003), but such findings have important implications for the future development of the Saudi stock and capital market, concerning how to widen the number of players (foreign and domestic) and type (institutional or individual). Figure 2.21 illustrates that the SISTs represent an average of over 87 per cent of the monthly traded value. Hence, in larger European bourses such as London's, institutional investors tend to account for around 90 per cent of the transactions value.

Analysis of net investment flows for each investor category indicates that the significantly smaller size of the Saudi corporate investors is the main driver. They seemed to do poorly when it came to forecasting market direction compared to SISTs, mutual funds and foreigners. Thus, the corporate investors in Saudi Arabia seem to play a significant balancing role when it comes to market movements.

**Figure 2.21: Average Monthly Contribution to Saudi Stock Market Trades by Category of Investor and % of Value Traded (2009)**



Source: Tadawul (2013), Author estimates

### 2.5.3 Tadawul's 2006 'Bubble'

Through the Gulf Cooperation Council and the Arab's world which includes other Middle Eastern countries that are mostly oil exporting states, together they all created actions in order to raise the quality of the economy (Abu-mustafa, 2007). Based on the study provided by Al-Twajjry (2007), the final five years of the 20th century, the stock market of Saudi Arabia stayed intact and immovable which presented a stabilised economy, while the major capital markets in the international community were developing to their highest peaks (Abdul-Hadi 1988). However, during the first few years of the 21st century, prices of the stocks in Saudi Arabia had shown drastic changes but it did not show major collapse (Al-Twajjry 2007).

Moreover, large proportion of the Saudi population have become interested in the stock market due to the stability and possibility of being much stronger and profitable to them, thus the increase of investment at the stock market reflected positively on the economy (Ramady 2010). The Saudi citizens were encouraged to trade at the stock market through the help of the Saudi government national privatisation scheme, the IPO's policy, the media and the private banks lending programs (Al-Twajjry 2007, Ramady 2010, Cordesman and Al-Rodman 2006). Consequently, SISTs' represented an average of 90 per cent of the stock market's monthly traded value.

In February 2006, the Tadawul All Share Index (TASI) had been increasing and reached a historical level of 20,000 mark. However, few weeks later, from February 21 until February 25 TASI fell very sharply and reached 7,000 mark by November that year.

As a result, the immediate decrease in the movement of the stock market index within the span of three weeks had created severe conclusions to the investors especially to SISTs (Al-Twajjry 2007, Ramady 2010).

It could be analysed that there are four major parties had been involved which are the government, the traders, the media and the banks (Cordesman and Al-Rodman 2006, Al-Twajjry 2007, Ramady 2010).

- 1 The decision for market correction interference, which have been done by CMA, was either late or was not enough. Nevertheless, the Saudi policy makers should give attention to the lack of investment banks, independent brokerage firms, and asset management firms as well as the inadequate amount of venture capital.
- 2 SISTs are mainly lack of financial and investment education and usually base their trading decisions upon rumours, family and friend.
- 3 The media made it self as a negative mediator to the people and the government. Media practitioners such as writers have indirectly encouraged common Saudi citizens in stock market trading in the while readers, those who are mostly uneducated. Later on, it was stated that, 'Saudi media kept stressing on this extraordinary event in the stock market and probably participate on creating fear in the investor's mind' (Al-Twajjry 2007: 9).
- 4 The banks encouraged SISTs to take on higher personal debt levels in forms of loans designed from shares instead of cash. This has been advertised as an Islamic loan which was very appealing and popular among common Saudis. Thus, gave easy access for common Saudis to the stock market.

## **2.6 Saudi Arabia: Islamic Finance**

*Sukuk* is the Arabic term for financial certificate and could also be considered as an Islamic equivalent of a bond (Wilson 2008, Austrade 2010). A large part of the *sukuk* issuance in the 2006 up to 2008 was from companies that have exposure with real estate assets that also experienced substantial amount of pressure after the bursting of the property bubble of 2006 (Jones 2009). These defaults show that underneath the rhetoric stability of Islamic financing models, the truth is that a young asset class has grown rapidly during the unprecedented period that happened at the global economic boom since 2002 (Jones 2009). Nevertheless, according to Jones (2009) the Saudi Arabian government together with leaders of other countries believe that the issuer defaults and the falling Gulf real estate markets may have made people doubt the credibility and the stability of the Islamic capital markets. On the other hand, they still strongly believe that this difficult situation could help in establishing a

more competent asset class (Jones 2009). This is proven by the existence of 12 *Takaful* Islamic insurance companies in Saudi Arabia that includes foreign giants like Allianz and eight licences pending. Aside from that, the Saudi Arabian Basic Industries Company (SABIC), Emirates Airlines and National Bank of Dubai have also complied with the salary pension schemes for their employees in relation with the *sukuk* market (Alexander 2009). This kind of development clearly shows that the *sukuk* market is continuously growing because of the increasing number of *Shari'ah*-compliant investors that are fixing their income exposure for the purpose of regulation (Hanware 2009). Globally with 15 per cent growth rate, the value of the Islamic finance accounts only for 1 per cent of the global financial assets (Nasib 2008, Austrade 2010).

Islamic finance became a boon for Saudi Arabia after the global credit crunch and by 2009 it ranked second in the top 10 countries by value of *Shari'ah*-compliant assets (Austrade 2010). The Islamic financial market acquired an increasing trend, which benefitted not only the security market but also the economy and industry (Parker 2006). With the help of the security market, the share market improved (Parker 2006). The security and financial markets gained new horizons for development and new sectors are attracted towards Islamic finance (Parker 2006). Islamic financial tools like *Sukuk* create investment opportunities (Austrade 2010). Islamic finance insists on stopping speculation because it is against *Shariah* compliance (Schmith n.d.). The Islamic financial tools are developed on mutual understating and *Riba* (usury interest) is not allowed in Islam. The traditional financial market, which depends on interest to run its business, cannot imitate Islamic finance, which considers the commodity (Fasnacht 2009:71).

Many private companies also have moved towards Islamic finance (Ryan 2008). According to the Islamic Finance Information Services (IFIS 2013), the global value of issued *Sukuk* was almost US \$145.5 billion in 2012. Islamic finance is not only for Muslims; any individual and organisations can take advantage of it, however the supply of Islamic finance does not match the global demand (Austrade 2010).

Risk is borne by both parties of the contract in the Islamic financial system (Chapra 2009). Islamic finance allows alternative finance to the prime customer and the needy customer on affordable terms (Chapra 2009; Naughton 2000).

According to *Shariah*-compliance, the financial ratio of the company can not be more than approved leverage ceilings in terms of debt to assets ratio, interest and debt market capitalisation. The index very often reviews the changes in free float and the company, which has a greater financial ratio than ceiling ratio, is removed. So due to this, the risk and manipulation in traditional index will be reduced. The investor has to bear less risk due to the ceiling of the financial ratio ('Saudi Arabia: *Shariah* index shows increasing trends towards Islamic investment' 2009).

It can be said that there is a wide scope for Islamic finance and that there is a need for a systematic market in which it can be made available. The rules and procedures of Islamic finance are not well developed to date, which is the greatest drawback of the system (Wilson 2008). As the investors' belief in the system is doubtful, too, the government should try to enhance investor's confidence and belief towards the Islamic financial system (Mohd, Shabri and Majid 2008).

The Islamic financial system is an alternative, ethically driven and can be very efficient concept for liquidity generation (Mohd, Shabri and Majid 2008). It is a mutual cooperation concept that is governed by Islamic *Shariah* law (Austrade 2010). The Islamic finance also boosted Investment Avenue. Investors had new investment opportunities, which were different from the traditional avenues. However, the Islamic financial laws are not well developed and understood globally (Austrade 2010). This creates uncertainty around a financial system that has the potential of become a true alternative, or competitor to the current rules of finance practice around the world (Austrade 2010).

## **2.7 Conclusion**

This chapter presented a historical review of the Saudi Arabian economic and financial development and planning. A statistical review of the performance of the Saudi economy and finance over the period of 1969 to 2010 was also provided.

Since 1970 Saudi Arabia adopted a sophisticated development planning system through implementing a series of medium-term five-year plans. The process of planning has evolved as the economic structure of the country has undergone transformation with the private sector

assuming more importance in both consumption expenditure and GFCF. The economic and financial strategic choices that early planners made to shift the economy from overwhelming dependence on oil are still being felt today. Thus planning is now shifting from a 'directive' to an 'indicative' role as the economy becomes more globalised and interdependent with the rest of the world.

The growing unemployment numbers, whether official or voluntary, are having an impact on poverty levels in Saudi Arabia. Again, no official statistics exist on what constitutes a national poverty level, or of the total number of those depending on social security assistance, but there are some official figures to illustrate the magnitude of the problem. The issue of poverty is one of the concerns of the Saudi government, and the 2008 and 2009 national budgets allocated increased social security benefits.

Saudi Arabia's WTO accession in 2005 helped to bring changes to the Kingdom's investment environment under the Agreement on Trade Related Investment Measures (TRIMs). However, prior to WTO accession, the Kingdom had been taking some measures to attract FDI and a new Foreign Investment Law was enacted in 2000 to replace and liberalise the 1979 Foreign Investment Law. The 2000 law established the Saudi Arabian General Investment Authority (SAGIA) as responsible for approving foreign investment projects; SAGIA also serves as the enquiry point on laws, regulations and procedures relating to foreign investment. Saudi Arabia became the largest FDI flow by an Arab country and recently been successful in attracting sizeable FDI due to the size of its economy, market depth and more recent enhancements to the Foreign Investment Law, such as a reduction to 20 per cent in foreign corporate profit tax. Cross-border mergers and acquisitions are still not common in the Middle East. Investor perception is that more is needed to enhance the legal and operating frameworks such as labour, company and bankruptcy laws.

SAMA has evolved from being a monetary agency with a limited role into a fully fledged central bank with relative independence, a broad range of monetary tools at its disposal and with effective supervisory powers of the financial sector. Monetary policy is the primary focus of SAMA, whose key objectives are to stabilise inflation and the general level of prices, to maintain a fixed exchange rate policy against the US dollar and to allow a free movement of currency and capital. SAMA uses four main policy instruments in conducting monetary policy: cash reserve ratio/minimum reserve policy, repos and reverse repos, foreign

exchange swaps and placement of public funds. It has increasingly relied on repos and reverse repos, the so called 'open-market' operations. SAMA's monetary policy assigns a high priority to its current fixed exchange policy as a means of controlling inflation, despite recent depreciation of the US dollar against major international currencies.

Domestic money supply creation is a function of dollar reserves held abroad, domestic government spending and the effects of domestic purchases of foreign currencies for trade and remittances.

SAMA faces future challenges including more effective participation in the GCC monetary union and the proposed single currency, developing a corporate bond market, the supervision and control of cross-border Saudi bank mergers and 'new wave' foreign bank entry to the Saudi market, as well as overseeing the growth of Islamic finance and banking products in Saudi Arabia and combating inflationary trends.

The Saudi banking sector is one of the financially strongest and most profitable in the world, with high capitalisation in excess of international required levels, advanced automation and a diversified range of banking services delivered to well-defined target market segments. Banking supervision is through SAMA control.

The Saudi banking sector passed through several phases of evolution, each laying foundation for the next phase. Currently the banking sector is going through a phase of consolidation and mergers, preparing to face global competition following its WTO accession as well as the granting of banking licences for wholly owned foreign banks to enter the Saudi market.

Saudi banks are characterised by a high degree of shareholder concentration levels, which could be counterbalanced by partial privatisation of government-held shares in some Saudi banks. In addition, Saudi banks, lending policies are still limited by their small capital base as well as SAMA mandated loans-to-deposit ratios, but consumer lending has become a major growth sector. Islamic finance has acquired more importance, and both Islamic and non-Islamic banks have entered this market segment.

The Saudi stock market has evolved from the formal establishment of a stock market in the 1980s to the passing of the CML in 2004, which created an independent Securities Exchange

Commission (SEC) and later the CMA to oversee the stock market. The establishment of the CMA has helped to overcome some of the previous obstacles in expanding the capital market, namely an increase in the number of listed companies, increase in the number of shareholders, expansion of brokerage and investment advisory services and licensing of non-bank financial institutions.

The benefits of the CML could be felt in several areas: potential to draw back Saudi resources invested abroad, growth of non-oil financial services sector, improvement in risk management practices and response to the infrastructure services demand.

In terms of performance, the Saudi capital market dominates the rest of the Arab world in size and has registered impressive performances, especially during 2003–2004, when it outperformed most international market indexes but saw sharp retreats after 2006. The Saudi market has improved in terms of turnover ratio and market capitalisation as a percentage of GDP.

However, The Saudi stock market is experiencing three issues; first, the total ‘free float’ shares for trading is around 50 per cent of all listed shares; second, the low number of listed companies. These could benefit from additional planned government privatisation sales and private sector IPOs; finally, the investor behaviour in the capital market is characterised by a majority of Saudi individuals with no formal training in stock trading who depend on opinion and make the lowest profits.

The Saudi stock market has made some progress in opening up to foreign investors through swap facilities and there are some developments in expanding the use of ETFs and index funds.

Islamic finance became a boon for Saudi Arabia after the global credit crunch and by 2009 it ranked second in the top 10 countries by value of *Shari’ah*-compliant assets.

The next chapter 3 will present a theoretical background of the economic growth in relation to capital market development. This is followed, by an empirical review on the relationship between capital market development and economic growth in general and specifically in the case of Saudi Arabia.

## **Chapter 3: Theoretical and Empirical Studies of Capital Market Development and Economic Growth**

### **3.1 Introduction**

The literature review in this chapter will present a vast number of terminologies and concepts. This might result in confusion among readers' regarding the concepts of capital market development and economic growth. Thus, for the purpose of this thesis it is very important to further clarify the concept of capital market development and economic growth.

#### **3.1.1 Capital market**

The capital markets can be defined as a market that specialises in offering long run loans to the economy (Gurusamy 2009); It is also part of the financial system that is responsible for channelling funds from surplus to deficit areas of the economy (Levine and Zervos 1998); Capital markets are the act of financial intermediary institutions that facilitate capital formation, mobilisation and channelling of capital funds on long term basis to investors across the economy (Obiakor and Okwu 2011). In addition, capital markets combine markets and institutions that specialise in the issuance as well as the trading of financial instruments in the long run. Thus, for this study we follow the views of Obiakor and Okwu (2011) and Gurusamy (2009) on the capital market as an institutional arrangement involving efficiently mobilising and channelling long run financial resources through a set of financial services that could affect economic growth. Moreover, capital market development can be defined as the capital market capability at low cost to acquire information, enforce contracts, facilitate transactions and create incentives for the emergence of particular types of financial contracts, markets and intermediaries (Levine and Zervos 1998, Obiakor and Okwu 2011). Furthermore, Randall Dodd offered an extended definition of capital markets:

*A more complete view of capital markets is, by analogy, a four-legged table made up of securities markets (issuing and trading bonds and equity shares), banking industry (issuing loans and providing payment and settlement services), insurance and pension funds (providing future income and collateral for lending), and derivatives markets (risk management and price discovery). All four legs serve to support the table, and it is no more stable than its weakest leg.*

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(Ocampo and Stiglitz 2008:290)

Note, the terms “capital market development”, “financial development”, “financial intermediation” are used interchangeably in this study. Capital market development, however, should be thought of as a broader concept that also includes financial innovations that occur outside the banking system. Because of the lack of data regarding non-bank financial innovation in developing countries like Saudi Arabia, the level of financial intermediation effectively measures the degree of capital market development by the banking system. For a comprehensive survey of recent evidence see Levine (1997).

### **3.1.2 Economic Growth**

Economic growth can be quantitatively defined as an increase in real gross domestic product (GDP). Many factors could affect economic growth, for example these include investment ratio (Pagano 1993, Greenwood and Jovanovic 1990), human capital (Romer 1986), research and development (Solow 1956, Darrat and Al-Sowaidi 2010). Economic development and growth issues continue to capture the interests of academics and policy makers around the globe. In recent times, the shift in emphasis has been from the classical concepts of maximising production outputs and wealth distribution towards economic sustainability, as a reaction to globalisation. This has resulted in major economic reforms, especially among developing countries as they expand their markets. Economic sustainability is heavily tied to investment, which in turn relies on the capital market. Hence, development of a stable domestic capital market underpins sustainability (Levine and Zervos 1998).

### **3.1.3 Capital Market Development and Economic Growth Main Hypotheses (Views)**

According to modern growth theory, the financial sector may affect long-run growth through its impact on capital accumulation and the rate of technological progress. Financial sector development has a crucial impact on economic growth and poverty reduction, especially in developing countries; without it, economic development may be constrained, even if other necessary conditions are met (DFID 2004).

The theoretical relationships between capital market development and economic growth have been analysed extensively in the literature and may be summarised under four hypotheses or views:

First, the conventional view of the supply leading hypothesis postulates that the direction of causality flows from capital market development to steady-state economic growth. In a world without frictions caused by transaction, information, and monitoring costs, no financial intermediaries are needed. If those costs are sufficiently high, no exchanges among economic agents will take place. The need to reduce those costs for exchanges to take place has led to the emergence of financial institutions and markets constituting the financial sector. A well-developed financial sector provides critical services to reduce those costs and thus to increase the efficiency of intermediation. It mobilises savings, identifies and funds good business projects, monitors the performance of managers, facilitates trading, diversification of risks, and fosters exchange of goods and services. These services result in a more efficient allocation of resources, a more rapid accumulation of physical and human capital, and faster technological innovation, thus inducing faster long-term economic growth

This view can be traced back to Schumpeter (1912), Goldsmith (1969), McKinnon (1973), Shaw (1973) King and Levine (1993) and Pagano (1993) all of whom investigated the effect of capital market development on economic growth (Demirhan, Aydemir and Inkaya 2011; Levine and Zervos 1998). Schumpeter's (1912) important early study proposed a causal link whereby capital markets promote economic growth by funding entrepreneurs and channelling capital to them with higher return investments (Ake and Ognaligui 2010; Demirhan, Aydemir and Inkaya 2011; Dritsaki and Dritsaki-Bargiota 2005; Levine and Zervos 1998). Schumpeter's (1912) view was that economic change could not simply be predicated on previous economic conditions alone, although prevailing economic conditions were a result of this. Similarly, Goldsmith (1969) emphasised the effect of the financial structure and development on economic growth.

Second, the demand following hypothesis proposes that economic growth leads to capital market development (Jung 1986). This view suggests that as the economy grows, more financial institutions, financial products and services emerge in markets in response to a higher demand for financial services (Zang and Chul Kim 2007, Athanasios and Antonios 2010, Odhiambo 2010, Obiakor and Okwu 2011). If this hypothesis is correct, reform efforts

should sequentially emphasise the development of the real sector, such as privatisation, labour market reforms to increase employment, tax reforms to provide a level playing field for investment, or legal and regulatory reforms to encourage private sector development.

The third view is the 'Feedback' causality that exists when there are a bi-directional causality between capital market development and economic growth (Hondroyannis, Lolos and Papapetrou 2005, Majid 2007, Demirhan, Aydemir and Inkaya 2011, Al-Malkawi, Marashdeh and Abdullah 2012). A country with a well-developed capital market could promote high economic expansion through technological changes, products and services innovation, which in turn creates a high demand for the financial institutions. As the financial institutions effectively respond to this demand, these changes will stimulate higher economic achievement. Both capital market and economic developments are therefore positively interdependent (Majid 2007).

The fourth view is the 'Independent' causality that capital market and economic growth is not causally related (Stiglitz 1985, Mayer 1988, Boyd and Smith 1998, Mosesov and Sahawneh 2005, Abu-Bader and Abu-Qarn 2006). Large and well-developed capital markets are insignificant sources of corporate finance (Mayer 1988). Capital market liquidity will not enhance incentives for acquiring information about firms or exerting corporate governance (Stiglitz 1985, 1993). Risk sharing through internationally integrated capital markets can actually reduce saving rates and slow economic growth (Devereux and Smith 1994). Capital market development can harm economic growth by easing counter-productive corporate takeovers (Morck, Shleifer and Vishny 1990a, 1990b; Shleifer and Summers 1988).

The literature review shows that the debate continues in both theoretical and empirical studies regarding the importance and causality directions of the relationship between capital market development and economic growth. For example, there are similar inconsistencies in empirical data on Saudi Arabia: on one hand Darrat (1999) investigated empirically the relationship between financial deepening and economic growth for three developing Middle-Eastern countries (Saudi Arabia, Turkey and the UAE). His empirical results suggested that the economic stimulus of more sophisticated and efficient financial markets in Saudi Arabia become noticeable only gradually as the economies grow and mature in the long-run, and financial deepening may influence only some, but not all, sectors of the economy. On the

other hand Naceur and Ghazouani's (2007) analysis of data from 1991 to 2003 found that developing the capital market is not important to the economies in 11 Middle Eastern and North African (MENA) countries, including Saudi Arabia. This resulted to their underdeveloped financial systems and unstable growth rates.

Thus, there appears to be no existing research on the proposed topic of this study that is country-specific, use capital market development variables that contain bank and stock market measurements, used eight macro-economic variables and used monthly data post the 2003 significant capital market changes.

The objective of this chapter is to provide policy makers, academics and both profit and non-profit organisations, who desire to undertake research in the field or learn more about it, with an idea of the theoretical and empirical relationship between capital market development and economic growth as proposed by key economists in the field. Therefore it is important to determine how the capital market and the economy are associated. Other objective is to offer a review of the relevant empirical research regarding capital market development and economic growth. It is essential to review the empirical literature, because this will assist academics and the research community to choose most appropriate data and methodologies when investigating the significance of and relationship between capital market development and economic growth. It could also help policy makers to decide which policy is best for the economy or, in other words, to determine what advantages they might acquire in terms of economic growth if they direct their policy toward developing the capital market. An empirical literature review also provides insights on the inconsistent results regarding capital market development and economic growth in the case of Saudi Arabia.

This chapter discusses theory and empirical studies to illustrate the relationship between capital market development and economic growth. References to the neoclassical and endogenous economic growth models and the channels to economic growth are made to illustrate and better understand the nature of the relationship between capital market development and economic growth. This is followed by an extensive review on empirical studies that represented the four main views regarding the causal relationship between capital market development and economic growth. Some empirics that used capita market banking base and stock market based variable. An extensive review on empirics included Saudi Arabia. Finally, the last section will conclude the chapter with a few remarks.

### **3.2 Economic Growth and Capital Market Development Theories**

Economic growth theories have emphasised three (related) determinants: (1) capital accumulation, (2) human capital (including learning) and (3) research, development and innovation (Stern 1991). Economists suggest that countries that inherit sustainable growth rates are able to decrease poverty levels, reinforce political stability, reduce crime rates and improve the environment (Obiakor and Okwu 2011). They predict that higher saving and investment will result in higher levels of per capita income and faster economic growth (Claus et al. 2001).

In considering the economic growth process, a question that is raised is: can economic growth be sustained in the long run and, if so, what determines the growth rate? (Grossman and Helpman 1994). This section focuses on the determinants of the growth rate of output over the long-run period. There are two complementary approaches to explain these determinants, the standard neoclassical growth theory, the Solow-Swan model (Swan 1956), and the endogenous economic growth theory of Lucas (1988) and Romer (1986).

The broadest division of the financial system is between either lenders or borrowers or financial intermediaries (banks, insurance companies, and pension funds) and markets (bonds and stock markets). A large part of an economy's saving is intermediated towards productive investment through financial intermediaries and stock markets, providing a set of choices with differing risk and return characteristics, and helping investors find the financing they need. Since the rate of capital accumulation is one of the fundamental determinants in long-run economic growth, an efficient financial system is essential for an economy to boost the growth rate (Garcia and Liu 1999).

In carrying out their functions, financial intermediaries reduce transaction costs for savers and investors and help reduce problems of asymmetric information that are inherent in the relationship between investors and entrepreneurs. The development of sophisticated derivative instruments can improve the allocation of risk in the economy and increase the efficiency of the saving-investment process (Fischer 2003).

As part of the capital market, stock market development plays an important role in economic growth. In principle, a well-developed stock market is expected to increase savings and efficiently allocate capital to real investment in the corporate sector, which leads to an increase in the rate of economic growth. Stock markets also contribute to the mobilisation of domestic savings by enhancing the set of financial instruments available to savers to diversify their portfolios (Caporale, Howells and Soliman 2004).

In line with the main theoretical and empirical literature on capital market development and economic growth, this section outlines a comprehensive review of theoretical consideration and presents a general framework on the possible effects of capital market development on saving and investment, and thereby economic growth, with reference to the neoclassical and endogenous economic growth models.

### 3.2.1 Neoclassical Growth Model

In Solow's (1956, 1994) neoclassical growth theory,<sup>7</sup> the sources of economic growth are the production function, that output produced depends on the factor inputs of capital,  $K$ , and labour,  $L$ , and the state of technology  $A$ , as in equation (3.1):

$$Y_t = A_t f(K_t, L_t) = A_t K_t^a L_t^{1-a} \quad \text{where: } 0 < \alpha < 1 \quad (3.1)$$

As specified in equation (3.1) applying the properties of logarithm which are:

$$\text{Log}(XY) = \log X + \log Y \quad (3.2)$$

$$\text{Log}(X^y) = y \log X \quad (3.3)$$

Thus:

$$\text{Log}(Y_t) = \log(A_t K_t^a L_t^{1-a}) \quad (3.3)$$

$$\text{Log}(Y_t) = \log(A_t) + \log(K_t^a) + \log(L_t^{1-a}) \quad (3.4)$$

$$\text{Log}(Y_t) = \log(A_t) + a \log(K_t) + (1-a) \log(L_t) \quad (3.5)$$

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<sup>7</sup> For further details, see Robert Solow (1956, 1994), whose model assumes the supply of goods and services upon a production function with constant returns to scale and imperfect substitution between classical factors of production, capital and labour.

After taking the derivative with respect to time, equation (3.6) represents the exogenous growth theory. Hence, as the returns to scale are usually assumed constant in neoclassical theory, increasing all inputs in the same proportion raises output in that same proportion.

$$\Delta Y/Y = \Delta A/A + (\theta \Delta K/K) + [(1 - \theta) \Delta L/L] \quad (3.6)$$

where:

$\Delta Y/Y$  = is the rate of change in GDP

$\Delta A/A$  = is change in technological progress (productive efficiency)

$\Delta K/K$  = is the rate of change in capital supply

$\Delta L/L$  = is the rate of change in labour force

Assuming perfect competition where inputs are paid their marginal products,  $(1-\theta)$  and  $\theta$  are the marginal products of labour and capital, respectively. For convenience, assume a given and constant rate of labour force growth,  $\Delta L/L = n$ , and that there is no technical progress, i.e.  $\Delta A/A = 0$ . Equation (3.6) becomes:

$$Y = f(K) \quad (3.7)$$

Where:  $Y$  = economic growth,  $K$  = capital

Given the assumptions of no technical progress and a fixed population growth rate, the only variable element left in equation (3.7) is the growth rate of capital. Capital growth is determined by saving, which in turn, depends on income<sup>8</sup> Bertola (1993).

In contrast, endogenous growth models show that economic growth performance is related to financial development, technology and income distribution (Caporale, Howells and Soliman 2004, 2005). The steady state is a condition of the economy in which output and capital per worker do not change over time. This is due to the rate of new capital production from invested saving exactly equalling the rate of existing capital depreciation (Swan 1956). There are two basic ways of endogenising the steady-state growth rate. First, the rate of technical progress  $\Delta A/A$  can be endogenous. Second, if there are constant returns to factors of production that can be accumulated, then the steady-state growth rate is determined by the

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<sup>8</sup> For more on the implications of the model for steady investment-driven growth, see Bertola (1993).

growth of technological change. Hence, in the neoclassical growth models, steady-state growth is independent of the saving rate (Blanchard 2003).

In addition to the relationship between output and investment, the channels through which stock market development may be linked to economic growth should be considered. These channels are detailed in the discussion of the endogenous growth model, following Romer (1986, 1990) and Lucas (1988), in the next section.

### 3.2.2 Endogenous Economic Growth Model

The recent motivation of interest in the link between capital market development and economic growth stems mainly from the insights and techniques of endogenous growth models, which have shown that there can be self-sustaining economic growth without exogenous technical progress and that growth can be related to preferences, technology, income distribution and institutional arrangement (Pagano 1993). This possibility has also revived interest among theorists regarding the link between capital market development and economic growth, and has led to the emergence of several models that highlight potential links (Gronski 2001). The endogenous growth model  $AK$ —resembles those of; Greenwood and Jovanovic (1990) model that has an  $AK$  structure with no diminishing returns to the reproducible factor and a permanent, exogenous improvement in financial structure, which would cause a permanent increase in the rate of growth. Pagano (1993) also considers the simplest endogenous growth model,  $AK$ , and finds that the financial intermediation (stock market) can affect economic growth by acting on the saving rate, on the fraction of saving channelled to investment or on the social marginal productivity of investment. And Gronski (2001)—clarify how capital market development may affect economic growth through saving and investment. Hence, saving and investment play an important role in economic growth and development: saving determines the national capacity to invest and thus to produce, which in turn affects the potential economic growth (Gronski 2001).

This let us assume we have a closed economy, where aggregate output,  $Y_{(t)}$ , is produced during period  $t$ <sup>9</sup> and is a linear function of the aggregate capital stock,  $K_{(t)}$ :

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<sup>9</sup> In contrast to neoclassical models, where increased saving does not have a long-run impact on economic growth, the  $AK$  model predicts that there will be a permanent change through capital deepening, since the

$$Y_{(t)} = AK_{(t)} \quad (3.8)$$

$K_{(t)}$  is the aggregate capital stock including physical and human capital as in Lucas (1988), and  $A$  is the social marginal productivity of capital.

The growth rate  $((Y_{(t)}/Y_{(t-1)})-1)$ , is represented by  $y$  which at time  $(t+1)$ , is determined only by the growth of capital input as:

$$Y_{(t+1)} = \frac{K_{(t+1)}}{K_{(t)}} - 1 \quad (3.9)$$

Assume that the economy produces a single good that can be either invested or consumed. If invested, it depreciates at the rate of  $\theta$  per period. Gross investment,  $I_{(t)}$  is given by:

$$I_{(t)} = K_{(t+1)} - (1 - \theta) K_{(t)} \quad (3.10)$$

In other words, gross investment equals the difference between the capital stock at time  $(t+1)$  and time  $(t)$ , plus the depreciated capital stock at time  $(t)$ .

In this assumption of closed economy, the capital market equilibrium assumes the equality between gross saving,  $S_{(t)}$  and gross investment,  $I_{(t)}$  (i.e. gross investment can be only financed by gross saving). Assuming further that a proportion of saving  $(1-\theta)$  is lost in the process of financial intermediation as a consequence of transaction costs, such that in equilibrium only a fraction of saved resources  $S_{(t)}$  is invested. The investment  $I_{(t)}$  therefore can be represented as:

$$I_{(t)} = \theta S_{(t)} \quad (3.11)$$

The amount of saving absorbed by the financial system is then  $(1-\theta) S_{(t)}$  and the higher the investment the lesser the capital accumulation in the economy.

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production function in this model has constant returns to scale in capital (i.e. the production function in the  $AK$  model sets,  $\alpha$ , is equal to 1 in equation  $(Y_{(t)} = AK_{(t)}^{\alpha} L_{(t)}^{\alpha-1})$  and given by equation (3.8).

From equations (3.9) and (3.10), the growth rate of the economy at time  $(t+1)$  is  $Y_{(t+1)}$ , and can be expressed as the ratio of gross investment to capital minus depreciation ( $Y_{(t+1)} = I_{(t)} / (K_{(t)} - \theta)$ )

In a second step, capital can be substituted by the ratio of output to productivity obtained from equation (3.8), as:

$$Y_{(t+1)} = A \frac{I_{(t)}}{Y_{(t)}} - \theta \quad (3.12)$$

Using the capital market equilibrium equation (3.11) and denoting the gross saving rate ( $S / Y$ ) by  $S$ , the steady-state growth rate can be expressed by the following equation:

$$Y = A \theta S - \theta \quad (3.13)$$

It appears then from this simple model that capital market development may affect economic growth process through the following:

- Firstly, through an increase of the saving rate ( $S$ ), ( $S/Y$ ), (or also the investment rate) by using economic policies affecting directly the determinants of private saving behaviour.
- Secondly, through the channelling of more saving to investment by avoiding the loss of funds during the intermediation process through a rise in the fraction  $\phi$  (i.e. an increase in  $A \theta$  in equation (3.13) increases the growth rate,  $Y$ ).
- Finally, through the improvement of capital productivity ( $A$ ) resources being allocated more productively. Thus saving channelled through the capital market is allocated more efficiently, and the higher capital productivity results in higher economic growth.

Both Solow's (1956) neoclassical and Lucas's (1988) endogenous economic growth theories emphasised on the role of capital markets on the economy and the growth process. Thus, the following section will review the empirical research on the field of study that put these theories into practice.

### **3.3 Channels to Economic Growth**

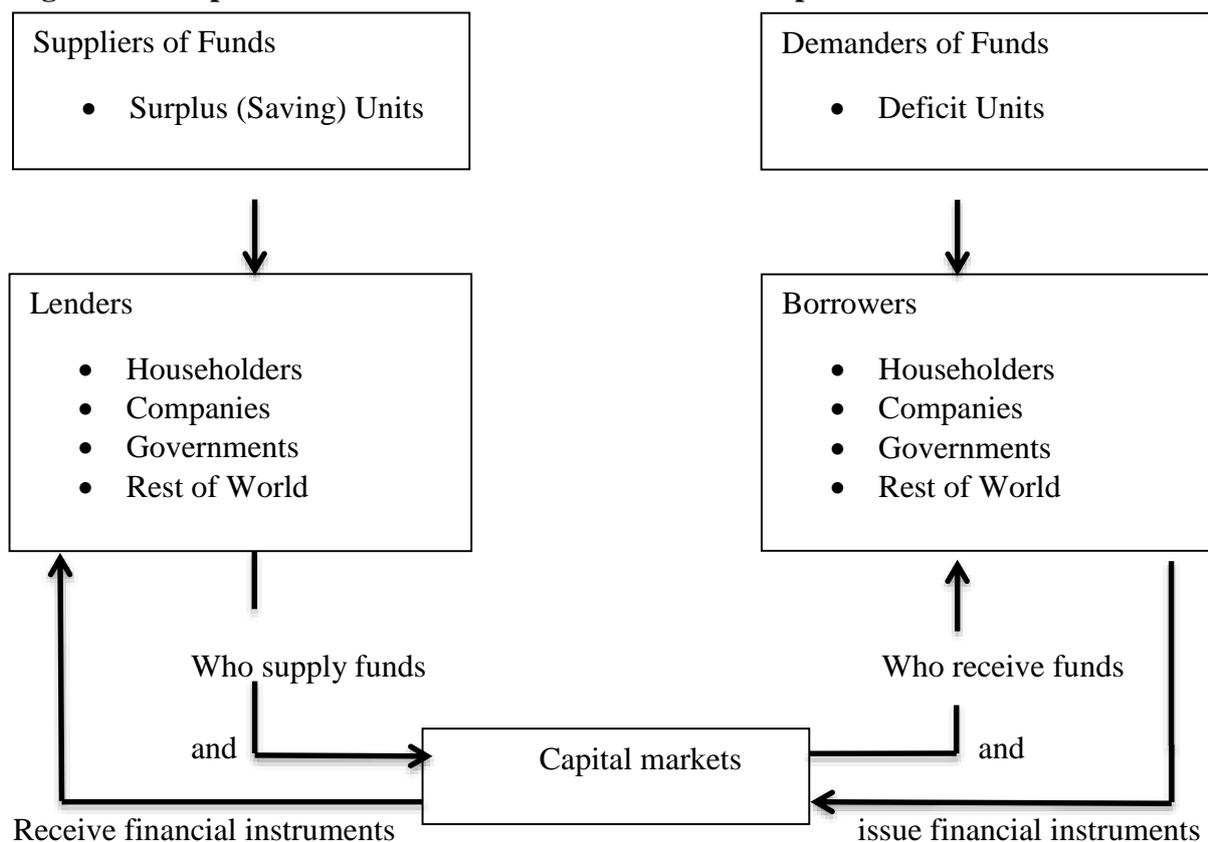
The theoretical relationship between capital market development and economic growth has remained an important issue of debate. The pioneering contributions of Goldsmith (1969), McKinnon (1973) and Shaw (1973) all suggesting that there is a strong positive correlation between the extent of capital market development and economic growth (De Gregorio and Guidotti 1995). Goldsmith (1969) argues that the correlation reflects a two-way causal relationship and that capital markets enhance economic growth by raising the efficiency of investment. McKinnon (1973) and Shaw (1973) further argue that capital markets raise the growth rate of saving and investment.

A well-functioning financial system serves very important functions within the economy. Greenwood and Smith (1997) and Viney (2003) emphasise that the capital markets are the most prominent means of encouraging and allocating savings to competing users by providing financial instruments that possess a range of mixes of the attributes of risk and return (i.e. channelling investment capital to its highest expected returns).

On the other hand, capital markets provide liquidity and permit individuals to allocate their current income to saving and/or spending, which alters the social composition of saving in a way that is potentially favourable to enhancing capital accumulation. Finally, capital markets foster specialisation in entrepreneurship, entrepreneurial development, and the adoption of new technologies.

The role of the capital markets is to bring together savers who buy financial instruments and the users of funds who issue financial instruments. The flow of funds, the relationship between savers and users of funds, and the place of the capital markets in the flow, are illustrated by Viney (2003) in Figure 3.1.

**Figure 3.1: Capital markets and flow of funds relationship**



Source: Viney (2003:7).

Alternatively, Levine (1997) describes the basic functions and channels through which capital may be linked to economic growth.<sup>10</sup> Figure 3.2 presents these functions and suggests that a well-functioning financial system might permit a higher level of saving and investment, and hence economic growth.

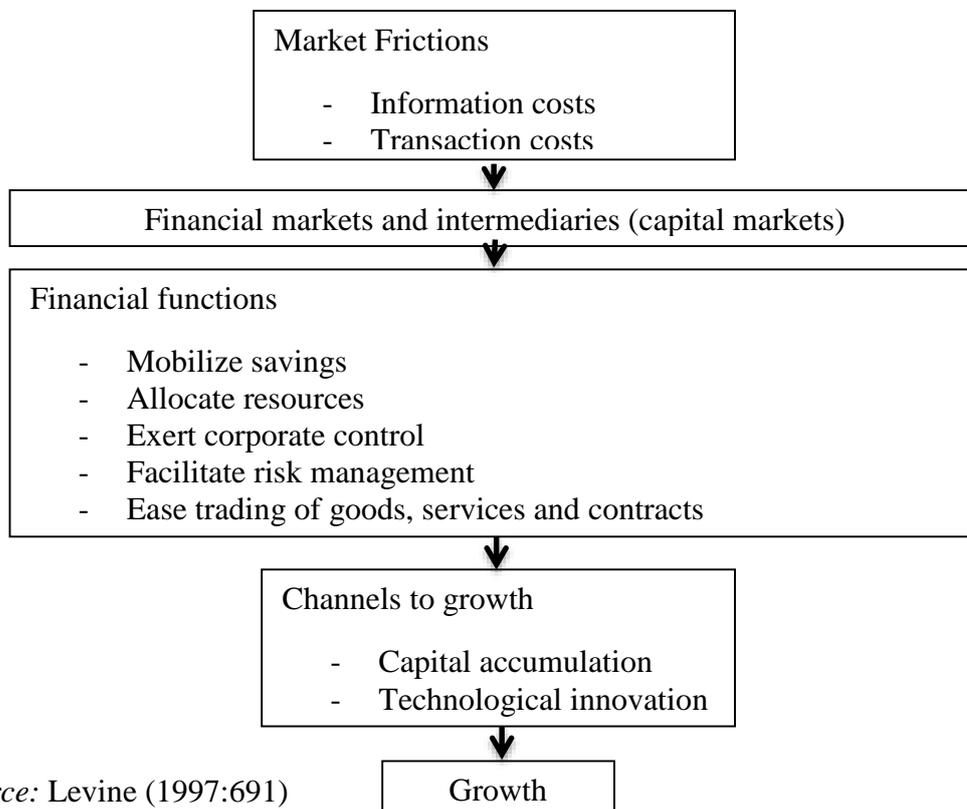
To understand how the financial system might influence economic growth in theory, Khan (2000:6–7) summarises these functions in more detail. Firstly, mobilising saving, that is capital markets and institutions pool the saving of diverse households and make these funds available for lending. This activity reduces the transaction costs associated with external finance for both firms and households. Secondly, allocating saving by determining which investment opportunities are worthwhile and judging the creditworthiness of borrowers at lower cost than the average small investor.

<sup>10</sup> For more information on the relationship between financial development and economic growth, see Greenwood and Smith (1997), Levine (1997), King and Levine (1993a), Wurgler (2000), Pagano (1993) and Fischer and Merton (1984).

Thirdly, reducing risk by spreading investors saving across many different investment opportunities. Fourthly, by creating liquidity in view of the fact that the financial system allocates funds to both short-run and long-run investment. Fifthly, facilitating trade by extending credit and guaranteeing payments. For example, letters of credit help firms and the private sector order the inputs for investment and production. Finally, monitoring managers and exerting corporate control. Banks monitor borrowers, and equity markets allow shareholders to discipline managers by voting out poor management.

Furthermore, the literature shows that differences in how well financial systems reduce information and transaction costs will influence saving, investment decisions, technological innovation, and long-run economic growth rate. Using the theory of the endogenous growth model, Levine (1997) examined two channels through which capital markets may affect economic growth: capital accumulation and technological innovation (Figure 3.2). Human capital reflects the educational level of the workforce: as an individual becomes more specialised and better trained, his/her productivity increases. Technological innovations reflect scientific development, and are evidenced by new production techniques and the creation of entirely new goods and services.

**Figure 3.2: A Theoretical approach on Finance and Growth**



Source: Levine (1997:691)

The equity market serves as the primary market through which shares are initially issued in order to obtain finance for the development and expansion of an investment. This transaction raises new funding for a corporation and allows increased investment in productive capital and economic growth (Viney 2003).

However, in most capital market literature, the main channels to economic growth are seen in the efficiency of capital allocation, encourage saving, and lead to more capital formation.<sup>11</sup> On a microeconomic level, such channels can be discussed in terms of the impact on corporate finance and governance (Laurenceson 2002).

Equity market development is supposed to encourage saving by providing households with additional instruments which may better meet their risk preferences and liquidity needs. Liquid equity markets make investment less risky and more attractive because they allow savers to acquire asset equity and to sell it quickly and cheaply if they need access to their portfolios. At the same time, companies enjoy permanent access to capital raised through equity issues. However, by facilitating long-term investment and making it more profitable, stock market liquidity improves the allocation of capital and enhances prospects for long-run economic growth (Levine and Zervos 1996).

Moreover, Rousseau and Wachtel (2000) describe the reasons why stock market is an important financial institution even when equity issuance is a relatively minor source of funds. Firstly, the stock market provides investors and entrepreneurs with a potential exit mechanism.<sup>12</sup> Secondly, capital inflows in both foreign direct investment and portfolio are potentially important sources of investment funds for emerging market and transition economies.<sup>13</sup> Thirdly, the provision of liquidity through organised stock markets encourages both international and domestic investors to transfer their surplus from short-run assets to the long-run capital market, where the funds can provide access to permanent capital for firms to finance large projects that enjoy substantive economies of scale. Finally, the existence of the stock market provides important information that improves the efficiency of capital intermediation generally. For traded companies, the stock market improves the flow of

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<sup>11</sup> Theories point out a rich array of channels (market size, liquidity, integration with world capital markets and volatility) through which stock markets may be linked to economic growth (Garcia and Liu 1999).

<sup>12</sup> The option to exit through a liquid stock market mechanism makes venture capital investment more attractive and may increase entrepreneurial activity generally (Rousseau and Wachtel 2000, p. 1936).

<sup>13</sup> On stock market and capital liberalisation, see Henry (2000), Levine and Zervos (1998) and Singh (1997).

information from management to owners and quickly produces a market evaluation of company developments.<sup>14</sup>

### **3.4 Empirical Studies on the Relationship between Capital Market Development and Economic Growth**

As this study reviewed earlier the relevant theories underlying the relationship between capital market development and economic growth, it is essential for this study to review the empirical research. This is very important in order to examine the reliability of the theory in explaining the role of capital markets in the economy. Constructing on the study by Schumpeter (1912), Goldsmith (1969), Shaw (1973) and McKinnon (1973), recent empirics has applied different econometric methodologies and data sets to examine the relationship between capital market development and economic growth. This study will list and group them according to their findings. For every group, the data, sample period, countries used, dependent variables, independent variables and econometric models will be discussed, with a few remarks on each.

Similar to the theoretical aspect, the empirical side show disagreement about the link between capital market development and economic growth. While some empirics have concentrated on testing the relationship between and mechanisms by which capital market development affects growth, others, however, have been concerned with investigating the direction of causality between the capital market development and economic growth variables. Other empirics have aimed at determining which capital market institutions that best explains economic growth. Empirics attempted to answer many questions in order to identify if capital market and economy growth are associated, and if it could be beneficial for a country to carry out capital market development as a policy to stimulate economic growth.

It is critical for this study to review those empirics that have focused on the causality between capital market development and economic growth, because relationship does not imply causality. For policy purposes, it is crucial to determine, between the capital market development and economic growth variables if they are linked which variable causes the other. The causality between capital market development and economic growth will assist us

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<sup>14</sup> Various finance and investment studies (e.g. Bodie, Kane and Marcus 2002; Viney 2003) discuss the advantages of holding listed companies in the stock market over other forms of business organisation.

to decide which variable can be used as an instrument to predict or influence the other. In other words, whether (or not) capital market development causes economic growth.

Further empirics attempted to identify the type of capital market institution that most explains economic growth. For example, is the stock market more important than the banking sector in economic growth process?

Finally, a review of the empirical research that included Saudi Arabia is of the most interest of this study. This review will offer important information regarding the relationship between capital market development and economic growth in the case of Saudi Arabia. This will guide our study to identify issues if any related to the data used, methods and models applied, and variables used. A reflection of this will be presented in the following chapters in this study.

### **3.4.1 The Independent View**

The independent view argues that capital market and economic growth is not causally related (Stiglitz 1985, Lucas 1988, Mayer 1988, Boyd and Smith 1998, Boulila and Trabelsi 2004, Mosesov and Sahawneh 2005, Abu-Bader and Abu-Qarn 2006, Naceur and Ghazouani 2007). These empirics were mostly conducted in the developing Middle East and North Africa (MENA) countries. Hence, the empirics by Boulila and Trabelsi (2004) and Naceur and Ghazouani (2007) are excluded and will be discussed in section 3.3.6 Empirics on Saudi Arabia.

Boyd and Smith's (1998) empirical research concerns capital market development and economic growth. The results indicate that there is no significant relationship between the capital markets and the early stages of economic development.

Ram (1999) study used annual data of 95 countries over the period 1960-1989. He investigated the relationship between financial development as measured by ratio of liquid liabilities/GDP, and economic growth, measured by the real growth of per capita GDP, using multiple regressions for the full sample and some selected countries. The main estimated model concludes that the association between financial development and economic growth shows considerable variation across countries. The multiple regression estimates of

individual-countries do not indicate a positive link between financial development and economic growth.

Devereux and Smith (1994) emphasise that greater risk sharing through internationally integrated capital markets can actually reduce the saving rate and slow down economic growth. This was clear in the case of the 2008 global financial crises.

Mosesov and Sahawneh (2005) used time series data from 1973 to 2003 to examine the finance-growth nexus in UAE. The study employed standard Ordinary Least Squares (OLS) regression and three variables to measure financial development: (1) broad money (M2), (2) credit to private sector (PSC) and (3) domestic assets of resident banks (BDA). The study also controlled for other variables that are believed to influence economic growth in the UAE, namely labour force growth, gross investment as percentage of GDP and oil prices. Inconsistent with their expectation, the coefficient on M2 is found to be negative and statistically significant at the 5% level in their Regression 1 (without oil prices) and negative but not statistically different from zero in Regression 2 (with oil prices). The coefficients on the second financial development variable (PSC) are also found to be negative but not statistically significant. Similarly, the coefficients on the third financial development variable (BDA) are not statistically significant but positive. They found no relationship between financial development and economic growth in the UAE. The control variables used in their study, however, are found to be positively and significantly related to economic growth in the UAE. The Saudi Arabian economy and capital market are very similar to that of the UAE. However, this study did not include variables representing the equity market as an important part of the capital market.

Abu-Bader and Abu-Qarn (2006) found a weak relationship between capital market development and economic growth in their empirical study in the Middle East and North Africa (MENA) region for the period from 1960 to 2004 using a vector auto-regression (VECM) method. They concluded that there is no significant relationship between capital market development and economic growth. It is only due to the fact that the association between bank development and economic growth is even negative after controlling for stock market development. This lack of relationship must be linked to underdeveloped capital markets in the MENA region that hamper economic growth. Note, Saudi Arabia is not included in this study sample.

Mohamed (2008) examined the short-run and long-run relationships between financial development and economic growth in Sudan, one of the MENA countries. Covering annually the period 1970-2004, the study employed the Autoregressive Distributed Lag (ARDL) modelling approach to co-integration. Specifically, he used two proxies for financial development: the ratio of M3 to GDP (M3Y), and the credit provided by commercial banks to the private sector as a percentage of GDP (CBS). He found that financial development variables negatively affect real GDP. The coefficient on M3Y is found to be negative and statistically significant at the 1% level and the coefficient on CBS is also negative but insignificant. He attributed his finding to the inefficient allocation of resources by banks, the absence of proper investment climate, and to the poor quality of credit disposal of the banking sector in Sudan. Similarly, the Saudi banking sector only focuses on consumer lending other than SMEs lending that weakened the Saudi private sector over the past years.

Ewah, Esang and Bassey's (2009) empirical research intends to investigate the relationship between capital market efficiency and the economic growth particularly in Nigeria from the period 1961-2004. They used multiple regression and OLS techniques. They found no significant relationship between the capital market development and economic growth. Nigeria is oil producing country and a member of OPEC along with Saudi Arabia.

Ake and Ognaligui (2010) used a Granger-causality test (Granger 1969) to examine causality relationships between stock markets and economic growth in Cameroon based on the quarterly time series data from 2006 to 2010. Their findings suggest that the Douala Stock Exchange still does not affect Cameroonian economic growth. However, after running a decomposition (VDC) test of Cholesky, they found systematic evidence that the market capitalisation positively affects GDP. They recommended that it is time for the Cameroonian government to find financial policies, which will encourage companies and develop a stock market culture, to push companies to initiate an IPO instead of bank loans when money is needed to increase their investment. This might be the case for the Saudi government to encourage the expansion of the private sector role in the economy through going public via IPOs. Hence, as mentioned previously in chapter 2, the number of listed companies on the Saudi stock market is very small compare to the size of the economy.

### **3.4.2 The Demand-Following View**

The demand-following view states that capital market development follows economic growth (Robinson 1952). As the economy expands its demand for certain financial instruments increases, leading to the growth of these services (Patrick 1966, Jung 1986, Zang and Chul Kim 2007, Odhiambo 2010).

Zang and Chul Kim (2007) carried out a panel data test to establish the direction of causality between capital development and economic growth. They applied Sims-Geweke causality tests on a panel data set consists of seven time periods for 74 countries covering the period 1961-1995. Their results show that economic growth leads to capital market development. This study only included credit market variables that do not fully represent the capital market.

Athanasios and Antonios (2010) investigated the causal relationship between capital market development and economic growth for Italy over the period 1965-2007 using a VECM method. The results of Granger causality tests indicated that there is only a unidirectional causal relationship runs from economic growth to the stock market development variable in the model.

Odhiambo (2010) examined the dynamic causal relationship between capital market development, investment and economic growth in South Africa using the bounds testing procedure (ARDL). His results show that, on the whole, economic growth has a formidable influence on the capital market development. The study also found that there is a distinct unidirectional causal flow from economic growth to investment. Moreover, the study also found that investment, which results from growth, 'Granger-causes' capital market development. The study, therefore, recommends that South Africa should intensify its pro-growth policies in order to bolster investment and capital market development.

### **3.4.3 The Supply-Leading View**

This view contends that a well-functioning capital market channels limited resources from surplus units to deficit units and in so doing providing an efficient allocation of resources, thereby resulting in economic growth (Patrick 1966, Jung 1986, Levine and Zervos 1998).

Many empirics concluded that capital market development is not only a good predictor, but also a leading factor in economic growth. Most of these studies are recent, and that they have focused mainly on developing countries and some empirics on developed countries. The sample period covered a much longer period, for example from 1970 to 2009, and the most commonly used econometric model is the time-series methods. While some studies used a multivariate vector autoregressive model, others used a bivariate one, the generalised methods of moments (GMM), the Fully Modified Ordinary Least Squares (FMOLS) and the most recent ARDL bounds testing approach of cointegration.

In an important paper, Levine (1991) constructs an endogenous economic growth model, associated with the work of Romer (1986, 1990) and Lucas (1988) in which a stock market emerges to allocate risk and explores how the stock market alters investment incentives in ways that change steady-state growth rates. Further evidence of the positive effect of stock market development in the economy came from the study of Atje and Jovanovic (1993). They use cross-sectional data of 39 countries over the period 1980–1988. The empirical results provide strong evidence that stock market development has a significant effect on subsequent economic growth. These studies main focus is limited to stock markets rather than both the credit and equity markets that shape the capital market.

King and Levine (1993a) empirical study on the relationship between credit market development and economic growth. They applied cross-country analyses for 77 countries over the period 1960-1989. The results show a strong correlation between the credit market development and economic growth.

Similarly, De Gregorio and Guidotti (1995) assess the effect of credit market development as measured by the banking sector indicator of the ratio of BCP over GDP on economic growth. They explored this relationship for two different data sets, a cross-country growth regression for 100 countries over the period 1960-1985, and then on a panel data set for 12 Latin American countries from 1950 to 1985, using six-year average data for 1950 to 1985. The empirical results find that there is a strong positive effect of credit market development on economic growth in the middle and low-income countries, and a weak relationship for high-income countries. On the other hand, they suggest that the effect of financial intermediation is due mainly to its impact on the efficiency of investment, rather than its level. These studies are similar to Levine (1991) and Atje and Jovanovic (1993) in the sense that this study focus

only on the credit markets rather than both the credit and equity markets that shape the capital market.

Bange's (1996) study investigates the predictive power of financial market variables for economic growth. He criticised prior studies for judging the merits of different capital market predictors on the basis of goodness of fit and addressed this shortcoming by applying the encompassing principle, an alternative method of assessing relationships between competing models. His paper ambitiously attempted to order competing models. From 1964 to 1988, all three financial variables— stock returns, the slope of the term structure and the expected change in inflation—forecast industrial production. None of the models outperforms the other contenders. With floating exchange rates, however, stock returns lose their predictive power. In Germany, the slope of the term structure encompasses both stock returns and the expected change in inflation. In Japan and the US, both the slope of the nominal term structure and the expected change in inflation contain information about future economic growth. The information in one variable is not subsumed by another variable. These results may reflect the more prominent role played by monetary policy and expected inflation during a regime of floating exchange rates as well as the influence of higher oil prices on production, inflation, and interest rates.

Levine and Zervos (1996) provide empirical evidence on the major theoretical debates regarding the linkages between stock market development and long-run economic growth using cross-sectional data on 41 countries from 1976 to 1993. They found that stock market liquidity is positively and significantly correlated with economic growth, even after controlling for economic and political factors. They use a model that includes an aggregate index of overall stock market development constructed by Demirguc-Kunt and Levine (1996).

Mohtadi and Agarwal (1997) examine time series cross-section data covering 21 selected development countries ranging from 1977 to 1997, utilising two empirical methods composed of two alternative panel regression models. They estimate the long-term effects of stock markets on economic growth and dynamic panel estimation. They conclude that stock market development is positively associated with economic growth and that the empirical relationship between stock market development and the long-run growth remains strong even

after controlling for lagged growth, initial level of GDP, foreign direct investment, and secondary school enrolment and domestic investment.

Bekaert and Harvey (1997) conducted an empirical study on the relationship between financial markets and economic growth. The focus of their research is on the stock market and capital market integration and the empirical evidences were presented in order to predict the correlation between stock markets and economic growth. An analysis was performed showing that the cost of capital should be lower in integrated capital markets than in segmented capital markets. Different measures were constructed to compute the correlation between global market and integration and economic growth. The rank correlations between all these different measures and real GDP growth conclude that the investment projects in segmented capital markets are likely to have higher discount rates because the required rate of return on equity is linked to the local market volatility and the openness of the economy is positively related with economic growth.

Levine and Zervos (1998) assess the impact of stock markets and banks on long-run economic growth using an endogenous growth model. After examining data on 47 countries over a period of 1976 to 1993, the results show that both stock markets and banking development are positively and significantly related to economic growth and both are good predictors of economic growth. They used six measurements of stock market development, these are: a measure stock market sizes, two measures of stock market liquidity, a measure of stock market volatility and two measures of stock market integration. While on the banking measurement, they used Bank credit to private sector. Furthermore three different economic growth indicators (per capita GDP growth, capital accumulation, and productivity). The empirical results illustrate that stock market liquidity and banking development are positively and significantly correlated with all economic growth indicators when entered together in regressions. These results are consistent with the views that financial markets and institutions provide important and different financial services for long-run economic growth.

Filer, Hanousek and Campos (1999) used Granger causality tests on an unbalanced panel data set for 64 countries over the period 1985–1997. They found that there is a positive and significant causal relationship between stock market development and economic growth, particularly for the low income and less developed countries.

Graff (1999) took a large panel data set covering 93 countries from 1970-90. The empirical results suggest that finance obviously matters for growth and causation runs mainly from financial development to real development.

Ghali's (1999) examines the impact of financial development on economic growth in Tunisia, using VAR modelling over the period 1963–1993. The results suggest the continuation of a stable long-run relationship between the progress of the financial sector and the evolution of real GDP per capita, and that financial development leads to the growth of the Tunisian economy.

Choe and Moosa's (1999) paper examines the relationship between the development of financial systems and economic growth in Korea over the period 1970–92. They focused on the relative development of financial intermediaries and capital markets, and their impact on the portfolio behaviour of the household and business sectors. Causality and non-nested model selection tests show that financial development in general leads economic growth and that financial intermediaries are more important than capital markets in this relationship.

Osinubi's (2000) empirical study implemented OLS regression and obtained data from 1980 to 2000. All the stock market development variables that were utilised in the study were found to have a direct relationship with growth in Nigeria's stock market.

Rousseau and Wachtel (2000) used a panel VAR with a generalised method of moment technique to examine simultaneously the relationship between stock markets, banks and economic growth. They used M3/GDP as a measure of the banking sector variable and measured the stock market system by market capitalisation and total value traded. After examining annual data from 1980 to 1995 for 47 countries, they found that both banks and stock markets promote economic growth.

Agarwal (2001) examines the impact of stock market development on economic growth using a sample of nine African countries over the period 1992-1997. He uses a simple correlation test on stock market indicators (market capitalisation/GDP, total value traded/GDP, and turnover ratio), and macroeconomic variable; economic growth and control variables (investment as a proportion of GDP, FDI and primary school enrolment). The paper does not conduct any regression analysis to establish this causality, mainly due to the lack of data

since there are not sufficient numbers of stock markets in African countries. The correlation results find that the stock market capitalisation/GDP and value traded/GDP are correlated to investment. Due to the direct correlation between investment and economic growth, stock market development is correlated with investment and in turn with economic growth.

Bekaert, Harvey, and Lundblad (2001) explore the relationship between financial stock market liberalisation and economic growth as measured by real per capita GDP growth, using cross-sectional and time-series data for 30 emerging markets during 1980-1997. The empirical results show a positive and significant effect of financial liberalisation and economic growth: average real economic growth increases between 1-2% per annum after a financial liberalisation. On the other hand, the estimated relationship between financial liberalisation and economic growth after controlling for a comprehensive set of macroeconomic and financial variables (such as banking and stock market development) is generally unaffected and remains significant.

Kularatne (2001) investigated the impact of financial deepening on long-run economic growth in South Africa from 1954 to 1992 using the Johansen VECM structure. He found that the financial system has an indirect effect on GDP via the investment rate.

Leahy et al. (2001) support the view that capital market development is important to boost economic growth through its relationship with investment by using three different indicators of capital market development (liquid liabilities, private credit provided to the private sector, and stock market capitalisation). They applied an unbalanced panel data set for 19 countries of the Organization for Economic Co-operation and Development (OECD) over the period 1970–1997, and four different estimation techniques (dynamic fixed effects, mean group estimator, pooled mean group estimator, and static fixed effects estimator). The empirical results appear to be strongest for stock market capitalisation, although the contribution of private credit issued by deposit money banks is significant.

The empirical study made by Bekaert et al. (2002) utilised a reduced-form model for a financial time series. The research method and design is the market liberalisation dates and defined the confidence intervals for the 20 countries as their interval. They gathered secondary sources and analysed the series of financial and macroeconomic variables by determining the relationship between these variables. They concluded that in net equity,

capital flows as well as variables such as dividend yields capture the permanent price effects in market integration. They also found that the returns are noisy in emerging markets and it is important to expand the scope of examination to other variables. They considered a number of time series for 20 emerging markets followed by the International Finance Corporation (IFC). It is best to think of their variables as constituting five groups: financial data linked to price levels, financial variables related to liquidity, financial flows, financial variables linked to the co-movement of returns, and economic indicators.

Stoica (2002) explores the role of capital market in economic growth. The different mechanisms and contributions of capital market are analysed employing a framework as the research method and design. The study is investigating the needed framework in order to provide recommendations for the enhancement of government policies regarding capital market. The target sample for this study is particularly in the case of Romanian economy. The process of financial investments and equity were also determined and the results of the study indicates a framework for the most appropriate policies for capital market and provided empirical evidences on the increase in economic growth once these policies are implemented accordingly. The Romanian capital market has a significant relationship with the policies in the framework that has a positive effect on economic growth.

Choong et al. (2003) used the ARDL bounds test approach and found that stock market development is cointegrated with economic growth in the context of Malaysia. Moreover, this test also suggests that stock market development has a significant positive long-term impact on economic growth. The Granger-causality test based on the VECM further reveals that stock market development Granger-causes economic growth. Hence, this study provides robust empirical evidence in favour of the finance-led growth hypothesis for the Malaysian economy for the period 1978–2000.

Beck and Levine (2004) assess whether stock markets and banks have positive influence on economic growth. Using a dynamic panel data set on 40 countries over a period 1976-1998 and with the application of GMM estimators their results shows that after controlling for simultaneity and omitted variables bias; both stock market and bank development enter all of the system panel growth regression significantly.

Khan Qayyum and Sheikh's (2005) paper has examined the empirical relationship between financial development and economic growth in Pakistan over the annual period 1971–2004, using the ARDL approach. The results show that in the long run, financial depth and real interest exerted positive impact on economic growth. While the share of investment is positively correlated to real income, it remained insignificant. Furthermore, in the short run, economic growth is positively and significantly affected by changes in the share of investment. Changes in real interest rate also exerted positive (negative) impact on growth. However, the response of real interest rate is very small in the short run. The feedback coefficient is negative and significant, suggesting about 0.06% disequilibrium in the previous period is corrected in the current year. They found a stable long-run relationship between economic growth and financial depth, as indicated by the CUSUM and CUSUMSQ stability tests. Their findings are consistent with the view that economic growth is an outcome of the financial development.

Caporale, Howells and Soliman (2005) study the causal linkages between stock market development, investment and economic growth for four developing countries (Chile, Korea, Malaysia and the Philippines), using cross-sectional analysis for quarterly data over the period 1979Q1 to 1998Q4. In their empirical analysis they measure the level of investment by the ratio of GFCF to nominal GDP, investment productivity proxied by the ratio of real change of GDP to real level of total investment, and two measures of stock market development (market capitalisation to GDP, and total value traded to GDP). The evidence suggests that stock market development affects long-run economic growth through its impact on investment productivity; that is, the results are consistent with the findings by Levine and Zervos (1996) that stock markets can give a big boost to economic growth.

Capasso (2006) used a sample of 24 advanced OECD and some emerging economies, he investigated the linkage between stock market development and economic growth from 1988 to 2002. The findings show a strong and positive correlation between stock market development and economic growth. The study concludes that stock markets tend to emerge and develop only when economies reach a reasonable size and with high level of capital accumulation.

Ardic and Damar (2006) used both cross-section OLS and dynamic panel GMM methods to analysed the effects of financial sector deepening on economic growth in the 81 provinces of

Turkey and used the data set for 1996–2001. Mainly, they searched the contribution of the developments of Turkish banking sector to regional economic growth. They found a strong negative relationship between financial deepening and economic growth.

Acaravci, Ozturk and Akaravci (2007) found no long-run relationship between financial development and economic growth in Turkey from January 1986 to April 2006. Their study indicated that there is a short-run relationship between variables and the direction of causality is only from the financial development to the economic growth.

Agrawalla and Tuteja (2007) employed a VECM to examine the relationship between stock market development, bank development and economic growth in India. They used monthly data from 04/1990 to 12/2002 and developed the SMI, proxied by the market capitalisation ratio (MCR), value-traded ratio (VTR), the turnover ratio (TOR); the bank development index (BDI), proxied by BCP, and the economic growth index (EGI), proxied by the Index of Industrial Production (IIP). They found a long-run unidirectional relationship between stock market development and economic growth. They found a long-run bidirectional relationship between bank development and economic growth.

Luintel et al. (2008) employed the Fully Modified Ordinary Least Squares (FMOLS) technique on a sample of fourteen countries. Their sample consists of 14 countries; Argentina, Brazil, Chile, Greece, India, Indonesia, Jordan, South Korea, Malaysia, Mexico, Philippines, Portugal, Thailand and Venezuela. Data on GDP, gross fixed investment (GFI), GDP deflator and population are obtained from the IMF and the OECD. Nominal GDP and GFI variables are deflated by the GDP deflator. Data on the stock market capitalisation ratio (value of listed shares/GDP), stock market total value traded ratio (total shares traded on stock market exchange/GDP), stock market turnover ratio (value of total shares traded/average real market capitalisation) and private credit ratio (private credit by deposit money banks and other institutions/GDP) are directly obtained from the World Bank data set. Although this data set covers well over 200 countries and territories, the reported time series are very short for most countries, which precludes their time-series analyses. There are only 17 countries with almost 27 (1979–2005) to 30 (1976–2005) observations (the latter is the longest time series reported in the database). Furthermore, these 17 countries are all low- and middle-income countries. For the other countries, the data span is very short; in a few cases the data starts from the late 1980s, but most start only from the 1990s. Data series on

industrialised high-income countries are reported from the early to mid-1990s only. Of those 17 countries, three were dropped due to other data problems, so only 14 countries are analysed. They apply a time series and dynamic heterogeneous panel methods to examine the relationship between financial structure and economic growth. The results indicate that for most countries in the sample, financial structure and financial development tend to have a strong impact on economic growth. Furthermore, the panel estimates do not correspond to country-specific estimates, and the cross-country data could not be pooled. Meanwhile, on the time series, there is long-run relationship between the level of output, capital stock, financial structure and financial development.

Ang (2008) examines the mechanism that links financial development and economic growth for Malaysia. Through the ARDL approach, he examines six mechanisms that provide the linkage between financial development and economic growth. These are: financial development, private saving, foreign direct investment, saving-investment correlation, private investment and aggregate output. The results indicate that financial development has a strong linkage with economic growth through qualitative and quantitative channels. It further observes that some of the repressionist policies of the Malaysian government such as interest rate controls and high reserve requirement tend to have positive impact on economic growth. He concludes that government has a critical role to play in promoting effective and sound financial system.

Seetanaah (2008) used the ARDL model to investigate the dynamic empirical link between financial development and economic performance in a small island state of Mauritius. The results showed that financial development have been contributing to the output level of the economy in both the short and the long run. Using similar econometric approach, Kargbo and Adamu (2009) have arrived at the same conclusion for the case of Sierra Leone.

Mundaca's (2009) study the effects of remittances and financial intermediation on economic growth. The target sample is the economy of Latin America and the Caribbean using annual data for the period 1970-2002. Mundaca used the panel data of the targeted countries and a theoretical model was utilised in order to determine the effect of the variables of financial development through capital market. The empirical evidences based on the theoretical model conclude that there is an increase in the economic growth of the countries being studied if investments and remittances are available.

Ray, Biswas and Roy (2009) used the market capitalisation ratio (MCR), value-traded ratio (VTR), turnover ratio (TR), Sharpe ratio (SR) and market integration indicator (MII), attempting to measure the level of stock market development of 21 sample countries for a period of 18 years from 1988 to 2005. Countries selected include: the US, the UK, Germany, France, Australia, Hong Kong, Singapore, Malaysia, the Philippines, India, Korea, Japan, Thailand, Pakistan, Bangladesh, Sri Lanka, South Africa, Argentina, Brazil, Mexico and Chile. They propose that development of a 'supportive system' undeniably cannot fully protect the market from untoward events but may induce change in the existing 'condition', which may reduce the occurrences of any unfavourable event and tighten the market-growth nexus. Furthermore, those who foresee the demise of inefficient local exchanges urge the emerging economies not to venture into any wasteful effort of building a 'mini Wall Street' at home. They, probably, tend to forget that despite the growing importance of a few international exchanges, investors still prefer to invest funds in domestic or markets in proximity. Hence, less developed economies should attempt to build their 'own competitive markets' to reduce the growing pressure of migration from local to international exchanges. While institutional development is essential, emerging markets may follow the policy of merger of small and cost-ineffective units into a single competitive market, capable of offering services to society at a lower cost and better term.

Nowbutsing (2009) examines the impact of stock market development on growth in Mauritius over the period 1989–2007. He analyses both the short-run and long-run relationship by constructing an error correction model (ECM) and using two measures of stock market development: size and liquidity. He defines size as the share of market capitalisation over GDP and liquidity as volume of share traded over GDP. He found that stock market development positively affects economic growth in Mauritius both in the short run and long run.

Ngugi et. al. (2009) investigates if capital market facilitates with the economic growth particularly in Kenya. The aim of the research is to present economic and market analysis of the assistance of capital market in financing investment. They also investigated the impact of capital market deepening on the productivity and deepening economic growth. The research method used is a regression model analysis and the study concludes that there is a noteworthy relationship between economic growth and capital market. The models for economic growth

execute improvingly if it is included with bank variables. Other non-financial factors suggest that infrastructures, cost of doing business and investment is related to economic growth as well.

Sule and Momoh (2009) focus on the relationship between the stock market performance and economic growth of Nigeria cover the period 1980-2007. The method employed is the cointegration and error correction modelling. They concluded that the primary capital market and the secondary capital market. Both markets have varied growth of stock market earnings that provided a positive effect on per capita income in Nigerian.

Asiegbu and Akujuobi's (2010) study assessed the effect of Nigerian capital market performance indicators on economic growth from 1997 to 2006, employing the OLS multiple regression model. Results from testing hypotheses at five per cent significance level showed that over this period, there was a strong relationship between GDP and the seven capital market predictor variables as a whole. However, taking them individually, the analysis revealed that the market turnover, the All-Share Index and the number of listed companies have a positive significant effect on economic growth, while value of issues exhibited no significant effect. Conversely, the volume of shares traded and number of listed securities exerted negative effects, though not significant. Surprisingly, market capitalisation was excluded from the model, which implied that it was not actually an independent variable for the study. On the strength of these findings, the study recommends among others, that the relevant authorities create an enabling environment of political and macroeconomic stability for the influx of foreign and local investments into the capital market for its growth and consequently the growth of the economy.

Mishra et. al. (2010) examines the impact of capital market efficiency on economic growth in India using the time series data on market capitalisation, total market turnover and stock price index over the period spanning from 1991:Q1 to 2010:Q1. The application of multiple regression model shows that the capital market in India has the potential of contributing to the economic growth of the country. This is as a result of high market capitalisation and relatively high market liquidity. Thus, the market organisations and regulations should be such that large number of domestic as well as foreign investors enters the market with huge listings, investments, and trading so that the very objective of optimal allocation of economic resources for the sustainable growth of the country can be ensured.

Antonios (2010) investigates the relationship between financial development and economic growth for 15 European Union member-states for the period 1965–2007, except for Greece (1978–2007), Portugal (1985–2007), Spain and Luxembourg (1975–2007), applying the two-stage least squared method. The results indicate that there is a positive relationship between financial development and economic growth taking into account the negative effect of inflation rate and interest rates.

Tachiwou (2010) examined the impact of stock market development on growth in the West African monetary union. He conducted a time series econometric investigation over the period 1995–2006 and analysed the short-run and long-run relationships by constructing an ECM model, using two measures of stock market development: size and liquidity. He found that stock market development positively affects economic growth in West African monetary union both in the short run and long run.

Samiloglu and Savas (2010) aimed to investigate the impact of financial development on economic growth in Turkey over the period 1970-2006 (annual data). Using the ARDL bounds testing approach to cointegration, their results suggest that financial development plays an important role in enhancing economic growth in Turkey. The results of the Granger causality tests also indicate that the Turkish case supports the supply-leading phenomenon in the long run, whereas both the supply-leading and the demand-following phenomena in the short-run.

Rahman and Salahuddin (2010) empirically analysed the relationship between economic growth and its determinants, with special focus on stock market development in Pakistan. Using data for the period from 1971 to 2006, they employed FMOLS and ARDL bounds testing for the long-run relationship and an ECM for the short-run dynamics. The findings suggest a positive relationship between efficient stock markets and economic growth, both in the short run and long run. Financial instability and inflation have negative effects, whereas human capital, foreign direct investment and stock market liquidity have positive effects on growth. The results are consistent with the theoretical and empirical predictions.

Hossain and Kamal (2010) examined the causal relationship between stock market development and economic growth in Bangladesh over an annual time series period from 1976 to 2008. They used the Engle-Granger causality and ML tests. They found that the stock market development strongly influences the economic growth in Bangladeshi economy, but there is no causation from economic growth to stock market development.

Darrat and Al-Sowaidi (2010) empirically assess the role of information technology and financial deepening in Qatar's covering the period from the first quarter of 1993 to the fourth quarter of 2006, using the VECM technique. Consistent with some theoretical priors, the results suggest that real economic growth in Qatar is robustly linked over the long run to both financial deepening and information technology. The results further indicate that IT is relatively more important than financial development for propelling long-run growth. However, they found financial development, rather than IT, to be more critical for enhancing economic growth over the short-run horizon. Due to the unavailability of quarterly data for IT and GDP, they used a geometric interpolation technique to obtain the quarterly figures from annual data.

Asante, Agyapong and Adam (2011) empirically investigate the relationship between bank competition, stock market and economic growth in Ghana using time series data for the period between 1992 and 2009. Short- and long-run relationships were established within the frameworks of Granger causality and the ARDL or dynamic OLS approach. They found that bank competition and stock market development Granger-cause economic growth in Ghana. In the long run, banking competition is good for economic growth, but there is a disproportionate response of economic growth to stock market development.

Zivengwa et. al. (2011) explored the causal link between stock market development and economic growth in Zimbabwe using annual time series data for the period 1980–2008. The study utilised advanced econometric techniques of unit root tests, the VAR model and Granger causality tests to explore the relationships. The empirical results showed a unidirectional causal link that runs from stock market development to economic growth and there is evidence of an indirect transmission mechanism through the effect of stock market development on investment.

Wong and Zhou (2011) empirically suggests that the development of stock markets in China, the US, the United Kingdom (UK), Japan and Hong Kong have independently a strongly positive correlation with their economic growth, using panel data model for the period from 1988 to 2008. The result brings out an important theory to support for the proposition that the stock market development is one of the key drivers of economic growth in developed and developing countries, whatever the modes of their financial systems, stage of their economic development and types of economic system.

Obiakor and Okwu (2011) investigated the relationship between the capital market and the economic growth for Nigeria during the year 1981-2008. They used the multi-regression analysis model and OLS techniques. The results indicate a positive relationship between the capital market development on the Nigerian economy.

Olweny and Kimani (2011) investigate the causal relationship between stock market performance and economic growth in Kenya for the 2001–2010 period, using the popular Granger causality test based on the VAR model. The findings imply that the causality between economic growth and stock market runs unilaterally from the NSE 20-share index to the GDP.

Ellahi and Khan's (2011) study has been conducted to analyse the relationship between financial sector development and economic growth in the four major South Asian Association for Regional Cooperation (SAARC) countries including Bangladesh, India, Pakistan and Sri Lanka. Using annual time series data set over the period 1975-2009, their study applied the ARDL approach to test the existence of long-run relationships between financial development and economic growth and finding the short- and long-run estimates simultaneously. Their findings suggested that financial reforms taken by these economies have been fruitful to raise saving and capital formation. Moreover, a positive, robust link between financial sector development and economic growth has also been observed in the case of India, Pakistan and Sri Lanka, while in the case of Bangladesh this relationship is negative and significant. They also conclude that there has been better utilisation of resources for productive investment in these economies.

Kirankabes and Başarir (2012) examined the causality relationship between the economic growth of Turkey and the Istanbul Stock Exchange (ISE) using Granger causality tests. They

found that there is a long-term relationship between economic growth and the ISE 100 Index, and a one-way causality relationship with the ISE 100 towards economic growth.

Alajekwu and Achugbu's (2012) study investigated the role of stock market development on economic growth of Nigeria using a 15-year time series data from 1994–2008. They used OLS techniques. The results show that market capitalisation and value-traded ratios have a very weak negative correlation with economic growth while turnover ratio has a very strong positive correlation with economic growth. Stock market capitalisation also has a strong positive correlation with stock turnover ratio. This result implies that liquidity has propensity to spur economic growth in Nigeria and that market capitalisation influences market liquidity. They view with caution the notion that stock market size is not significant for economic growth since there was multi-collinearity in their data.

Were, Nzomoi and Rutto (2012) investigates the impact of access to bank credit on the economic performance of key economic sectors using sectoral panel data for Kenya. They used a dynamic panel model with lagged dependent variable using Generalised Method of Moments (GMM) albeit keeping in mind the limited size of the time series sample for the period 1998 to 2010. They found a positive and significant impact of credit on sectoral GDP measured as real value added. However, the magnitude of the impact is smaller once factors such as the labour employed and past economic performance of the sectors are taken into account.

#### **3.4.4 The Feedback View**

The feedback view contends that there is bi-directional causality between capital market development and economic growth (Patrick 1966, Jung 1986). A country with a well-developed capital market could promote high economic expansion through technological changes, products and services innovation, which in turn creates a high demand for the financial institutions. As the financial institutions effectively respond to this demand, these changes will stimulate higher economic achievement. Both capital market and economic developments are therefore positively interdependent (Majid 2007). Many of these empirics are recent that mainly applied the ARDL and VAR cointegration methods on developing countries (Darrat 1999, Al-Yousif 2002, Chuah and Thai 2004, Hondroyannis, Lolos and Papapetrou 2005, Majid 2007, Demirhan, Aydemir and Inkaya 2011).

Demetriades and Hussein's (1996) paper conducts causality tests between financial development and real GDP for 16 countries: Costa Rica, El Salvador, Greece, Guatemala, Honduras, India, Korea, Mauritius, Pakistan, Portugal, South Africa, Spain, Sri Lanka, Thailand, Turkey and Venezuela. They found bi-directionality causation between financial development and real GDP. They suggested that economic policies are country-specific and their success depends on the effectiveness of the institutions which implement them. There can, therefore, be no 'whole sale' acceptance of the view that 'finance leads growth' as there can be no 'whole sale' acceptance of the view that 'finance follows growth.'

Luintel and Khan (1999) examined the long-run relationship between financial development and economic growth for 10 countries; Costa Rica, Colombia, Greece, India, Korea, Malaysia, Philippines, Sri Lanka, South Africa, and Thailand. Employing a multivariate VAR framework using annual data and the time span ranges from a minimum of 36 years to a maximum of 41 years. They found bi-directional causality between financial development and economic growth in all the sample countries.

Unalmis (2002) investigates the relationship between financial development and economic growth in Turkey using a bivariate VECM method covering the period from 1970-200. According to the results, when proxies are taken as a ratio of private credit to GDP, long-run bidirectional causality between financial development and economic growth and short-run unidirectional causality from financial development to economic growth are detected.

Calderon and Liu (2003) study the possible directions of causality between financial development and economic growth for a panel data set of 109 industrial and developing countries over the period 1960–1994. They found that in all the countries, financial development generally leads to economic growth and bi-directional linkages between financial development and economic growth coexist. Furthermore, financial deepening contributed more to the causal relationship in the developing countries than in the industrial economies due to the potential opportunity for financial and economic improvement in developing countries.

Hondroyannis, Lolos and Papapetrou (2005) used monthly data sets over the period 1986–1999 to assess empirically the relationship of the development of banking system and the

stock market with economic growth for Greece. They used VECMs and the results of the study to show bi-directional causality between finance and growth in the long-run. Error-correction models results show that both bank and stock market financing promote economic growth in the long run, but their effect is small. Nonetheless the contribution of bank finance to economic growth is bigger than that of stock market finance.

Similarly applying the VAR method Demirhan, Aydemir and Inkaya (2011) investigated the direction of causality between capital market development and economic growth in Turkey for the period from January 1987 to April 2006. They concluded that stock market and banking sector have a bidirectional relationship with economic growth.

In addition, Majid (2007) empirically examines the short-run and long-run dynamics between capital market development, inflation and economic growth during the post-1997 financial crisis in Thailand using battery of time series techniques. Based on the ARDL [2, 2, 0, 0], the study documents a long-run equilibrium between finance depth, inflation and growth. Granger causality tests based on the VECM further reveals that there is a bi-directional causality between finance-growth in Thailand, the finding accords with ‘the feedback hypothesis’ or ‘bidirectional causality view’. Based on the VDCs and IRFs, the study discovers that the variations in the economic growth rely very much on its own innovations. To promote growth in the country, priority should be given for long-run policies, i.e. the enhancement of existing financial institutions both in the banking sector and stock market and the preservation of low rate of inflation.

Using the same ARDL method applied by Majid (2007). The following empiric is considered the closest and most similar to the Saudi Arabian economy and capital market. Al-Malkawi, Marshdeh and Abdullah (2012) empirically examine the relationship between financial development and economic growth in a small open economy of the UAE for the period 1974–2008. The study employs the ARDL approach to cointegration. The results show a negative and statistically significant relationship between financial development, as measured by broad money supply M2/GDP and bank credit to private sector, and economic growth. The results also suggest a bi-directional causality between the three variables.

Brasoveanu et al. (2008) investigate the correlation between capital market development and economic growth for Romania using the regression functions and VAR models. Their study

established that there is a significant and direct relationship between the two variables. They concluded that capital market development is completely correlated with financial advancement, and they suggest the feedback effect because financial improvement continues monetary growth determining economic organisations to transform and increase.

Shahbaz, Ahmed and Ali (2008) investigate whether there is a relationship between stock market development and economic growth in Pakistan. The data set covers annual times series data from 1971 to 2006. They employed ARDL bounds testing techniques. Their findings suggested that there exist a very strong relationship between stock market development and economic growth. Engle-Granger causality estimation confirms in the long run, there is bi-directional causality between stock market development and economic growth. However, in the short run, there exists only one-way causality, i.e. from stock market development to economic growth.

Barna and Mura (2010) examined the relationship between stock market development and economic growth in Romania using quarterly time series data from 2000 to 2009. They found that a significant bidirectional relationship between them, but economic growth is stronger in determining financial development.

Athapathu and Jayasinghe (2012) empirically examine the causal relationship between stock market performance and economic growth in Sri Lanka based on time series data in the period 1997–2008. Econometric methods such as cointegration analysis, error correction mechanism and Granger causality tests are employed to investigate the relationship. Their results are in-line with the feedback hypothesis. Whilst stock market appears to be causing economic growth, there is also limited evidence of economic activity influencing stock market performance.

### **3.4.5 The ‘bank versus stock market’ based variables Empirics**

A number of studies explained the mixed results found within either studies conducted on the relationship or causality between capital market development and economic growth in terms of the type of the capital market. According to these studies, either bank based or stock market based development significantly and differently affects economic growth, and can

thus explain why, in some countries, there is a positive relationship between capital market development and economic growth, whereas in other countries, there is not.

Most empirics reviewed were mainly conducted on developing countries, in which both stock markets and the banking sector exist. These empirics are recent and were applying VAR and VECM methods. The dependent variable for most studies is the indicator of economic growth, which is the real per capita GDP or the total factor productivity (TFP). As independent variables, both indicators of the banking sector and the stock market were used, and some studies added other variables such as the inflation rate, government consumption and indicators of human capital. Stock market liquidity and the ratio of M3/GDP were used as indicators of the stock market and banking sector respectively, but it is difficult to determine the most commonly used indicator of capital market development, because each empirical research used different indicators. What is certain is that they used both indicators of banking and stock market development separately and they provided mixed results.

Bolbol, Fatheldin and Omran (2005) examined Egypt's financial structure and its relation to total factor productivity (TFP) during the period 1974–2002. The results shows that bank based indicators have a negative effect on TFP unless they are associated with a threshold level of per capita income; whereas the effect of market-based indicators is positively reinforced by private net resource flows. The study stresses that widening the financial sector to include the securities market has benefited TFP and growth in Egypt, but more reforms is needed towards that end.

Arestis, Demetriades and Luintel (2001) examine the relationship between capital market development and economic growth using the VAR method for five developed countries: the US, the UK, France, Germany and Japan over the quarterly period 1968–1998. The results reveal bidirectional causality between capital market and economic growth. Similarly, Dritsaki and Dritsaki-Bargiota (2005) used a trivariate VAR model to examine the causal relationship between stock, credit market and economic growth for Greece. Using monthly data covering the period from January 1988 to December 2002, their results reveal unidirectional causality from economic development to stock market and bidirectional causality between economic developments and banking sector.

Ndako (2010) attempted to determine the relationship between capital market development and economic growth in South Africa for the period of 1983:q1-2007:q4, using the VECM, the IRFs and Variance Decomposition (VDCs). The empirical study suggests that in the long run, there is evidence of bidirectional causality between capital market development and economic growth using the banking system proxy by bank credit to the private sector (BCP). When stock markets variables are used—turnover ratio (TR) and value-traded ratio (VTR)—the results indicate unidirectional causality from economic growth to the stock market. The IRFs and VDCs indicate that financial development (BCP, TR and VTR) have a short-run impact on economic growth at the immediate year of initial shocks and VDCs show that all the indicators for financial development contain some useful information in predicting the future path of economic growth. Meanwhile, SVAR results indicate little evidence that finance promotes economic growth in the long-run.

Likewise, Mishal (2011) investigates the relationship between capital market development and economic development in Jordan using VECM cointegration testing for the period 1978 to 2009. The results provide evidence of a stable long-run equilibrium. The causality test results also showed a bidirectional causality between economic growth and banking system developments. Moreover, the results demonstrate that economic growth leads to stock market growth, but not vice versa.

#### **3.4.6 The Mixed Results Empirics**

Kar and Pentecost (2000) investigated the direction of causality between financial development and economic growth in Turkey using annual data for the period of 1963-1995. The causality analysis carried out by a bivariate VECM shows unidirectional causality from economic growth to financial development, which is sensitive to the choice of proxy used for financial development. For example, when financial development is measured by the money to income ratio, the direction of causality runs from financial development to economic growth, but when the bank deposits, private credit and domestic credit ratios are alternatively used to proxy financial development, growth is found to lead financial development.

Arestis, Demetriades and Luintel (2001) examine the relationship between stock market development and economic growth using the VAR framework for five developed countries: the US, the UK, France, Germany and Japan over the quarterly period 1968–1998. The

results reveal that in Germany, there is bidirectional causality between banking system development and economic growth. Conversely, the stock market is weakly exogenous to the level of output. In the US, financial development does not cause real GDP in the long run. Japan exhibits bidirectional causality between both banking system and stock market and the real GDP while in the UK, the results indicate evidence of unidirectional causality from banking system to stock market development in the long-run but the causality between financial development and economic growth in the long-run is very weak. The evidence in France suggests that in the long-run both the stock market and banking system contribute to real GDP but the contribution of the banking system is much stronger.

Sihna and Macri (2001) examine the relationship between financial development and economic growth using time series data for eight Asian countries. First, they estimate augmented production functions where a financial development variable is added. Second, they conducted multivariate causality tests between the growth rate of income and the growth rates of the financial development variables. The regression results show a positive and significant relationship between the income variables and financial variables for India, Malaysia, Pakistan and Sri Lanka. The multivariate causality tests show a two-way causality relationship between the income and the financial variables for India and Malaysia, one-way causality from financial variables to income variables for Japan and Thailand and reverse causality for Korea, Pakistan and Philippines. Thus, their empirical results do not unambiguously support the general view of a clear and positive relationship between financial development and economic growth.

Minier (2003) paper uses regression tree techniques to investigate whether the partial correlation between growth and financial development differs based on countries' levels of financial and economic development, using 42 countries for the period 1976–1993. The results show that growth and financial development are positively correlated in countries with high levels of market capitalisation; however, this relationship does not appear to hold for countries with low levels of market capitalisation.

Andrés et al. (2004) used the data of 21 OECD countries over the period of 1961–1993 and they have not found a significant positive growth-financial development relation. Then, they suggest that the finance–growth nexus might be less relevant for industrialised countries with

already highly developed financial systems. Therefore, countries selected for researches can affect the empirical result of the study.

Thangavelu and James (2004) empirically examine the dynamic relationship between financial development and economic growth in Australia in terms of bank-based and market-based financial structure. This study covers the period from 1960 to 1999, and with the use of quarterly data. A time-series approach with a VAR model is used to provide evidence for the dynamic relationship. The paper provides empirical evidence on the causal impact of the financial market on the economic growth of the Australian economy. The results suggest that financial intermediaries and financial markets have different impacts on economic growth given their diverse roles in the domestic economy. In particular there is evidence of causality from economic growth to the development of the financial intermediaries. On the other hand, development in the financial markets causes economic growth but there is no evidence of any causality from economic growth to financial markets. The sensitivity test using different interest rates does not change the results.

Ghirmany (2004) empirically explores the significant relationship between financial development and economic growth for 13 sub-Saharan African countries; Benin, Cameroon, Ethiopia, Ghana, Kenya, Malawi, Mauritius, Nigeria, Rwanda, South Africa, Tanzania, Togo, and Zambia. The data frequency is annual and the time span ranges at least 30 years and using VAR modelling. The results of the study conclude that the cointegration analysis has supplied empirical evidence that there is indeed a significant causal link of the financial development and economic growth in the long run. The results indicate that the relationship is significant in almost all (12 out of 13) of the countries. There is also empirical evidence for bidirectional causal relationships in the six countries being studied. Moreover, the findings based on the VAR analysis imply that the African countries can increase the speed of the economic growth by improving the financial systems in their country.

Bolbol, Fatheldin and Omran (2005) examined Egypt's financial structure and its relation to total factor productivity (TFP) during the 1974–2002 period. The results show that bank-based indicators have a negative effect on TFP unless they are associated with a threshold level of per capita income; whereas the effect of market-based indicators is positively reinforced by private net resource flows. The study stresses that widening the financial sector

to include the securities market has benefited TFP and growth in Egypt, but more reforms is needed towards that end.

Dritsaki and Dritsaki-Bargiota (2005) used a trivariate VAR model to examine the causal relationship between stock, credit market and economic growth for Greece. Using monthly data covering the period from January 1988 to December 2002, their results reveal unidirectional causality from economic development to stock market and bidirectional causality between economic developments and banking sector. The paper establishes no causal relationship between stock market function and banking sector.

Handa and Khan (2008) used annual data from 1960 to 2002 on 13 countries to test four causality hypotheses between financial development and economic growth. They applied the Johansen procedure and a VECM, and the results show the existence of unidirectional causality from economic growth to financial development for Bangladesh, Sri Lanka, Brazil, Malaysia, Thailand and Turkey. Meanwhile, Germany, Japan, India, Argentina, the UK and the US establish bidirectional causality between financial development and economic growth and no causality exists for Pakistan.

Akinlo and Egbetunde (2010) examine the long-run, causal relationship between financial development and economic growth for ten countries in sub-Saharan Africa for the period 1980-2005. Using a VECM, the study finds that financial development is cointegrated with economic growth in the selected ten countries in sub-Saharan Africa. That is, there is a long-run relationship between financial development and economic growth in the selected sub-Saharan African countries. The results indicate that financial development Granger-causes economic growth in Central African Republic, Congo Republic, Gabon, and Nigeria while economic growth Granger-causes financial development in Zambia. However, bidirectional relationship between financial development and economic growth was found in Kenya, Chad, South Africa, Sierra Leone and Swaziland. The results show the need to develop the financial sector through appropriate regulatory and macroeconomic policies. However, in Zambia emphasis needs to be placed on economic growth to propel financial development.

Ndako (2010) attempted to determine the relationship between stock markets, banks and economic growth in South Africa for the period of 1983:Q1-2007:Q4, using the VECM, the IRFs and Variance Decomposition (VDCs). The study concluded that there is unidirectional

causality from economic growth to the stock market system of South Africa. The results also indicate that financial development has a short-term effect on economic growth based on the year of the initial, which can be employed to predict future development. This empirical study suggests that in the long run, there is evidence of bidirectional causality between financial development and economic growth using the banking system proxy by bank credit to the private sector (BCP). When stock markets variables are used—turnover ratio (TR) and value-traded ratio (VTR)—the results indicate unidirectional causality from economic growth to the stock market. The IRFs and VDCs indicate that financial development (BCP, TR and VTR) have a short-run impact on economic growth at the immediate year of initial shocks and VDCs show that all the indicators for financial development contain some useful information in predicting the future path of economic growth. Meanwhile, SVAR results indicate little evidence that finance promotes economic growth in the long-run.

Kolapo and Adaramola (2012) examined the impact of the Nigerian capital market on its economic growth from the period 1990–2010. This means that the performance of the stock market is an impetus for economic growth and development. The economic growth was proxied by GDP, while the capital market variables considered include: market capitalisation (MCAP), total new issues (TNI), value of transactions (VLT) and total listed equities and government stocks (LEGS). Applying Johansen co-integration and Granger causality tests, the results show that the capital market and economic growth in Nigeria are co-integrated, implying a long-run relationship between them. The causality test results suggest a bidirectional causation between the GDP and VLT and a unidirectional causality from market capitalisation to the GDP. The F statistics are significant at 5% using a two-tailed test. On the other hand, there is no ‘reverse causation’ from GDP to MCAP. Furthermore, there is independence and ‘no causation’ between the GDP and TNI or GDP and LEGS. This is a clear indication that the activities in the capital market tend to have a positive impact on the economy. Kolapo and Adaramola (2012) recommended, therefore, that the regulatory authority initiate policies that would encourage more companies to access the market and be more proactive in their surveillance role in order to check sharp practices that undermine market integrity and erode investors’ confidence.

### 3.4.7 Empirics on Saudi Arabia

The empirical literature in the case of Saudi Arabia with the exception of Masih et. al. (2009) is limited to MENA and GCC regions (see Table 3.1). These cross-country specific studies led to diverse results (Darrat 1999, Xu 2000, Al-Tamimi et al., 2002, Al-Yousif 2002, Omran and Bolbol 2003, Boulila and Trabelsi, 2004, Chuah and Thai 2004, Al-Awad and Harb, 2005, Naceur and Ghazouani 2007, Masih et. al. 2009, Goaid et. al. 2011, Kar et. al. 2011). These studies shared the lack of a capital market variables that fully reflect the banking sector and the stock market. Also these empirics used annual data that both old and short with low frequencies as low as 20 observations. These noticeable remarks motivated this study on Saudi Arabia to be country-specific, using long time period, and more frequent and updated data.

Some empirics indicated a significant long run relationship in the capital market-economic growth nexus. Al-Tamimi et. al. (2002) examined the relationship between financial development and economic growth by using VAR method for Arab countries including Saudi Arabia over the period 1964-1998. The results indicate that capital market development and real GDP growth are strongly linked in the long-run. However, Granger causality tests and the impulse response functions indicate that the linkage is weak in the short-run. In addition, Xu (2000) used a multivariate vector-autoregressive (VAR) method to examine the effects of capital market development on domestic investment and output in 41 countries over the period 1960-1993. The findings support the supply leading view. However, a negative long term relationship between financial development and economic growth is found in the case of Saudi Arabia using data from 1962-1992.

In addition, couple of empirics supports the independent view: Boulila and Trabelsi (2004) used a sample of sixteen MENA countries for the period 1960–2002. They applied the bivariate vector autoregressive (bVAR) model on these variables: Real GDP per capita. Ratio of M3 to GDP, ratio of credit allocated to the private sector, ratio of financial savings to GDP. Ratio of M3 to GDP, ratio of credit allocated to the private sector, ratio of financial savings to GDP. They found no link between capital market development and economic growth in the case of Saudi Arabia over the period 1960-1999. Similar results of no significant relationship between capital market development and growth is found in the study

of Naceur and Ghazouani (2007) that applied a dynamic panel model with GMM estimators on the data of 11 MENA countries, hence data on Saudi Arabia for the period 1991-2003.

Moreover, empirics that support the supply leading view do exist. Omran and Bolbol (2003) construct a growth equation that captures the interaction between FDI and various indicators of capital market development in the context of Arab countries. They used averaged five years cross-sectional data for the period 1975–1999. The estimation model is based on the growth accounting framework of the Cobb-Douglas production function where  $y$  is the growth rate of GDP per capita in the Arab world, and  $x$  represents capital market development indicators of the banking sector and the stock market.  $z$  is a vector of control variables that are usually used in the estimation (initial per capita income, human capital, investment/GDP, inflation rate, government consumption/GDP, openness of trade/GDP, and exchange rate), and  $\epsilon$  is the error term. They found that FDI has a positive impact on economic growth, which depends on local conditions and absorptive capacities, where capital market development is one of the important capacities.

Likewise, empirics within the MENA region of Al-Awad and Harb (2005) who used a sample of ten MENA countries for the period 1969–2000 and by using panel cointegration approach concluded that the long-run capital market development and economic growth may be related to some level. In addition, the evidence of unidirectional causality that runs from capital market development to economic growth can be seen in Saudi Arabia in the short-run. However, Kar et. al. (2011) researched a sample of fifteen MENA countries over the period 1980–2007. They used GMM method and found a unidirectional relationship runs from economic growth to capital market development when using the ratio of private sector credit to income as a proxy for capital market development. Different results were found using a similar GMM method, Goaid et. al. (2011) investigated 16 MENA countries using annual data over the period 1962-2006. They found a negative and significant relationship in the long run when using bank based variables.

A recent country-specific study on Saudi Arabia concluded a supply leading view done by Masih et. al. (2009). They examined the relationship between capital market development and economic growth by applying VAR method and using annual data from 1985-2004 (20 observations). Note, they only used banking based measurement as proxies for the capital market development variable.

Furthermore, bidirectional relationship was found in the early study of Darrat (1999) who investigated the relationship between financial deepening and economic growth for three developing Middle-Eastern countries (Saudi Arabia, Turkey and the UAE). He applied Granger-Causality tests and VAR method over the period of 1964-1993 for Saudi Arabia. The study found long run bidirectional relationship between financial deepening and economic growth in the case of Saudi Arabia. Likewise, Al-Yousif (2002) examined the nature and direction of the relationship between financial development and economic growth employing a Granger-causality test within a VECM method. He used both time-series and panel data from 30 developing countries including Saudi Arabia for the period 1970-1999. The study found bidirectional causality between capital market development and economic growth. Similar results found by Chuah and Thai (2004), they used real non-hydrocarbon GDP in order to capture the real impact of bank based development variables on economic growth for six GCC countries including Saudi Arabia. Chuah and Thai (2004) used annual data over the period 1962-1999 for Saudi Arabia. They applied a bivariate time series model and concluded that capital market development provides critical services to increase the efficiency of intermediation, leading to a more efficient allocation of resources, a more rapid accumulation of physical and human capital, and faster technological innovation.

Table 3.1: Empirics Included Saudi Arabia

Author(s)	Empirical study	Sample	Period	Method	Results
<b>Darrat (1999)</b>	Are financial deepening and economic growth causality related? Another look at the evidence	Saudi Arabia, Turkey and UAE.	1964-93	Granger-Causality tests within VAR model	Feedback view
<b>Xu (2000)</b>	Financial development, investment, and economic growth	41 Countries	1960-93	VAR	Supply-leading view, a negative long term relationship
<b>Al-Tamimi et. al. (2002)</b>	Finance and Growth: Evidence from Some Arab Countries	8 Arab countries	1964-98	VAR	Positive and significant relationship in the long run when using bank based variables
<b>Omran and Bolbol (2003)</b>	Foreign direct investment, financial development, and economic growth: evidence from the Arab countries	17 Arab countries	1975-99	OLS and Causality tests	Supply-leading view
<b>Al-Awad and Harb (2005)</b>	Financial development and economic growth in the Middle East	10 MENA countries	1969-2000	J-J and Granger panel cointegration tests	Supply-leading view in short term
<b>Chuah and Thai (2004)</b>	Financial Development and Economic Growth: Evidence from Causality Tests for the GCC countries	6 GCC countries	1962-1999	bVAR	Supply-leading view
<b>Goated et. al. (2011)</b>	Financial Development, Islamic Banking and Economic Growth Evidence from MENA Region	16 MENA countries	1962-2006	GMM	Negative and significant relationship in the long run when using bank based variables
<b>Kar et. al. (2011)</b>	Financial development and economic growth nexus in the MENA countries: Bootstrap panel granger causality analysis	15 MENA countries	1980-2007	GMM	Demand-following view
<b>Al-Yousif (2002)</b>	Financial development and economic growth: another look at the evidence from developing countries	30 Developing countries	1970-99	VECM	Feedback view
<b>Bouhila and Trabelsi (2004)</b>	The Causality Issue in the Finance and Growth Nexus: Empirical Evidence from Middle East and North African Countries	16 MENA countries	1960-2002	bVAR	Independent view
<b>Naceur and Ghazouani (2007)</b>	Stock markets, banks, and economic growth: empirical evidence from the MENA region	11 MENA countries	1991-2003	GMM	Independent view
<b>Masih et. al. (2009)</b>	Causality between financial development and economic growth: an application of vector error correction and variance decomposition methods to Saudi Arabia	Saudi Arabia	1985-2004	VAR	Supply-leading view

### 3.5 Conclusion

This chapter reviewed the theoretical and empirical aspects of the relationship between capital market development and economic growth to assist the understanding of our study's field of interest.

From the preceding review, while conclusions must be drawn with caution and only with sufficient justification, it is clear that capital market development plays a significant role in explaining economic growth. From the growth theory proposed by Solow (1956) and Lucas (1988), one can note that capital market development (materialised as saving) was always considered as source of economic growth, even if, it was not the main focus in the Solow's (1956) model. The advocates of capital market development have been based on those models of economic growth in order to attest that capital market positively influence the economy. These economists are Schumpeter, (1912), Goldsmith, (1969), McKinnon, (1973) Shaw, (1973) and many others. Although they provide a mechanism by which capital market can affect economic growth, they were not as clear as Levine (1998), who highlighted five channels through which financial services provided by capital markets affect the economic growth. Thus, capital market developments were mainly associated with transaction costs and overcome information issues (Levine, 1998). The economic theory of the endogenous growth model illustrates that capital market development may affect economic growth through an increase in the saving rate, the channelling of more saving to investment, and the improvement of capital productivity with better resource allocation towards their most productive use. Thus saving channelled through the capital market is allocated more efficiently, and the higher capital productivity leads to higher economic growth. Capital markets influence the economy by enhancing capital accumulation and innovation. Capital accumulation as an endogenous determinant of economic growth is in line with the traditional (neoclassical) growth theory.

After the theoretical considerations, the chapter reviewed the four empirical research views on the relationship between capital market development and economic growth: The 'independent' view argues that capital markets and economic growth are not causally related, while the 'demand-following' view states that capital market development follows economic growth: as the economy expands, its demand for certain financial instruments increases, leading to the growth of these services. The 'supply-following' view contends that a well-

functioning capital market channels limited resources from surplus units to deficit units and in so doing providing an efficient allocation of resources, thereby resulting in economic growth. The 'feedback' view contends that there is bidirectional causality between capital markets and economic growth: A country with a well-developed capital market could promote high economic expansion through technological changes, products and services innovation, which in turn creates a high demand for the financial institutions. As the financial institutions effectively respond to this demand, this will stimulate higher economic achievement. Capital market and economic developments are therefore positively interdependent.

In addition, the indicators of capital market development are very important when examining the relationship between capital market development and economic growth. This is because it is difficult to measure each of the capital market functions' performance. Arguably there might be a misleading interpretation of some variables. For example, bank based or stock market based variables significantly and differently affects economic growth, and can thus explain why, in some countries, there is a positive relationship between capital market development and economic growth, whereas in other countries, there is not.

It is apparent that the study of the relationship between economic growth and capital market development is country specific and that the results vary, depending on the time period, variables selected and methodology applied. This led to many studies that used a variety of methodologies with mixed results.

The empirical literature in the case of Saudi Arabia with the exception of Masih et. al. (2009) was conducted within MENA and GCC regions. These cross-country specific studies mainly applied either VAR or GMM methods using different variables and time periods that led to various results. These empirics share some common issues, for example the data used are old with low frequency (annual) and short time periods. Therefore, these factors motivated our study on Saudi Arabia to be country-specific, using updated data with long time period.

These empirical issues and remarks drawn from the literature review will be reflected at the following chapter 4. Chapter 4 will be associated with the data, variables and methodology used to investigate the relationship between capital market development and economic growth for the case of Saudi Arabia.

## **Chapter 4: Methodology**

### **4.1 Introduction**

Having established in the previous chapter that there is some evidence of capital market development and economic growth in Saudi Arabia, this study now intends to empirically test the association and causality between the two variables in the country. Economists have long debated the empirical importance of the relationship between capital market development and economic growth. The ambiguity that still surrounds the relationship is mainly in terms of how to measure capital market development and the data set. In order to overcome these problems, this study uses the two most commonly used indicators of capital market development in the literature and recent data set. By using a broadest selection of indicators and recent data set, this study can determine whether or not the capital market indicators tell similar stories about their relationship with economic growth.

In the process, this study intends to use an econometric model to investigate the association and casual relationship between capital market development and economic growth in Saudi Arabia. Econometrics combines economic theory with statistics in order to analyse and test economic relationships. The goal of econometrics is twofold: to provide economic theory with empirical data, and to empirically verify them. An econometric model is always used by economists to analyse the association and/or relationship between variables, usually with the hope of determining causality. Econometric models are not perfect, but they often provide an approximation that is useful when trying to understand and forecast changes in the economy. Researchers and policy makers use econometric models extensively in order to understand what the implications for the economy will be if certain variables are changed.

An investigation of the relationship between capital market development and economic growth requires a methodological approach have unique characteristics. The literature review (see chapter 3) highlighted five main methods that can be applied in our study and these are, the Computable General Equilibrium (CGE) method, the autoregressive distributed lag (ARDL) approach, the Generalised Method of Moments (GMM) estimators, the Ordinary Least Square (OLS), the Granger Causality Test and the Vector autoregression and Vector error correction model (VAR and VECM) approach to cointegration.

First, the Computable General Equilibrium (CGE) method is popular among economists conducting research on trade, taxes, environment and energy issues. This popularity is due to the dynamic nature and flexibility of the method that offers comprehensive insights for policy makers (Melo 1988). However, dynamic CGE modelling has some disadvantages and weaknesses, such as the complexity associated with managing its massive data and the need for solid background knowledge of handling such models. Nevertheless, this method is widely used in empirical research other than our field of study.

Second, the autoregressive distributed lag (ARDL) approach to cointegration of Pesaran et al. (2001) is conducted to test the existence of a long run relationship between the variables in the model. This approach is based on the estimation of a dynamic error-correction representation for the variables involved by testing whether or not the lagged levels of the variables are statistically significant. Many recent empirics on developing countries applied the ARDL method. For example, Majid (2007) on Thailand, Marashdeh and Abdullah (2012) on UAE, Asante, Agyapong and Adam (2011) on Ghana, Samiloglu and Savas (2010) on Turkey. These empirics' results supported both the supply-leading and the feedback views in relation to the direction of causality between capital market development and economic growth.

The main advantages of the ARDL modelling are its flexibility that it can be applied when the variables are of different order of integration (Pesaran and Pesaran 1997). Also this approach is more appropriate measure in the case of small samples, while the Johansen cointegration techniques still require large data samples for the purpose of validity (Pesaran and Pesaran 1997).

Thirdly, the Granger Causality Test method is popular because it considers the possibility of a two-way causation over time (Quartey and Prah, 2008). Another reason is that the lagged variables of both the independent variable (X) and dependent variable (Y) are used in the regression. It is very clear that most of the empirical research in our field of study did use this technique at some stage in their analyses. However, the Granger Causality Test has some criticism. First criticism of this method is the direction of the causality depends on the number of lags chosen. If the lag of choice is different from the real lag, the results of the model become biased or inefficient (Majid 2007). The second criticism is the stationarity of variables problem especially when two variables are stationary they move together in the

long run or trend together. If the variables are not stationary and are used in the Test, the regression results might be misleading (Wooldridge 2006). Thus, following the steps of the empirics reviewed, this study will use the Granger Causality Test as part of the short-run analysis.

Fourthly, the Generalised Method of Moments (GMM) estimators used for dynamic panel data and cross-country growth regression. This procedure is developed by Arellano and Bond (1991), Arellano and Bover (1995) and Blundell and Bond (2000) (Rousseau and Wachtel 2000, Beck and Levine 2004). The GMM estimates can be based on either a one-step or a two-step estimator. In the one-step estimator, the error term  $\varepsilon_{it}$  is assumed to be independent and homoskedastic across countries and time; in the two-step estimator, the residuals of the first step are used to consistently estimate the variance-covariance matrix of the residuals, relaxing the assumption of homoskedasticity. Although the two-step estimator is asymptotically more efficient in the presence of heteroskedasticity of the error term  $\varepsilon_{it}$  (Goaied et. al. 2011).

These empirics that applied the GMM estimators are all cross-country specific (Beck and Levine 2004, Naceur and Ghazouani 2007, Kar et. al. 2011, Goaied et. al. 2011). The literature review identified three out of five empirics are recently conducted on the MENA countries including Saudi Arabia (Naceur and Ghazouani 2007, Kar et. al. 2011, Goaied et. al. 2011). Equally, the Ordinary Least Square (OLS) method, for example Luintel et al. (2008) conducted their research on 14 developing countries. Worth noting, that The OLS estimator is identical to the maximum likelihood estimator (MLE) under the normality assumption for the error terms that could be used for the cointegration analysis. Nevertheless, this study follows the recommendations of many researches in the literature review such as of Ghali's (1999) that the study of the relationship between capital market development and economic growth is country-specific.

Fifthly, most of the empirical researches used the VAR and VECM method (Darrat 1999, Xu 2000, Al-Tamimi et. al., 2002, Al-Yousif 2002, Boulila and Trabelsi 2004, Chuah and Thai 2004, Abu-Bader and Abu-Qarn, 2008, Masih et. al. (2009), Agrawalla and Tuteja 2007, Ake and Ognaligui 2010, Demirhan et al. 2011, Khan et al. 2005). The VAR model, according to Juselius (2006), is a flexible model for the analysis of multivariate time series. It is a natural extension of the univariate autoregressive model for dynamic multivariate time series. The

VAR model is especially useful for describing the dynamic behaviour of economic and financial time series. In addition to data description, the VAR model is also used for structural inference and policy analysis. In structural analysis, certain assumptions about the causal structure of the data under investigation are imposed, and the resulting causal impacts of unexpected shocks or innovations to specified variables on the variables in the model are summarised. These causal impacts are usually summarised with impulse response functions and forecast error variance decompositions. With these advantages, VAR and Vector error-correction (VECM) models were generally used in the studies in the literature review. This method can be considered as the most convenient in our case, because of the familiarity with the method and the accessibility to the VAR analysing software (Eviews). However, VAR models may require a large lag length to adequately describe a series, thus there is a loss of precision due to the extent of parameters estimated.

As a result, this research will favour undertaking the VAR and VECM models due to the simplicity and feasibility of these approaches under the current limitations associated mainly with the thesis time frame and budget. In addition, this thesis follows the steps of the dominant empirics in this field of study. Without ignoring the advantages associated with the more complex and advanced dynamic CGE, the ARDL, OLS and GMM methods. Thus, the shorter and simplest way is clear by far to be the VAR and VECM approaches and the Granger Causality Test. This chapter presents the model, variables and methodology used in this study.

After this brief introduction, the rest of the chapter is organised as follows: the first section will focus on the variables of the VAR model, the data set and sources. The reason for choosing each indicator and its importance will be highlighted. After presenting the variables that will be used in this study, it is worthwhile to describe the model that is employed, in order to test their association. Thus, the second section discusses the methodology that is used in order to examine the possible association between capital market development and economic growth and all the other additional variables. In this regard, the Vector autoregressive framework (VAR) will be used in order to explore the relationship between capital market development and economic growth. This method has been proven in the literature to be the best when studying this type of relationships, especially the ones involving tests of causality between variables. Since time-series data is used, it has been suggested that variables must be stationary in order to avoid spurious regression. Thus, after briefly

discussing the model specification, the study will present the unit root test, followed by the cointegration procedure. Having test the relationship between the variables used, the study next investigate the direction of causality between them. Thus, the description of the causality framework will be highlighted. The last section will provide a brief conclusion of the chapter.

## **4.2 The Macroeconomic Variables and the VAR Model**

This section will justify the inclusion of nine macroeconomic variables in this study, which were selected based upon the endogenous growth theory and literature review in Chapter 3. Each variable is predicted to have had a significant impact on economic growth over the period 1970 to 2010. These annual data were collected from the IMF, SAMA and the Saudi stock exchange ‘Tadawul’ (see Appendix A and B).

These variables include: (1) real GDP growth rate (RGDPR) and (2) real non-oil GDP growth rate (RNOIL) as proxies of economic growth. The capital market development (CMD) variables are, (1) the stock market index (SMI), proxied by Tadawul All Share Index (TASI); (2) turnover ratio (TR); (3) value traded ratio (VT); (4) market capitalisation ratio (MC); (5) the bank credits to the private sector (BCP); (6) the money supply (M1, M2) divided by nominal GDP; The control variables are, (1) the interest rate (IR); (2) inflation (INF) in the Saudi economy measured by the CPI; (3) the exchange rate of the Saudi Riyal (EX); (4) The nominal north sea (Brent) oil prices (NOILB); (5) The level of investment (INVR), proxied by the gross fixed capital formation (GFCF) divided by nominal GDP; (6) foreign direct investment (FDI); (7) general education student (GEDU).

### **4.2.1 Economic Growth Variables**

Economic growth in Saudi Arabia has been based, to a large extent, on the development of hydrocarbon (oil and gas) resources. The production of hydrocarbon sector, while having met world demand, has also been conditioned by the need to finance domestic development. To a more limited extent, economic growth has also reflected the development of non-hydrocarbon sector in response to the economic diversification policy initiated in the late 1970s aiming at minimising the negative effects of international oil price fluctuations. The development of the non-hydrocarbon sector is based mostly on the development of industries using the abundant hydrocarbon resources as inputs, such as petrochemicals, fertilisers, electricity generation for

aluminium production. It has also been derived from growth in industries that are not based on hydrocarbon and that are important in specific countries. To measure economic growth in Saudi Arabia, this thesis uses two proxies.

#### *4.2.1.1 Real GDP Growth Rates (RGDPR)*

Economic growth is defined as the increase in a nation's ability to produce goods and services over time as is shown by increased production levels in the economy. This thesis employs real GDP growth rates as a proxy for economic growth as it focuses on actual domestic production, which has a bearing on the general welfare of a country's citizens. Following the empirical study of King and Levine (1993), the variable of economic growth (GDP) is measured by the rate of change of real GDP.

#### *4.2.1.2 Real Non-Oil GDP Growth Rate (RNOIL)*

The proxy for economic growth refers to real non-oil GDP growth rate. A distinguishing feature of the oil exporting countries such as Saudi Arabia is the substantial contribution of the oil sectors to the overall economy. This sector averages 60 per cent of the Saudi total economy. While financial intermediation affects all sectors of the economy, it may be argued that the performance of the oil sector reflects more global economic conditions than domestic capital market development. Therefore, total GDP may not accurately capture the impact of capital market development on economic performance. To address this concern, the oil sector of the economy is removed from GDP to form the non-oil GDP growth rate proxy (Chuah and Thai 2004). The testing of this relationship with non-oil GDP growth rate is an attempt to see, in a broad perspective, whether capital market development may be seen as a way to meet the policy challenge facing Saudi Arabia to diversify its economy into non-oil sectors so as to reduce their vulnerabilities to international oil price fluctuations

## **4.2.2 Capital Market Development (CMD) Variables**

### *4.2.2.1 Stock Market Indicators*

The nonfinancial sector is less developed than the banking sector. The stock markets are very small, shallow, and illiquid. The secondary market for government papers is limited, the private capital markets nascent and insurance and pension funds not fully developed. Foreign investment in the nonbank financial sector, similar to the banking sector, is restrictive. The stock market data are on only available from 1985. The bond and ETF markets are established in 13 June 2009 and 28th March 2010 respectively. Therefore, this thesis is not using the following stock market related variables used in the literature review.

#### **4.2.2.1.1 Stock Market Index (SMI)**

The All-Share Index and the number of listed companies have a positive significant effect on economic growth (Asiegbu and Akujuobi 2010, Athanasios and Antonios 2010). This is supported by Olweny and Kimani's (2011) findings that imply that the causality between economic growth and the stock market runs unilaterally from the NSE 20-share index to the GDP. From their results, it was inferred that the movement of stock prices in the Nairobi stock exchange reflect the macroeconomic condition of the country and can therefore be used to predict the future path of economic growth. Similarly, the study by Kirankabes and Başarir (2012) found that there is a long-term relationship between economic growth and the ISE 100 Index, and a one-way causality relationship with the ISE 100 towards economic growth.

Tadawul All Share Index (TASI) is the only general price index for the Saudi stock market. It is computed based on the calculation that takes into account traded securities or free-floating shares. According to Saudi capital law, shares owned by the following parties are excluded from TASI calculations: the Saudi government and its institutions; a foreign partner, if he or she is not permitted to sell without the prior approval of the supervision authority; a founding partner during the restriction period; and owners who hold 10% or more of a company's shares listed on the Saudi stock market (Tadawul website 2013). At the end of 2010, free-floating shares on the TASI index accounted for 41% of total issued shares. TASI reflects the performance of all the 146 listed companies within fifteen sectors in the Saudi stock market

taking into account the free-floating shares. Thus, it is expected to provide better insight into the overall performance of the Saudi stock market in response to fundamental changes within the Saudi economy.

#### 4.2.2.1.2 Turnover Ratio (TR)

When measuring capital market liquidity, the turnover ratio (TR) is frequently employed (Bhide 1993, Holmstrom and Tirole 1993, Levine 1991). The turnover ratio (TR) that is, the value of total shares and bonds traded as a percentage of market capitalisation.

#### 4.2.2.1.3 Value Traded Ratio (VT)

When measuring capital market liquidity, the value traded ratio (VT) is frequently employed (Bhide 1993, Holmstrom and Tirole 1993, Levine 1991). In this instance, liquidity is measured by total value traded divided by GDP.

#### 4.2.2.1.4 Market Capitalisation Ratio (MC)

The market capitalisation ratio (MC) is used in a majority of studies to measure capital market size. The MCR is the market value of listed shares and bonds divided by GDP (Bhide 1993, Holmstrom and Tirole 1993, Levine 1991).

#### 4.2.2.2 *Bank Credit to Private Sector (BCP)*

The banking sector, which constitutes the core of the Saudi Arabian financial sector possess a number of common features. It is very concentrated and government dominated. However, as part of the policy to promote the private sector, divestiture of some state-owned banks has taken place in recent years. Banks are closely regulated and supervised, and are compliant or largely compliant with most Basel Core Principles as well as with international standards on anti-money laundering and the combating of terrorism financing. Banks face little changes in competition due in part to the restrictive policy for new bank entries during the past decades.

In 2001, GCC banks were allowed to establish in other GCC countries; but as of end-2003, only a few banks have been licensed. Entry of non-GCC banks is still under consideration.

Banks are profitable and efficient. They offer a wide range of financial instruments for deposits and loans. In recent years, they have introduced new products (mortgage in Saudi Arabia), broadened or intensified their activities (private and investment banking, project financing, and Islamic banking), adopted new technologies (ATM, internet banking), and updated their financial skills.

Banks also benefit from well functioning payment systems which have been updated to international standards to ensure prompt registration, clearing, and settlement of transactions. Credit bureaus have been introduced in some countries, and are underway in others. Deposit insurance schemes exist in some countries and they have been considered for some time in others; although in the latter, bank deposits are implicitly guaranteed by the governments.

The bank credit to the private sector as a ratio of nominal GDP (BCP), represents more accurately the role of intermediaries to channel funds to private sector and it is more closely associated with investment and hence economic growth. Levine, Loyaza and Beck (2000) emphasised that BCP is (1) a good representation of the role of capital intermediaries in channelling funds to private market participants. (2) BCP can be an indicator of the functioning of the capital market because it is a measure of the quantity and quality of investment. (3) BCP excludes credit to the public sector which better reflects the extent of efficient resources allocation.

Commercial banks, in the modern economy, create most of the money supply by issuing loans. Therefore, when banks create an excess supply of money, the prices of assets, goods, and services tend to rise. Conversely, when not enough money is created, the prices of assets, goods, and services decrease. Thus, it is reasonable to hypothesise that a strong positive relationship exists between asset prices and bank lending.

Thus, this study will use BCP as a measurement for capital market development by following the steps of Omran and Bolbol (2003), Boulila and Trabelsi (2004), Chuah and Thai (2004), Al-Awad and Harb (2005), Naceur and Ghazouani (2007), Masih et. al. (2009), Goaiied et. al. (2011) and Kar et. al. (2011).

The link between commercial banks in the Saudi economy is unique, in the sense that banks have a significant position in both the debt and equity markets since the intermediation function of the Saudi stock market was restricted by the law to commercial banks (SAMA 1997). Banks are the second largest supplier of credit in the Saudi economy after the government's mutual funds (Ramady 2010, SAMA 2011).

Bank credit to the private sector is used, for example, in King and Levine (1993), De Gregorio and Guidotti (1995), Demetriades and Hussein (1996) and Khan and Senhadji (2000). However, bank credit to the private sector may be negatively correlated with growth as a result of negative correlation between bank credit and nonbank financial intermediation. The latter situation stems from the possibility that financial innovation may induce a substitution away from credit to stock market and other forms of direct financing. This possibility is unlikely to occur in the GCC countries because the stock markets have not been fully developed and direct financing of firms by bonds is still nascent and sufficiently long time series for these proxies are not available. As a result, this thesis does not include measures of stock and bond markets as part of financial development.

In this thesis, it is vital to include BCP to help determine the effect of credit banks' lending behaviour on the Saudi economy. Examining the historical relationship between bank lending behaviour and the economy may also provide the Saudi authority with reliable knowledge about the role of bank loans in transmitting financial shocks to the real sector. In other words, understanding this channel may help authorities to stimulate bank loans as a way to boost real activity in the local economy.

#### *4.2.2.3 Money Supply: M1 and M2*

Darrat (1999), Al-Yousif (2002) and Kar et. al. (2011) used two alternative proxies. One is the currency ratio, denoted by K and calculated by the ratio of currency to the narrow money stock (M1). Vogel and Buser (1976) argue that this measure can assess the complexity (or sophistication) of domestic financial markets. A decrease in this ratio signifies a higher diversification of financial institutions and greater availability and use of non-currency (bank deposits) forms of transaction media. The second proxy of the degree of financial deepening

is the inverse of the broad-money velocity, that is, the ratio of broad money stock (M2) to nominal GDP. This measure, suggested by McKinnon (1973) and Shaw (1973), and recently used by King and Levine (1993) is often called the monetisation variable (Z), which could measure the size of the financial market or ‘financial depth’. An increase in this variable indicates further expansion in the financial intermediary sector relative to the rest of the economy since it implies faster accumulation of a wide range of financial assets (primarily saving accounts). As is typical with any empirical measurement of economic phenomenon, these proposed proxies are not perfect measures of the degree of financial deepening. In particular, changes in K and Z may not solely reflect financial deepening. For example, currency substitution could ignite similar changes in K. Nevertheless, in the absence of better alternatives, researchers continue using K and Z to approximately monitor financial development in various countries.

This study will use two measures for the money supply in the Saudi economy. The first measure (M1) is the narrowest measure of the money supply of Saudi Arabia, and consists of currency outside of banks and demand deposits. The second measure (M2) is a broad measure of the money supply in the Saudi economy, and consists of the narrow money supply (M1) components, time deposits and savings deposits. Examining these two measures is expected to give a comprehensive view of the role that the money supply plays in explaining movements in the Saudi economy.

### **4.2.3 The Control Variables (CV)**

#### *4.2.3.1 Interest Rate (IR)*

In line with the literature review most empirics used real interest rate to measure financial repression. For example, Khan Qayyum and Sheikh (2005) found that changes in real interest rate exerted positive (negative) impact on economic growth. However, the response of real interest rate is very small in the short run.

Investigating the relationship between the interest rate and the Saudi economy is of particular interest to researchers for at least two reasons. First, the Saudi Monetary Authority works in a unique institutional environment in which charging interest is prohibited by Islamic law. That is, Islamic law does not consider money as an asset, and thus, money is viewed only as a

measurement of value. For that reason, SAMA, the central bank in Saudi Arabia, has no direct control over the interest rate (Ramady 2010). Second, the Saudi currency has been pegged to the US dollar at a fixed exchange rate since 1986. This restriction makes local monetary policy conditional on the monetary policy of the US. In such an environment, interest rate based assets are not the primary alternative for the majority of investors in the Saudi economy. Money and capital markets in the Saudi economy are not substitutes but rather are independent.

Most empirical studies related to the Saudi economy use a short or a long term interest rate of the US market as a proxy for the Saudi market due to the Saudi exchange rate policy. However, this thesis do not use this variable for the reasons mentioned earlier.

#### *4.2.3.2 Inflation (INF)*

In line with, Bekaert and Harvey (1997), Darrat (1999), Al-Tamimi et. al. (2002), Omran and Bolbol (2003), Naceur and Ghazouani (2007) and Goaiied et. al. (2011) they used inflation rate as an important variable on the economy. Fisher (1930) believes that the real and monetary sectors of the economy are independent, and claims that the nominal interest rate fully reflects the available information concerning the possible futures values of the rate of inflation. Thus, he hypothesises that the real return on interest rates is determined by real factors such as the productivity of capital and time preference of savers, hence, the real return on interest rates and the expected inflation rate are independent.

Thus, investors may benefit from this thesis to learn how to allocate their recourses more efficiently to protect the purchasing power of their investments, especially during inflationary periods. However, there are no enough available data on this variable that pre-date 1980.

#### *4.2.3.3 Exchange Rate (EX)*

This thesis follows the steps of Bekaert and Harvey (1997) and Omran and Bolbol (2003) they used exchange rate as risk factor toward investment and the economy. Dornbusch and Fischer's (1980) approach explains the impact of exchange rate fluctuations on the economy using the current account or the trade balance. This approach advocates that changes in

exchange rates affect international competitiveness of the economy, and thus, changes in its trade balance. A depreciation of the domestic currency makes local firms more competitive, i.e. their export is cheaper in international markets, which increases exports. Thus, the oil exporting nature of the Saudi economy can be affected by the exchange rate fluctuation. Hence, the World Bank (2009) classified the Saudi economy as one of the most open economies in the world with a degree of openness equal to 70 per cent, measured as the ratio of the merchandise trade volume to GDP. Although there is no standard level of openness, this may be a sign that the Saudi economy heavily depends on the world economy.

Since 1986, the Saudi authority has adopted a pegged exchange rate regime in which Saudi Riyals are pegged to US dollars at a fixed rate of 1:3.75. Because of this, this thesis is not using this variable.

#### *4.2.3.4 Nominal North Sea (Brent) Oil Price*

Oil price was used in empirics associated with oil producing countries such as Mosesov and Sahawneh (2005) on the UAE and Naceur and Ghazouani (2007) on the MENA region.

The Saudi economy is a small oil-based economy that possesses nearly 20 per cent of the world's known petroleum reserves and is ranked as the largest exporter of petroleum (OPEC 2013). The oil sector in the Saudi economy contributes more than 85 per cent of the country's exports and government revenues (SAMA 2013). As a result, oil revenue plays a vital role in all major economic activities in Saudi Arabia. Hence, the Saudi economy also imports almost all manufactured and raw goods except for oil from developed and emerging countries.

Even though high oil prices impose a positive impact on the economy this may indirectly harm the economy through its influence on the prices of imported products. In other words, a high oil price may be fed back to the local economy as imported inflation, which increases future interest rates.

This thesis uses the Brent oil price rather than other oil benchmarks—and Dubai-Oman oil prices—mainly because it is used to price two-thirds of the crude oil internationally traded.

#### *4.2.3.5 Level of Investment (INV)*

The level of investment (INV) is obtained from gross fixed capital formation (GFCF) divided by nominal GDP. According to endogenous economic theory, investment provides a positive link to economic growth. This measurement was used by Ndikumana (2000), Xu (2000) and Chuah and Thai (2004).

Investment refers to an increase in capital stock in the economy and is one of the traditional determinants of economic growth. It can also enhance the operation of the capital market, which eventually feeds into the growth of the economy. Time series data for domestic investment is not readily available; hence the adoption of the GFCF ratio to GDP as a proxy, which has been used in studies such as Caporale, Howells and Soliman (2005). Domestic investment is expected to exert a positive influence on economic growth. For example, Kularatne's (2001) study of South Africa found that the financial system has an indirect effect on GDP via the investment rate.

#### *4.2.3.6 Foreign Direct Investment (FDI)*

Foreign direct investment (FDI) is an investment of foreign assets into domestic structures, equipment and organisations. It does not include foreign investment into the stock markets. FDI is thought to be more useful to a country than investments in the equity of its companies because equity investments are potentially "hot money" which can leave at the first sign of trouble, while FDI is durable and generally useful whether the economy is doing well or badly (Aitken et. al., 1997, Liu et. al., 2000). By all accounts, FDI can be a critically important ingredient to long-term sustainable growth for developing countries, especially if the FDI is channelled into neglected productive sectors, or internationally underperforming, but potentially profitable sectors. FDI can play an important "spill-over" effect as demonstrated by other countries' experiences (Aitken et al. 1997). In the endogenous growth literature Edwards (1993) argue that countries open to international trade can grow faster and more rapidly by expanding their markets and become more efficient (cited Naceur and Ghazouani 2007:303)

Omran and Bolbol (2003) construct a growth equation that captures the interaction between FDI and various indicators of capital market development in the context of Arab countries. They used averaged five years cross-sectional data for the period 1975–1999. The estimation model is based on the growth accounting framework of the Cobb-Douglas production function where  $y$  is the growth rate of GDP per capita in the Arab world, and  $x$  represents capital market development indicators of the banking sector and the stock market.  $z$  is a vector of control variables that are usually used in the estimation (initial per capita income, human capital, investment/GDP, inflation rate, government consumption/GDP, openness of trade/GDP, and exchange rate), and is the error term. They found that FDI has a positive impact on economic growth, which depends on local conditions and absorptive capacities, where capital market development is one of the important capacities.

Similarly, Naceur and Ghazouani (2007) used FDI as a control variable in their study to capture the degree of openness in the economy.

#### 4.2.3.6 General Education Students (GEDU)

According to Solow's (1956, 1994) neoclassical growth theory, the sources of economic growth are the production function, that output produced depends on the factor inputs of capital,  $K$ , and labour,  $L$ , and the state of technology  $A$ , as in equation (3.1):

$$Y_t = A_t f(K_t, L_t) = A_t K_t^\alpha L_t^{1-\alpha} \quad \text{where: } 0 < \alpha < 1 \quad (3.1)$$

The General Education Students (GEDU) variable, similar to many widely used variables in the literature review that tried to measure the human capital development. Empirics supported by theory found a significant and positive relationship between economic growth and development in human capital (Darrat and Al-Sowaidi 2010).

### 4.3 VAR and VECM Modelling

Many researchers use this method (Agrawalla and Tuteja 2007; Ake and Ognaligui 2010; Demirhan, Aydemir and Inkaya 2011; Khan Qayyum and Sheikh 2005). The VAR model, according to Juselius (2006), is a flexible model for the analysis of multivariate time series. It is a natural extension of the univariate autoregressive model for dynamic multivariate time series. The VAR model is especially useful for describing the dynamic behaviour of economic and financial time series. With these advantages, VAR models and VECMs were generally used in the studies in the literature review. Thus the VAR and VECM modelling offer a feasible approach due to the robustness and rigour of the data.

A VAR model is adopted to estimate the effects of the capital market development on economic growth. In order to test the causal relationships, the following multivariate model will be estimated (repeated from section 1.5):

$$Y = f(\text{CMD}, \text{CV}) \quad (1.1)$$

Where:        Y = economic growth variables.  
               CMD = capital market development variables.  
               CV = control variables.

The VAR models and variables used in this study followed the literature reviewed earlier in this chapter and these are:

$$\text{VAR (1)} \\ \text{RGDPR} = f(\text{LINV}, \text{LM1}, \text{LGEDU}, \text{LNOILB}, \text{FDI}) \quad (4.1)$$

$$\text{VAR (2)} \\ \text{RGDPR} = f(\text{LINV}, \text{LM2}, \text{LGEDU}, \text{LNOIB}, \text{FDI}) \quad (4.2)$$

$$\text{VAR (3)} \\ \text{RGDPR} = f(\text{LINV}, \text{LBCP}, \text{LGEDU}, \text{LNOILB}, \text{FDI}) \quad (4.3)$$

$$\text{VAR (4)} \\ \text{RNOIL} = f(\text{LINV}, \text{LM1}, \text{LGEDU}, \text{LNOILB}, \text{FDI}) \quad (4.4)$$

$$\text{VAR (5)} \\ \text{RNOIL} = f(\text{LINV}, \text{LM2}, \text{LGEDU}, \text{LNOILB}, \text{FDI}) \quad (4.5)$$

$$\text{VAR (6)}$$

$$\text{RNOIL} = f(\text{LINV}, \text{LBCP}, \text{LGEDU}, \text{LNOILB}, \text{FDI}) \quad (4.6)$$

Where:      RGDPR = real GDP growth rate as a proxy of economic growth  
               RNOIL = real non-oil GDP growth rate  
               LINV = log level of investment  
               LM1 = log narrow money supply  
               LM2 = log broad money supply  
               LBCP = log bank credits to the private sector  
               LGEDU = log general education students  
               LNOILB = log nominal oil North Sea (Brent) price  
               FDI = foreign direct investment

All variables are in logarithmic form except RGDPR, RNOIL and FDI because of some negative values.

#### 4.3.1 Unit Root Test

Augmented Dickey-Fuller (ADF) unit root tests are calculated for individual series to provide evidence as to whether the variables are stationary and integrated of the same order. The most general ADF model, which includes both a drift and linear time trend, is shown in equation (4.7). The additional lagged terms are included to ensure that the errors are uncorrelated. The lag length examined by the AIC and SC information criteria.

$$\Delta Y_t = \alpha_0 + \alpha_1 t + \gamma Y_{t-1} + \sum_{i=1}^p \beta_i \Delta Y_t + \varepsilon_t \quad (4.7)$$

where;  $Y$  is the variables in question, and  $\gamma$  are constant terms while  $t$ , and  $\Delta$  are the time trend and the first difference operator, respectively.  $\varepsilon_t$  is the white noise residual and  $p$  is the lagged values of  $\Delta Y$  to control for higher-order correlation assuming that the series follows an  $\text{AR}(p)$ .

The null hypothesis is that the variable  $Y_t$  is a non-stationary series ( $H_0: \gamma=0$ ) and is rejected when  $\gamma$  is significantly negative ( $H_1: \gamma<0$ ). If the calculated ADF statistic is higher than McKinnon's critical values, then the null hypothesis ( $H_0$ ) is not rejected and the series is non-stationary or not integrated of order zero  $I(0)$ . Alternatively, rejection of the null hypothesis implies stationarity (Dickey and Fuller 1979).

In order to find the proper structure of the ADF equations, in terms of the inclusion in the equations of an intercept ( $\alpha_0$ ) and a trend ( $t$ ) and in terms of how many extra augmented lagged terms to include in the ADF equations, for eliminating possible autocorrelation in the disturbances, the minimum values of Schwarz's (1978) criterion (SC). The Eviews 7.0 (2012) software package which is used to conduct the ADF tests, reports the simulated critical values based on response surfaces.

Phillips-Perron (PP) test is an extension of the ADF test, which makes the semi-parametric correction for autocorrelation and is more robust in the case of weakly autocorrelation and heteroskedastic regression residuals. According to Choi (1992), the PP test appears to be more powerful than the ADF test for the aggregate data.

Although the PP test gives different lag profiles for the examined variables (time series) and sometimes in lower levels of significance, the main conclusion is qualitatively the same as reported by the ADF test. Since the null hypothesis in the ADF test is that a time series contains a unit root, this hypothesis is accepted unless there is strong evidence against it. However, this approach may have low power against stationary near unit root processes.

Kwiatkowski et al. (1992) present a test where the null hypothesis states that the series is stationary. The KPSS test complements the ADF test in that concerns regarding the power of either test can be addressed by comparing the significance of statistics from both tests. A stationary series has significant ADF statistics and insignificant KPSS statistics.

The results of the ADF, PP, KPSS tests for each variable will be represented. If the time series (variables) are non-stationary in their levels, they can be integrated with integration of order 1, when their first differences are stationary.

### **4.3.2 Cointegration Test**

Since it has been determined that the variables under examination are integrated of order 1, then the cointegration test is performed. The testing hypothesis is the null of non-cointegration against the alternative that is the existence of cointegration using the Johansen maximum likelihood procedure (Johansen and Juselius 1990).

It is well known that Johansen's cointegration tests are very sensitive to the choice of lag length. First, a VAR model is fitted to the time series data to find an appropriate lag structure. Five different criteria—the sequential modified likelihood ratio (LR) test statistic, the final prediction error (FPE) criteria, the Akaike information criterion (AIC), the Schwarz information criterion (SIC) and the Hannan-Quinn (HQ) information criterion—are used to determine the lag lengths used in the VAR. These criteria are widely used in the literature (Enders 2010; Lütkepohl 2005). Another consideration is the monthly frequency of the data, which takes 3, 4, 6 and 12 lags as a standard practice. Thus, the model best fit in regards to the economic theory and the economic nature of the Saudi Arabia is the final determinant of the lag choices.

### 4.3.3 Granger-Causality Test

Granger causality is used for testing the long-run relationship among the variables in the model. The Granger procedure is selected here because it is a simple way of testing causal relationship (Granger 1986, 1988). The following bivariate model is estimated:

$$Y_t = a_{10} + \sum_{j=1}^K a_{1j} Y_{t-j} + \sum_{j=1}^k \beta_{1j} X_{t-j} + u_t \quad (4.8)$$

$$X_t = a_{20} + \sum_{j=1}^K a_{2j} Y_{t-j} + \sum_{j=1}^k \beta_{2j} X_{t-j} + v_t \quad (4.9)$$

where  $Y_t$  is the dependent and  $X_t$  is the explanatory variable and  $u_t$  is the white noise error term in (4.8), while  $X_t$  is the dependent and  $Y_t$  is the explanatory variable and  $v_t$  is the white noise error term in (4.9).

Four different null hypotheses can be tested to determine the direction of the relationship between  $X$  and  $Y$ :

- 1- If  $\sum_{j=1}^n \beta_j$  and  $\sum_{j=1}^n a_j = 0$ , it can be concluded that  $X$  and  $Y$  do not help to predict one another.
- 2- If  $\sum_{j=1}^n \beta_j$  and  $\sum_{j=1}^n a_j \neq 0$ , it can be concluded that  $X$  and  $Y$  can help to predict one another, which we call bidirectional Granger causality.
- 3- If  $\sum_{j=1}^n \beta_j = 0$  but  $\sum_{j=1}^n a_j \neq 0$ , unidirectional Granger causality exists from  $X$  to  $Y$ , but not vice versa. In other words, changes in  $X$  can help to predict future values of  $Y$ , but  $Y$  cannot help to predict future values of  $X$ .

- 4- If  $\sum_{j=1}^n \beta_j \neq 0$  but  $\sum_{j=1}^n a_j = 0$ , unidirectional Granger causality exists from Y to X, but not vice versa. In other words, changes in Y can help to predict future values of X, but X cannot help to predict future values of Y.

These four null hypotheses can be tested using an *F*-test given by the following formula as in Brandt and Williams (2006):

$$F_{\text{Calculated}} = \left[ \frac{(RSS_R - RSS_{UR})/P}{(RSS_{UR}/n-k-1)} \right] \quad (4.10)$$

where: *p* is the number of lagged terms, *k* is the number of parameters estimated in the unrestricted model, *n* is the number of observations, and *RSS<sub>R</sub>* and *RSS<sub>UR</sub>* are residual sum of squares of the restricted and unrestricted models, respectively. The restricted model occurs when the above model's parameters are restricted by the null hypotheses conditions mentioned above. It should be noted also that the null hypotheses will be rejected if the *F*-statistic is greater than the critical value for a chosen level of significance (Brandt and Williams, 2006).

The validity of the test depends on the order of the VAR model and on the stationarity or non-stationarity of the variables.

#### 4.4 Conclusion

This chapter outlined the VAR methodology used in this study to investigate the relationship between capital market development and economic growth for the Saudi Arabian economy. The VAR model is a flexible model for the analysis of multivariate time series. It is a natural extension of the univariate autoregressive model for dynamic multivariate time series and is especially useful for describing the dynamic behaviour of economic and financial time series. In addition to data description, the VAR model is also used for structural inference and policy analysis. VAR and VECM models offer a feasible approach to the robustness and rigour of the data and were extensively used in previous empirical studies. As a result VAR and VECM modelling were used in this study.

Thus, in order to achieve the aims and objectives of this study. The following chapter 5 will present the results of the VAR analyses using the variables and data set prescribed in this chapter.

## **Chapter 5: Results**

### **5.1 Introduction**

The annual data from 1970 to 2010 on Saudi Arabia contains 41 observations of the following variables: (1) real GDP growth rate (RGDPR) and (2) real non-oil GDP growth rate (RNOIL) as proxies of economic growth. The capital market development (CMD) variables are, (1) the bank credits to the private sector (LBCP); (2) the narrow money supply (LM1) divided by nominal GDP; (3) the broad money supply (LM2) divided by nominal GDP; The control variables are (1) The nominal north sea (Brent) oil prices (LNOILB); (2) The level of investment (LINVR), proxied by the gross fixed capital formation (GFCF) divided by nominal GDP; (3) foreign direct investment (FDI); (4) general education student (LGEDU). These variables are statistically analysed through a process of starting with descriptive statistics then undertaking long-run and short-run analyses using Johansen-Juselius cointegration tests, the vector error-correction model (VECM) and the Granger causality test. The results will be presented followed by a summary of the chapter.

### **5.2 Descriptive Statistics**

Table 5.1 summarises the basic statistical features of the data under consideration, including the mean, the minimum and maximum values, standard deviation, kurtosis, skewness and the Jarque-Bera test for the data in their levels. Table 5.2 reports the mean of the data in first differences. These descriptive statistics provide a historical background for the behaviour of the data in this study. For instance, the standard deviations indicate that RGDPR, RNOIL and ROILB are more volatile than M1, M2, INVR and FDI (see Table 5.1). This is perhaps because the nature of the oil-based economy depends on the fluctuations of the oil prices (SAMA 2013). Furthermore, the standard deviation indicates that the level of investment (INVR) is the least volatile compared to other macroeconomic variables during the same time.

**Table 5.1: Statistical features of the Macroeconomic variables (Data in Level)**

Observations	Statistical Features									
	Sum	Probability (P-value)	Jarque-Bera	Kurtosis	Skewness	Std. Dev.	Minimum	Maximum	Median	Mean
RGDPR	41	0.00	10.9	4.4	1.0	8.0	-11.1	27.5	4.2	5.0
RNOIL	41	0.00	296.7	14.4	3.2	11.5	-5.8	61.7	3.7	6.9
INVR	41	0.28	2.5	3.0	0.6	1.4	0.9	6.8	3.2	3.1
M1	41	0.84	0.3	2.6	-0.1	0.0	0.0	0.3	0.2	0.2
M2	41	0.58	1.0	2.2	-0.1	0.1	0.0	0.6	0.3	0.3
BCP	41	0.00	31.5	5.2	1.8	211361.7	1692.0	7757 56	73281	162099.8
GEDU	41	0.22	2.9	1.9	0.4	1846219	517402	6388 538	27365 58	2963209
NOILB	41	0.00	24.5	5.1	1.5	21.2	2.2	97.3	20	27.5
FDI	41	0.31	2.3	3.9	0.2	3.3	-8.3	9.7	0.3	1.2

**Table 5.2: Statistical features of the microeconomic variables (Mean of the Data in their first Differences)**

	Observations	Sum Sq. Dev.	Sum	Probability ( <i>P</i> -value)	Jarque-Bera	Kurtosis	Skewness	Std. Dev.	Minimum	Maximum	Median	Mean
DRGDPR	40	1775	-6.9	0.00	10.0	4.7	-0.8	6.74	-22.3	10.9	-0.02	-0.17
DRNOIL	40	3272.5	4.3	0.00	105.9	10.9	-0.4	9.16	-33.7	33.4	0.45	0.10
DINVR	40	10.8	5.4	0.91	0.1	2.7	-0.0	0.52	-1.12	1.18	0.11	0.13
DM1	40	0.0	0.2	0.00	36.4	7.0	1.1	0.03	-0.05	0.13	0.00	0.00
DM2	40	0.0	0.4	0.00	13.3	5.2	0.8	0.04	-0.06	0.15	0.00	0.01
DBCP	40	4.87E+10	7740	0.00	104.9	9.0	2.5	35352.3	-7986	156675	8141	19351.5
DGEDU	40	1.37E+12	5871	0.00	1720.6	33.2	5.4	187755.5	20095	1265893	114959.0	146778.4
DNOILB	40	3526	77.2	0.00	50.2	8.1	-0.9	9.5	-35.7	24.8	0.81	1.93
DFDI	40	367	6.40	0.00	45.9	7.4	1.4	3.06	-4.7	12.3	0.1	0.16

*P*-values<sup>15</sup> associated with the Jarque-Bera statistics, a test for departures from normality, show that the sample skewness and kurtosis are significantly different from zero and three respectively (Table 5.1). Given that the kurtosis of INVR, M1, M2 and GEDU variables are all less than three, the distributions of these variables exhibit non-normality (Stock and Watson 2006). The positive values of the skewness tests for RGDP, RNOIL, BCP, GEDU, NOILB and FDI suggest that these variables have long right tails, while negative values of the skewness tests for M1 and M2 suggest that these two variables have long left tails (Stock and Watson 2006).

On the other hand, the narrow money supply (M1) grew at less than one per cent on average each year during the whole period. This is comparable to the growth rate of all other variables included in the analysis with the exception of RGDP, which had an average annual growth rate of -17 per cent (Table 5.2).

Although there is no indication of causation, the results reported in Table 5.3 reveal information on the strength of the relationships connecting the macroeconomic variables. In particular, Table 5.3 shows a negative relationship between both of the economic growth variables (RGDP and RNOIL) and the rest of the macroeconomic variables in the time-series (INVR, M1, M2, BCP, GEDU, NOILB and FDI). On the other hand, a positive relationship exists between all the capital market and control variables in the series.

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<sup>15</sup> The reported Probability is the probability that a Jarque-Bera statistic exceed (in absolute value) under the null hypothesis—a small probability value leads to the rejection of the null hypothesis of a normal distribution.

**Table 5.3: Correlation Matrix of the Macroeconomic Variables**

	RGDPR	RNOIL	INVR	M1	M2	BCP	GEDU	NOILB	FDI
RGDPR	1								
RNOIL	0.64	1							
INVR	-0.40	-0.31	1						
M1	-0.51	-0.58	0.76	1					
M2	-0.50	-0.55	0.82	0.97	1				
BCP	-0.2	-0.18	0.88	0.64	0.73	1			
GEDU	-0.34	-0.35	0.91	0.80	0.88	0.87	1		
NOILB	-0.29	-0.19	0.75	0.44	0.56	0.89	0.73	1	
FDI	-0.53	-0.37	0.57	0.41	0.47	0.66	0.50	0.69	1

### 5.3 Long-Run Analysis

As mentioned earlier, the long-run analysis is conducted using Johansen and Juselius's (1990) cointegration test, which typically consists of three general steps: (1) examine whether

all variables in the model are integrated of the same order, which can be established by unit root tests; (2) determine the optimal lag length for the VAR model to verify that the estimated residuals are not auto-correlated; and (3) estimate the VAR model to construct the cointegration vectors to determine the order of cointegration that is necessary to establish the trace and the Max-Eigen value statistics tests (Enders 2004, 2010). The results for each step are presented below.

### 5.3.1 Unit Root Test Results

Determining the order of integration for each variable included in the system is the first step to understanding the long-run relationships among these variables. To this end, two different unit root tests are employed to establish that all (if any) variables are integrated of the same order. The following two tests are widely used in literature: the Augmented Dickey-Fuller (ADF) unit root and Phillips-Perron (PP) unit root tests. The most general ADF model is estimated here, including both a drift and linear time trend:

$$\Delta LY_t = \alpha_0 + \alpha_1 t + \gamma Y_{t-1} + \sum_{i=1}^p \beta_i \Delta Y_{t-i} + \varepsilon_t \quad (5.1)$$

where;  $LY$  is the natural logarithm of the variables in question.  $\alpha_0$ ,  $\alpha_1$ , and  $\gamma$  are constant terms while  $t$ , and  $\Delta$  are the time trend and the first difference operator, respectively.  $\varepsilon_t$  is the white noise residual and  $p$  is the lagged values of  $\Delta LY$  to control for higher-order correlation assuming that the series follows an  $AR(p)$ . For the PP unit root, the following model (with the same variables and parameters as those of the ADF unit root test) is estimated:

$$\Delta LY_t = \alpha_0 + \alpha_1 t + \gamma Y_{t-1} + \varepsilon_t \quad (5.2)$$

The null hypothesis for the ADF and PP unit root tests is that  $\gamma=0$ , which implies that the series has a unit root, the time series is non-stationary, against the alternative hypothesis of stationarity (see Table 5.4). Since the ADF and PP tests do not have a normal distribution even if the sample size is large, the null hypothesis was examined here using the critical values reported in Enders (2010). Second, the upper limit of the lag length is determined based on the Bartlett criteria:

$$(p_{\max} = \text{int} (12(\frac{T}{100})^{0.25})) \quad (5.3)$$

Where:  $T$  = the sample size (Hayashi 2000)

This step suggests that 3 lags is the upper limit of the lag-length of all estimated models. Finally, the optimal lag-length is chosen to minimise the Schwarz Information Criterion (SC) by:

$$SC = T \ln |\Sigma^n| + n \ln (T) \quad (5.4)$$

Where:  $T$ =the number of observations  
 $\Sigma$ =the estimated sum of squared residuals  
 $n$ = the number of estimated parameters

**Table 5.4: ADF and PP Unit Root Tests of the VAR Models**

<b>VAR (1): RGDP, LM1, LINVR, LGEDU, LNOILB and FDI</b>		
<b>Method</b>	<b>Statistic</b>	<b>Prob.**</b>
ADF - Fisher Chi-square	160.40	0.00
ADF - Choi Z-stat	-11.09	0.00
PP - Fisher Chi-square	566.52	0.00
PP - Choi Z-stat	-20.58	0.00
<b>VAR (2): RGDP, LM2, LINVR, LGEDU, LNOILB and FDI</b>		
<b>Method</b>	<b>Statistic</b>	<b>Prob.**</b>
ADF - Fisher Chi-square	160.11	0.00
ADF - Choi Z-stat	-11.08	0.00
PP - Fisher Chi-square	548.02	0.00
PP - Choi Z-stat	-19.97	0.00
<b>VAR (3): RGDP, LBCP, LINVR, LGEDU, LNOILB and FDI</b>		
<b>Method</b>	<b>Statistic</b>	<b>Prob.**</b>
ADF - Fisher Chi-square	143.09	0.00
ADF - Choi Z-stat	-10.10	0.00
PP - Fisher Chi-square	523.38	0.00
PP - Choi Z-stat	-18.68	0.00

<b>VAR (4): RNOIL, LM1, LINVR, LGEDU, LNOILB and FDI</b>		
<b><u>Method</u></b>	<b>Statistic</b>	<b>Prob.**</b>
<b>ADF - Fisher Chi-square</b>	129.79	0.00
<b>ADF - Choi Z-stat</b>	-9.89	0.00
<b>PP - Fisher Chi-square</b>	481.97	0.00
<b>PP - Choi Z-stat</b>	-18.70	0.00
<b>VAR (5): RNOIL, LM2, LINVR, LGEDU, LNOILB and FDI</b>		
<b><u>Method</u></b>	<b>Statistic</b>	<b>Prob.**</b>
<b>ADF - Fisher Chi-square</b>	129.49	0.00
<b>ADF - Choi Z-stat</b>	-9.87	0.00
<b>PP - Fisher Chi-square</b>	463.47	0.00
<b>PP - Choi Z-stat</b>	-18.08	0.00
<b>VAR (6): RNOIL, LBCP, LINVR, LGEDU, LNOILB and FDI</b>		
<b><u>Method</u></b>	<b>Statistic</b>	<b>Prob.**</b>
<b>ADF - Fisher Chi-square</b>	112.47	0.00
<b>ADF - Choi Z-stat</b>	-8.90	0.00
<b>PP - Fisher Chi-square</b>	438.83	0.00
<b>PP - Choi Z-stat</b>	-16.79	0.00

\*\* Probabilities for Fisher tests are computed using and asymptotic Chi-square distribution. All other tests assume asymptotic normality.

The optimal lag length varies across the series. It is clear from Table 5.4 that the null hypothesis of non-stationarity cannot be rejected for any of the series in their levels since ADF statistics for all variables are not less than the critical values at any significance level, i.e. 1%, 5% and 10%. Therefore, it can be concluded that all series are non-stationary in levels. Applying the same test to their first differences shows that the null hypothesis of a unit root is rejected in all cases even at a one per cent significance level. On the basis of these results, all variables are treated as integrated of order one.

The PP unit root test differs from the ADF unit root test mainly in how it treats the serial correlation and heteroskedasticity in the error terms. While the ADF test corrects for higher order serial correlation by adding lagged differenced terms on the right-hand side of the model, the PP test makes a correction to the t-statistic of the coefficient from the  $AR(p)$

regression to account for the serial correlation in  $\varepsilon_t$ . Therefore, serial correlation does not affect the asymptotic distribution of the test statistic. For more details, see Phillips and Perron (1988).

As reported in Table 5.4, the conclusions from the ADF test are confirmed by the results of the PP unit root test. Both ADF and PP unit root tests with intercept and trend were also performed. The results from these two tests provide additional support for treating all the individual series as non-stationary in their levels but stationary in their first differences. Consequently, all the individual series are treated as integrated of order one.

### **5.3.2 Selection of Optimal Lag lengths**

The second step for establishing the presence of a long-run relationship among the variables is to determine the optimal lag length for the VAR system. Lag-length misspecification for the VAR model often generates auto-correlated errors (Lütkepohl 2005). To perform the second step, five different criteria—the sequential modified likelihood ratio (LR) test statistic, the Final Prediction Error (FPE) criteria, the Akaike information Criterion (AIC), the Schwarz Information Criterion (SC) and the Hannan-Quinn Information Criterion (HQ) information criterion—are used to determine the lag lengths used in the VAR. These criteria are widely used in the literature (Enders 2010; Lütkepohl 2005).

Table 5.5 reports the results for each criterion with a maximum of 3 lags. Another consideration is the annual frequency of the data, which takes 1 and 2 lags as a standard practice. Thus, the model best fit in regards to the economic theory and the economic nature of Saudi Arabia is the final determinant of the lag choices.

The analysis here is preceded by the use of 1 lag suggested by the SC test, which was consistent in all the VAR models and the model best-fit in response to neoclassical/liberal economic theories and the Saudi Arabian economy.

**Table 5.5: Optimal Lag Lengths of the VAR Models****VAR (1):** Endogenous variables: RGDP, LM1, LINVR, LGEDU, LNOILB and FDI

Exogenous variables: C.

Lag	LogL	LR	FPE	AIC	SC	HQ
0	-248.48	NA	0.02	13.39	13.65	13.48
1	-54.00	317.31	6.47e-06	5.05	6.86*	5.69*
2	-12.23	54.96*	5.53e-06*	4.74	8.11	5.94
3	25.74	37.97	7.57e-06	4.64*	9.55	6.39

**VAR (2):** Endogenous variables: RGDP, LM2, LINVR, LGEDU, LNOILB and FDI

Exogenous variables: C.

Lag	LogL	LR	FPE	AIC	SC	HQ
0	-247.31	NA	0.02	13.33	13.59	13.42
1	-45.30	29.59	4.09e-06	4.59	6.40*	5.23*
2	-4.60	53.55*	3.70e-06*	4.34	7.70	5.54
3	35.79	40.39	4.46e-06	4.11*	9.02	5.86

**VAR (3):** Endogenous variables: RGDP, LBCP, LINVR, LGEDU, LNOILB and FDI

Exogenous variables: C.

Lag	LogL	LR	FPE	AIC	SC	HQ
0	-243.52	NA	0.02	13.13	13.39	13.22
1	-54.78	307.95	6.74e-06	5.09	6.90*	5.73*
2	-13.17	54.74*	5.81e-06*	4.79	8.16	5.99
3	24.12	37.30	8.25e-06	4.73*	9.64	6.47

**VAR (4):** Endogenous variables: RNOIL, LM1, LINVR, LGEDU, LNOILB and FDI

Exogenous variables: C.

Lag	LogL	LR	FPE	AIC	SC	HQ
0	-258.62	NA	0.04	13.92	14.18	14.01

1	-63.34	318.61	1.06e-05	5.54	7.35*	6.18
2	-20.10	56.89*	8.37e-06	5.16	8.52	6.35
3	30.76	50.87	5.82e-06*	4.38*	9.29	6.12*

**VAR (5):** Endogenous variables: RNOIL, LM2, LINVR, LGEDU, LNOILB and FDI

Exogenous variables: C.

Lag	LogL	LR	FPE	AIC	SC	HQ
0	-257.77	NA	0.04	13.88	14.14	13.97
1	-57.09	327.43	7.61e-06	5.21	7.02*	5.85
2	-10.84	60.85*	5.14e-06	4.67	8.03	5.87
3	38.816	49.66	3.81e-06*	3.95*	8.86	5.70*

**VAR (6):** Endogenous variables: RNOIL, LBCP, LINVR, LGEDU, LNOILB and FDI

Exogenous variables: C.

Lag	LogL	LR	FPE	AIC	SC	HQ
0	-264.53	NA	0.06	14.23	14.49	14.33
1	-65.38	324.92	1.18e-05	5.65	7.46*	6.29
2	-9.56	73.44*	4.80e-06*	4.60	7.96	5.80*
3	31.48	41.04	5.60e-06	4.34*	9.25	6.09

\*indicates lag order selected by criterion

LR: Sequential modified LR Test statistic (each test at 5% level)

FPE: Final Prediction Error

AIC: Akaike information Criterion

SC: Schwarz Information Criterion

HQ: Hannan-Quinn Information Criterion

### 5.3.3 Results of the Johansen-Juselius Cointegration Tests

The final step for the Johansen-Juselius cointegration test is to determine the number of cointegration vectors. The cointegration test is sensitive to the presence of deterministic trends (Johansen 1991, 1995). Johansen (1991, 1995) suggests five possible deterministic trends to be analysed:

1. no deterministic trends in the VAR and the cointegrating relationship has no intercept and no trend;
2. no deterministic trends in the VAR and the cointegrating relationship has an intercept and no trend;
3. linear trend in the VAR and the cointegrating relationship only has an intercept;
4. linear trend in the VAR and the cointegrating relationship only has a deterministic trend; and
5. a quadratic trend in the VAR and the cointegrating relationship has a linear deterministic trend.

Following the guidelines provided in the *EViews 7 User's Guide II* (2012: 685-704) and the assumption that all of the data series have stochastic trends, the analysis proceeds to examine the long-run and short-run relationships between GDP and the rest of the macroeconomic variables in the system assuming a linear trend in the VAR and the cointegrating relationship only has an intercept. Table 5.6 presents detailed results of cointegration tests for VAR models including the trace test and the max-eigenvalue test at the five per cent significance level.

In the presence of more than cointegration vector, Johansen and Juselius (1990) suggested that the first eigenvector is the most useful to use in examining the long-run relationship between variables in the system (Mukherjee and Atsuyuki 1995).

The major implications of the results of these two tests are:

1. The macroeconomic variables in the system share a long-run relationship. Hence each variable in the system tends to adjust proportionally to remove short-deviations from the long-run equilibrium.
2. There is at least one direction of causality among the variables in the system as expected by the Granger representation theorem.

**Table 5.6: Johansen-Juselius Cointegration Test**

**Sample (1970-2010), Lags interval: 1 to 1:**

**VAR (1):** RGDP, LM1, LINVR, LGEDU, LNOILB and FDI

Data Trend:	None	None	Linear	Linear	Quadratic
Test Type	No Intercept	Intercept	Intercept	Intercept	Intercept
	No Trend	No Trend	No Trend	Trend	Trend
Trace	2	2	1	2	1
Max-Eig	1	1	1	0	1

**VAR (2):** RGDP, LM2, LINVR, LGEDU, LNOILB and FDI

Data Trend:	None	None	Linear	Linear	Quadratic
Test Type	No Intercept	Intercept	Intercept	Intercept	Intercept
	No Trend	No Trend	No Trend	Trend	Trend
Trace	2	3	2	2	1
Max-Eig	0	1	1	1	1

**VAR (3):** RGDP, LBCP, LINVR, LGEDU, LNOILB and FDI

Data Trend:	None	None	Linear	Linear	Quadratic
Test Type	No Intercept	Intercept	Intercept	Intercept	Intercept
	No Trend	No Trend	No Trend	Trend	Trend
Trace	3	3	2	2	2
Max-Eig	1	1	1	1	2

**VAR (4):** RNOIL, LM1, LINVR, LGEDU, LNOILB and FDI

Data Trend:	None	None	Linear	Linear	Quadratic
Test Type	No Intercept	Intercept	Intercept	Intercept	Intercept
	No Trend	No Trend	No Trend	Trend	Trend
Trace	2	3	3	3	2
Max-Eig	2	1	1	2	2

**VAR (5):** RNOIL, LM2, LINVR, LGEDU, LNOILB and FDI

Data Trend:	None	None	Linear	Linear	Quadratic
Test Type	No Intercept	Intercept	Intercept	Intercept	Intercept
	No Trend	No Trend	No Trend	Trend	Trend
Trace	2	3	2	2	2
Max-Eig	1	2	2	2	2

**VAR (6): RNOIL, LBCP, LINVR, LGEDU, LNOILB and FDI**

Data Trend:	None	None	Linear	Linear	Quadratic
Test Type	No Intercept	Intercept	Intercept	Intercept	Intercept
	No Trend	No Trend	No Trend	Trend	Trend
Trace	3	4	4	4	3
Max-Eig	2	3	3	3	3

\*Critical values based on MacKinnon-Haug-Michelis (1999).

The discovery of a long-run relationship between the economic growth variables (RGDPR and RNOIL) and a set of macroeconomic variables in the Saudi economy is consistent with a large body of empirical studies (e.g. Abu-Bader and Abu-Oarn 2006; Abu-Sharia 2005; Al-Malkawi, Marashdeh and Abdullah 2012; Al-Yousif 2002; Arestis, Demetriades and Luintel 2001; Athanasios and Antonios 2010; Atje and Jovanovic 1993; Demirguc-Kunt and Levine 1996; Demirhan, Aydemir and Inkaya 2011; King and Levine 1993; Levine 1991; Levine and Zervos 1996, 1998; Mishal 2011; Mosesov and Sahawneh 2005; Thangavelu and James 2004).

Given that there is at least one cointegration vector among the variables in the system following a suggestion by Johansen and Juselius (1990) that the first eigenvector is the most useful to use in examining the long-run relationship between variables in the system in the case of existing more than one cointegration vector (Mukherjee and Atsuyuki 1995). The analysis normalises the cointegrating vectors on the economic growth variables (RGDPR and RNOIL).

Equations (5.5, 5.6, 5.7, 5.8, 5.9 and 5.10) are used to investigate relationships and they generate findings, which indicate, in general, that all variables included in the system are statistically significantly contributing to the long-run relationships between the economic growth variables (RGDPR and RNOIL) and the capital market development variables (LM1, LM2 and LBCP) in the system. The control variables (LINVR, LGEDU, LNOILB and FDI) are not an exception. These results are in alignment with the study of the relationship between capital development and economic growth that can be traced back to Schumpeter (1912) and Goldsmith (1969), both of whom investigated the effect of capital market development on economic growth (Demirhan, Aydemir and Inkaya 2011; Levine and Zervos 1998).

Schumpeter's (1912) important early study proposed a causal link whereby capital markets promote economic growth by funding entrepreneurs and channelling capital to them with higher return investments (Ake and Ognaligui 2010; Demirhan, Aydemir and Inkaya 2011; Dritsaki and Dritsaki-Bargiota 2005; Levine and Zervos 1998). Schumpeter's (1912) view was that economic change could not simply be predicated on previous economic conditions alone, although prevailing economic conditions were a result of this. Similarly, Goldsmith (1969) emphasised the effect of the financial structure and development on economic growth. According to modern growth theory, the financial sector may affect long-run growth through its impact on capital accumulation and the rate of technological progress. Financial sector development has a crucial impact on economic growth and poverty reduction, especially in developing countries; without it, economic development may be constrained, even if other necessary conditions are met (DFID 2004).

### 5.3.3.1 Normalised cointegrating coefficients

**VAR (1):** **(5.5)**

$$D(\text{RGDPR}) = A(1,1)*B(1,1)*\text{RGDPR}(-1) + B(1,2)*\text{LM1}(-1) + B(1,3)*\text{LINVR}(-1) + B(1,4)*\text{LGEDU}(-1) + B(1,5)*\text{LNOILB}(-1) + B(1,6)*\text{FDI}(-1) + B(1,7) + C(1,1)*D(\text{RGDPR}(-1)) + C(1,2)*D(\text{LM1}(-1)) + C(1,3)*D(\text{LINVR}(-1)) + C(1,4)*D(\text{LGEDU}(-1)) + C(1,5)*D(\text{LNOILB}(-1)) + C(1,6)*D(\text{FDI}(-1)) + C(1,7)$$

$$D(\text{RGDPR}) = -0.13*(\text{RGDPR}(-1) - 76.10*\text{LM1}(-1) - 55.07*\text{LINVR}(-1) + 51.36*\text{LGEDU}(-1) + 40.01*\text{LNOILB}(-1) - 7.31*\text{FDI}(-1) - 935.51) - 0.43*D(\text{RGDPR}(-1)) - 0.17*D(\text{LM1}(-1)) - 16.02*D(\text{LINVR}(-1)) - 8.98*D(\text{LGEDU}(-1)) + 5.96*D(\text{LNOILB}(-1)) - 1.00*D(\text{FDI}(-1)) + 0.62$$

#### VECM (1) Estimates

Sample (adjusted): 1972 2010

Included observations: 39 after adjustments

Standard errors in ( ), t-statistics in [ ] and \* significant at 95% confident level.

Cointegrating Eq:	CointEq1
RGDPR(-1)	1.00
LM1(-1)	-76.10 (20.01) [-3.80]*

LINVR(-1)	-55.07 (16.86) [-3.26]*
LGEDU(-1)	51.36 (13.02) [ 3.94]*
LNOILB(-1)	40.01 (7.15) [ 5.59]*
FDI(-1)	-7.31 (1.59) [-4.59]*
C	-935.51

**VAR (2):**

**(5.6)**

$$D(\text{RGDPR}) = A(1,1)*B(1,1)*\text{RGDPR}(-1) + B(1,2)*\text{LM2}(-1) + B(1,3)*\text{LINVR}(-1) + B(1,4)*\text{LGEDU}(-1) + B(1,5)*\text{LNOILB}(-1) + B(1,6)*\text{FDI}(-1) + B(1,7) + C(1,1)*D(\text{RGDPR}(-1)) + C(1,2)*D(\text{LM2}(-1)) + C(1,3)*D(\text{LINVR}(-1)) + C(1,4)*D(\text{LGEDU}(-1)) + C(1,5)*D(\text{LNOILB}(-1)) + C(1,6)*D(\text{FDI}(-1)) + C(1,7)$$

$$D(\text{RGDPR}) = -0.087*(\text{RGDPR}(-1) - 113.87*\text{LM2}(-1) - 116.48*\text{LINVR}(-1) + 116.03*\text{LGEDU}(-1) + 43.97*\text{LNOILB}(-1) - 5.95*\text{FDI}(-1) - 1854.82) - 0.44*D(\text{RGDPR}(-1)) + 2.17*D(\text{LM2}(-1)) - 16.56*D(\text{LINVR}(-1)) - 7.744*D(\text{LGEDU}(-1)) + 4.60*D(\text{LNOILB}(-1)) - 0.85*D(\text{FDI}(-1)) + 0.56$$

**VECM (2) Estimates**

Sample (adjusted): 1972 2010

Included observations: 39 after adjustments

Standard errors in ( ), t-statistics in [ ] and \* significant at 95% confident level.

Cointegrating Eq:	CointEq1
RGDPR(-1)	1.00
LM2(-1)	-113.87 (26.48) [-4.30]*
LINVR(-1)	-116.48 (22.87)

		[-5.09]
LGEDU(-1)	116.03 (22.15) [ 5.23]*	
LNOILB(-1)	43.97 (9.13) [ 4.81]*	
FDI(-1)	-5.95 (2.13) [-2.78]*	
C	-1854.82	

**VAR (3):**

**(5.7)**

$$D(\text{RGDPR}) = A(1,1)*B(1,1)*\text{RGDPR}(-1) + B(1,2)*\text{LBCP}(-1) + B(1,3)*\text{LINVR}(-1) + B(1,4)*\text{LGEDU}(-1) + B(1,5)*\text{LNOILB}(-1) + B(1,6)*\text{FDI}(-1) + B(1,7) + C(1,1)*D(\text{RGDPR}(-1)) + C(1,2)*D(\text{LBCP}(-1)) + C(1,3)*D(\text{LINVR}(-1)) + C(1,4)*D(\text{LGEDU}(-1)) + C(1,5)*D(\text{LNOILB}(-1)) + C(1,6)*D(\text{FDI}(-1)) + C(1,7)$$

$$D(\text{RGDPR}) = - 0.47*( \text{RGDPR}(-1) + 26.65*\text{LBCP}(-1) + 13.06*\text{LINVR}(-1) - 51.40*\text{LGEDU}(-1) - 3.50*\text{LNOILB}(-1) - 2.83679748522*\text{FDI}(-1) + 454.095425526) - 0.30*D(\text{RGDPR}(-1)) + 8.03*D(\text{LBCP}(-1)) - 12.72*D(\text{LINVR}(-1)) - 16.66*D(\text{LGEDU}(-1)) + 0.55*D(\text{LNOILB}(-1)) - 1.50*D(\text{FDI}(-1)) + 0.31$$

**VECM (3) Estimates**

Sample (adjusted): 1972 2010

Included observations: 39 after adjustments

Standard errors in ( ), t-statistics in [ ] and \* significant at 95% confident level.

Cointegrating Eq:	CointEq1
RGDPR(-1)	1.00
LBCP(-1)	26.65 (5.03) [ 5.29]*
LINVR(-1)	13.05 (4.80)

	[ 2.71]*
LGEDU(-1)	-51.40 (7.85) [-6.54]*
LNOILB(-1)	-3.50 (3.91) [-0.89]
FDI(-1)	-2.83 (0.38) [-7.31]*
C	454.09

**VAR (4):**

**(5.8)**

$$D(RNOIL) = A(1,1)*(B(1,1)*RNOIL(-1) + B(1,2)*LM1(-1) + B(1,3)*LINVR(-1) + B(1,4)*LGEDU(-1) + B(1,5)*LNOILB(-1) + B(1,6)*FDI(-1) + B(1,7)) + C(1,1)*D(RNOIL(-1)) + C(1,2)*D(LM1(-1)) + C(1,3)*D(LINVR(-1)) + C(1,4)*D(LGEDU(-1)) + C(1,5)*D(LNOILB(-1)) + C(1,6)*D(FDI(-1)) + C(1,7)$$

$$D(RNOIL) = 0.01*(RNOIL(-1) + 629.42*LM1(-1) + 509.256924163*LINVR(-1) - 475.82*LGEDU(-1) - 255.59*LNOILB(-1) + 53.10*FDI(-1) + 8159.29) + 0.03*D(RNOIL(-1)) - 14.55*D(LM1(-1)) - 13.40*D(LINVR(-1)) + 6.85*D(LGEDU(-1)) - 9.26*D(LNOILB(-1)) - 1.73*D(FDI(-1)) + 1.70$$

**VECM (4) Estimates**

Sample (adjusted): 1972 2010

Included observations: 39 after adjustments

Standard errors in ( ), t-statistics in [ ] and \* significant at 95% confident level.

Cointegrating Eq:	CointEq1
RNOIL(-1)	1.00
LM1(-1)	629.42 (141.63) [ 4.44]*
LINVR(-1)	509.25 (120.96) [ 4.21]*
LGEDU(-1)	-475.82

	(93.34)
	[-5.09]*
LNOILB(-1)	-255.59
	(51.30)
	[-4.98]*
FDI(-1)	53.10
	(11.08)
	[ 4.79]*
C	8159.29

**VAR (5):**

**(5.9)**

$$D(\text{RNOIL}) = A(1,1) \cdot (B(1,1) \cdot \text{RNOIL}(-1) + B(1,2) \cdot \text{LM2}(-1) + B(1,3) \cdot \text{LINVR}(-1) + B(1,4) \cdot \text{LGEDU}(-1) + B(1,5) \cdot \text{LNOILB}(-1) + B(1,6) \cdot \text{FDI}(-1) + B(1,7)) + C(1,1) \cdot D(\text{RNOIL}(-1)) + C(1,2) \cdot D(\text{LM2}(-1)) + C(1,3) \cdot D(\text{LINVR}(-1)) + C(1,4) \cdot D(\text{LGEDU}(-1)) + C(1,5) \cdot D(\text{LNOILB}(-1)) + C(1,6) \cdot D(\text{FDI}(-1)) + C(1,7)$$

$$D(\text{RNOIL}) = - 0.01 \cdot (\text{RNOIL}(-1) - 291.42 \cdot \text{LM2}(-1) - 348.23 \cdot \text{LINVR}(-1) + 337.19 \cdot \text{LGEDU}(-1) + 106.06 \cdot \text{LNOILB}(-1) - 16.85 \cdot \text{FDI}(-1) - 5257.40) + 0.02 \cdot D(\text{RNOIL}(-1)) - 11.70 \cdot D(\text{LM2}(-1)) - 12.53 \cdot D(\text{LINVR}(-1)) + 6.95 \cdot D(\text{LGEDU}(-1)) - 10.17 \cdot D(\text{LNOILB}(-1)) - 1.71 \cdot D(\text{FDI}(-1)) + 1.73$$

**VECM (5) Estimates**

Sample (adjusted): 1972 2010

Included observations: 39 after adjustments

Standard errors in ( ), t-statistics in [ ] and \* significant at 95% confident level.

Cointegrating Eq:	CoIntEq1
RNOIL(-1)	1.00
LM2(-1)	-291.42
	(69.01)
	[-4.22]*
LINVR(-1)	-348.23
	(59.83)
	[-5.82]*
LGEDU(-1)	337.19
	(57.70)
	[ 5.84]*

LNOILB(-1)	106.06 (23.92) [ 4.43]*
FDI(-1)	-16.85 (5.49) [-3.06]*
C	-5257.40

**VAR (6):**

**(5.10)**

$$D(RNOIL) = A(1,1)*(B(1,1)*RNOIL(-1) + B(1,2)*LBCP(-1) + B(1,3)*LINVR(-1) + B(1,4)*LGEDU(-1) + B(1,5)*LNOILB(-1) + B(1,6)*FDI(-1) + B(1,7)) + C(1,1)*D(RNOIL(-1)) + C(1,2)*D(LBCP(-1)) + C(1,3)*D(LINVR(-1)) + C(1,4)*D(LGEDU(-1)) + C(1,5)*D(LNOILB(-1)) + C(1,6)*D(FDI(-1)) + C(1,7)$$

$$D(RNOIL) = 0.00*( RNOIL(-1) + 2391.89*LBCP(-1) - 5131.65*LINVR(-1) - 496.74*LGEDU(-1) - 3073.78*LNOILB(-1) + 454.83*FDI(-1) - 4883.34) - 0.03*D(RNOIL(-1)) + 12.62*D(LBCP(-1)) - 1.74*D(LINVR(-1)) - 10.36*D(LGEDU(-1)) + 2.09*D(LNOILB(-1)) - 2.66*D(FDI(-1)) - 0.91$$

**VECM (6) Estimates**

Sample (adjusted): 1972 2010

Included observations: 39 after adjustments

Standard errors in ( ), t-statistics in [ ] and \* significant at 95% confident level.

Cointegrating Eq:	CointEq1
RNOIL(-1)	1.00
LBCP(-1)	2391.89 (868.63) [ 2.75]*
LINVR(-1)	-5131.65 (843.60) [-6.08]*
LGEDU(-1)	-496.74 (1334.15) [-0.37]
LNOILB(-1)	-3073.78 (676.44) [-4.54]*

FDI(-1)	454.83 (65.75) [ 6.91]*
C	-4883.34

The normalised cointegrating vectors given in Equations (5.5, 5.6, 5.7, 5.8, 5.9 and 5.10) suggest the following results.

#### 5.3.3.2 VAR (1)

A significant negative long-run relationship between RGDP and LM1 is found in this VAR model. Vogel and Buser (1976) argue that the ratio of currency to the narrow money stock (M1) measure can assess the complexity (or sophistication) of domestic capital markets. A decrease in this ratio signifies a higher diversification of financial institutions and greater availability and use of non-currency (bank deposits) forms of transaction media.

This result is in line with, King and Levine (1993), Levine and Zervos (1998), Darrat (1999), Al-Yousif (2002), Ake and Ognaligui (2010), Demirhan, Aydemir and Inkaya (2011), Dritsaki and Dritsaki-Bargiota (2005).

#### 5.3.3.3 VAR (2)

A significant negative long-run relationship between RGDP and LM2 is found in this VAR model. The ratio of broad money stock (M2) to nominal GDP. This measure, suggested by McKinnon (1973) and Shaw (1973), and recently used by King and Levine (1993), is often called the monetisation variable, which could measure the size of the capital market or 'financial depth'. An increase in this variable indicates further expansion in the financial intermediary sector relative to the rest of the economy since it implies faster accumulation of a wide range of financial assets (primarily saving accounts).

This result is in line with Xu (2000) findings of a negative long term relationship between financial development and economic growth in the case of Saudi Arabia using data from 1962-1992.

This is contrasted with empirical studies by King and Levine (1993), Levine and Zervos (1998), Darrat (1999), Al-Yousif (2002), Ake and Ognaligui (2010), Demirhan, Aydemir and Inkaya (2011), Dritsaki and Dritsaki-Bargiota (2005).

#### 5.3.3.4 VAR (3)

A significant positive long-run relationship between RGDP and LBCP is found in this VAR model. This result is in alignment with Masih et. al. (2009) and Al-Awad and Harb (2005). Similar results found by Chuah and Thai (2004), they used real non-hydrocarbon GDP in order to capture the real impact of bank based development variables on economic growth for six GCC countries including Saudi Arabia. Chuah and Thai (2004) used annual data over the period 1962-1999 for Saudi Arabia. They applied a bivariate time series model and concluded that capital market development provides critical services to increase the efficiency of intermediation, leading to a more efficient allocation of resources, a more rapid accumulation of physical and human capital, and faster technological innovation.

This result is contrasted with Goaid et. al. (2011) investigated 16 MENA countries using annual data over the period 1962-2006. They found a negative and significant relationship in the long run when using bank based variables. This is also contrasted with the 'independent' view that argues that capital market and economic growth is not causally related (e.g. Stiglitz 1985, Mayer 1988, Boyd and Smith 1998, Boulila and Trabelsi 2004, Mosesov and Sahawneh 2005, Abu-Bader and Abu-Qarn 2006, Naceur and Ghazouani 2007). These empirics were mostly conducted in the developing Middle East and North Africa (MENA) countries. In addition, this is supported by Mohamed (2008) who related this result to the inefficient allocation of resources by banks, the absence of proper investment climate, and to the poor quality of credit disposal of the banking sector. Furthermore, this lack of relationship between BCP and GDP can be related as reviewed in chapter 2 to the banking environment in Saudi Arabia that is characterised of;

1. The issue of shareholder concentration is one of the major concerns for the Saudi banking sector, as it is for most other publicly listed Saudi joint stock companies. The trend towards far fewer shareholders is unmistakable and there are several

implications. First, holding a higher concentration of shares in fewer hands might enable some business groups to influence day-to-day operations and bank management through board representation. Second, the concentration of shares in a few hands with block votes ‘de-democratises’ the role of annual general meetings in joint stock companies. Concentration eliminates transparency and leads to joint stock companies operating like partnerships.

2. The issue of competition, the same three banks, NCB, SAMBA and Al Rajhi, dominated, although Riyad Bank came a close fourth. Despite new entrants into the Saudi banking sector, the top three continued to dominate, the only erosion being seen in their loan and asset share. Studies conducted in the area of bank concentration and economic efficiency indicates that a high concentration ratio may induce banks to charge borrowers with higher interest rates than when there is a low banking concentration. According to Saudi studies, the non-interventionist policy of SAMA in this area of bank regulation could hamper the growth of companies, particularly SMEs, due to more restrictive credit conditions by the banks within a system of imperfect competition (Essayad, Ramady and Al Hejji 2003).
3. Saudi banks have traditionally a low loans-to-deposit ratio and thus more liquidity compared to other Western institutions. The majority of bank lending was of less than a year’s duration, which is not conducive to long-term industrial investment and planning. Filling a need for long-term investment capital was the prime reason for the Saudi government’s establishment of its own lending agencies.
4. Saudi banks suffer from widening asset-liability maturity mismatch, raising major concerns about banks’ liquidity risk as well as credit risk.
5. Consumer loans represented around 38 per cent of all private sector loans. According to SAMA (2011), the majority were for financing motor vehicles and ‘other’ unspecified personal loans; real estate and credit-card financing remained steady.

Commercial banks are the second largest supplier of credit in the Saudi economy after the government’s mutual funds and special purposes banks. In the modern economy, they create most of the money supply by issuing loans. Therefore, when banks create an excess supply of money, the prices of assets, goods, and services tend to rise. Conversely, when not enough money is created, the prices of assets, goods, and services decrease (Ramady 2010).

#### 5.3.3.5 VAR (4)

A significant positive long-run relationship between RNOIL and LM1 is found in this VAR model. This result is contrasted to the VAR (1) however in line with Darrat (1999) who investigated the relationship between financial deepening and economic growth for three developing Middle-Eastern countries (Saudi Arabia, Turkey and the UAE). He applied Granger-Causality tests and VAR method over the period of 1964-1993 for Saudi Arabia. The study found long run bidirectional relationship between financial deepening variable (M1) and economic growth in the case of Saudi Arabia.

#### 5.3.3.6 VAR (5)

A significant negative long-run relationship between RNOIL and LM2 is found in this VAR model. This result is similar to the VAR (2) model.

#### 5.3.3.7 VAR (6)

A significant positive long-run relationship between RNOIL and LBCP is found in this VAR model. This result is similar to the VAR (3) model and in line with Chuah and Thai (2004), they used real non-hydrocarbon GDP in order to capture the real impact of bank based development variables on economic growth for six GCC countries including Saudi Arabia. Chuah and Thai (2004) used annual data over the period 1962-1999 for Saudi Arabia. They applied a bivariate time series model and concluded that capital market development provides critical services to increase the efficiency of intermediation, leading to a more efficient allocation of resources, a more rapid accumulation of physical and human capital, and faster technological innovation.

### 5.4 Short-Run Analysis

Having established that all of the macroeconomic variables in the analysis are cointegrated, the fundamental question that needs to be asked is: what is the nature of the dynamic relationship between these variables in the short run? This question can be answered using causality tests, the results of which are presented below.

### 5.4.1 Causality Tests

Given that RGDPR, RNOIL, LINVR, LM1, LM2, LBCP, LGEDU, LNOILB and FDI are cointegrated, the short-run analysis for these variables is performed using a VECM as developed by Engle and Granger (1987). Granger (1988) states that using a VECM rather than a VAR in differences will not result in any loss in long-run information, as is the case for the Granger causality test. The following two sections present the results of both the VECM and Granger causality tests.

#### 5.4.1.1 VECM Causality Tests

In this section, a VECM is estimated to investigate the short- and long-run dynamic adjustment of a system of cointegrated variables. The estimation equation 5.11 is:

$$\Delta X_t = \delta + \sum_{t=1}^p \Gamma \Delta X_{t-i} + \Pi X_{t-i} + v_t \quad (5.11)$$

where  $\Delta X_t$  is an  $n \times 1$  vector of variables and  $\delta$  is an  $(n \times 1)$  vector of constants.  $\Pi$  is the error-correction mechanism, which has two components:  $\Pi = \alpha \beta'$  where  $\alpha$  is an  $(n \times 1)$  column vector representing the speed of the short-run adjustment to the long-run equilibrium, and  $\beta'$  is a  $(1 \times n)$  cointegrating vector with the matrix of long-run coefficients.  $\Gamma$  is an  $(n \times n)$  matrix representing the coefficients of the short-run dynamics. Finally,  $v_t$  is an  $(n \times 1)$  vector of white noise error terms, and  $p$  is the order of the auto-regression. Interestingly, Equation 5.11 has two channels of causation. The first channel is through the lagged exogenous variables' coefficients. The second channel of causation is through the error-correction term (ECT), which captures adjustment of the system towards its long-run equilibrium (see Table 5.7).

Since the VECM technique is a more general case of the standard VAR model, the analysis proceeds to determine the lag length for the dynamic terms, i.e. the lagged variables in first difference form, the number of cointegrating vectors and the structural cointegrating vector of the VECM. The optimal lag is  $p=1$  based on the previous equations (5.5, 5.6, 5.7, 5.8, 5.9 and 5.10).

**Table 5.7: Vector Error Correction Estimates**

Sample (adjusted): 1972 2010, Included observations: 39 after adjustments

Standard errors in ( ) and t-statistics in [ ]

VECM (1):

<b>Error Correction:</b>	<b>D(RGDPR)</b>	<b>D(LM1)</b>	<b>D(LINVR)</b>	<b>D(LGEDU)</b>	<b>D(LNOILB)</b>	<b>D(FDI)</b>
<b>CointEq1</b>	-0.129	0.001	0.004	4.07E-05	-0.001	0.057
	(0.035)	(0.001)	(0.001)	(0.000)	(0.002)	(0.014)
	[-3.669]	[ 1.119]	[ 2.646]	[ 0.106]	[-0.403]	[ 4.068]
<b>D(RGDPR(-1))</b>	-0.436	0.000	-0.000	0.001	-0.000	-0.080
	(0.127)	(0.005)	(0.005)	(0.001)	(0.009)	(0.050)
	[-3.420]	[ 0.079]	[-0.128]	[ 0.925]	[-0.011]	[-1.573]
<b>D(LM1(-1))</b>	-0.178	0.043	0.966	0.044	0.223	-3.499
	(7.88)	(0.319)	(0.349)	(0.085)	(0.596)	(3.143)
	[-0.022]	[ 0.136]	[ 2.764]	[ 0.515]	[ 0.375]	[-1.113]
<b>D(LINVR(-1))</b>	-16.023	0.402	-0.096	-0.007	-0.001	5.110
	(3.553)	(0.143)	(0.157)	(0.038)	(0.268)	(1.417)
	[-4.508]	[ 2.795]	[-0.613]	[-0.203]	[-0.007]	[ 3.605]
<b>D(LGEDU(-1))</b>	-8.988	-0.749	-0.520	0.243	1.344	2.460
	(16.434)	(0.665)	(0.728)	(0.177)	(1.243)	(6.553)
	[-0.546]	[-1.126]	[-0.714]	[ 1.368]	[ 1.081]	[ 0.375]
<b>D(LNOILB(-1))</b>	5.969	0.044	-0.027	0.008	0.034	-0.525
	(3.663)	(0.148)	(0.162)	(0.039)	(0.277)	(1.460)
	[ 1.629]	[ 0.297]	[-0.168]	[ 0.209]	[ 0.125]	[-0.359]
<b>D(FDI(-1))</b>	-1.001	0.025	-0.001	-0.000	-0.018	-0.040
	(0.293)	(0.011)	(0.013)	(0.003)	(0.022)	(0.117)
	[-3.407]	[ 2.132]	[-0.130]	[-0.223]	[-0.846]	[-0.345]
<b>C</b>	0.624	0.048	0.055	0.044	-0.008	-0.076
	(1.279)	(0.051)	(0.056)	(0.013)	(0.096)	(0.510)
	[ 0.487]	[ 0.929]	[ 0.982]	[ 3.227]	[-0.091]	[-0.149]
<b>R-squared</b>	0.663	0.313	0.375	0.095	0.092	0.748
<b>Adj. R-squared</b>	0.586	0.158	0.234	-0.108	-0.111	0.691
<b>Sum sq. resids</b>	575.650	0.942	1.131	0.067	3.294	91.528
<b>S.E. equation</b>	4.309	0.174	0.191	0.046	0.325	1.718
<b>F-statistic</b>	8.713	2.024	2.662	0.467	0.454	13.160
<b>Log likelihood</b>	-107.831	17.252	13.686	68.663	-7.146	-71.973
<b>Akaike AIC</b>	5.940	-0.474	-0.291	-3.110	0.776	4.101
<b>Schwarz SC</b>	6.281	-0.133	0.049	-2.769	1.117	4.442
<b>Mean dependent</b>	-0.379	0.031	0.043	0.061	0.082	0.207

<b>S.D. dependent</b>	6.704	0.190	0.218	0.044	0.309	3.092
<b>Determinant resid covariance (dof adj.)</b>		2.35E-06				
<b>Determinant resid covariance</b>		5.94E-07				
<b>Log likelihood</b>		-52.461				
<b>Akaike information criterion</b>		5.459				
<b>Schwarz criterion</b>		7.762				

**VECM (2):**

<b>Error Correction:</b>	<b>D(RGDPR)</b>	<b>D(LM2)</b>	<b>D(LINVR)</b>	<b>D(LGEDU)</b>	<b>D(LNOILB)</b>	<b>D(FDI)</b>
<b>CointEq1</b>	-0.087	0.000	0.004	-4.40E-05	-0.000	0.0370
	(0.027)	(0.000)	(0.001)	(0.000)	(0.002)	(0.011)
	[-3.131]	[ 0.773]	[ 3.654]	[-0.152]	[-0.317]	[ 3.131]
<b>D(RGDPR(-1))</b>	-0.446	0.000	-0.000	0.001	-0.001	-0.072
	(0.135)	(0.004)	(0.005)	(0.001)	(0.009)	(0.057)
	[-3.308]	[ 0.077]	[-0.088]	[ 0.810]	[-0.108]	[-1.262]
<b>D(LM2(-1))</b>	2.172	0.012	1.073	0.019	0.143	-4.525
	(9.075)	(0.318)	(0.358)	(0.093)	(0.656)	(3.841)
	[ 0.239]	[ 0.040]	[ 2.991]	[ 0.206]	[ 0.218]	[-1.178]
<b>D(LINVR(-1))</b>	-16.566	0.365	-0.008	-0.011	-0.008	5.234
	(3.878)	(0.136)	(0.153)	(0.040)	(0.280)	(1.641)
	[-4.271]	[ 2.685]	[-0.056]	[-0.275]	[-0.029]	[ 3.189]
<b>D(LGEDU(-1))</b>	-7.744	-0.598	-0.546	0.255	1.398	1.600
	(17.247)	(0.605)	(0.682)	(0.178)	(1.248)	(7.299)
	[-0.449]	[-0.987]	[-0.801]	[ 1.434]	[ 1.119]	[ 0.219]
<b>D(LNOILB(-1))</b>	4.605	0.085	-0.076	0.005	-0.029	0.391
	(3.807)	(0.133)	(0.150)	(0.039)	(0.275)	(1.611)
	[ 1.209]	[ 0.639]	[-0.507]	[ 0.127]	[-0.108]	[ 0.243]
<b>D(FDI(-1))</b>	-0.859	0.022	-0.009	-0.000	-0.016	-0.103
	(0.322)	(0.011)	(0.012)	(0.003)	(0.023)	(0.136)
	[-2.666]	[ 2.013]	[-0.769]	[-0.103]	[-0.722]	[-0.756]
<b>C</b>	0.564	0.042	0.048	0.044	-0.005	-0.023
	(1.375)	(0.048)	(0.054)	(0.014)	(0.099)	(0.582)
	[ 0.409]	[ 0.889]	[ 0.884]	[ 3.157]	[-0.059]	[-0.040]
<b>R-squared</b>	0.627	0.303	0.450	0.090	0.081	0.686
<b>Adj. R-squared</b>	0.543	0.146	0.326	-0.115	-0.125	0.615
<b>Sum sq. resids</b>	636.835	0.786	0.995	0.067	3.336	114.073
<b>S.E. equation</b>	4.532	0.159	0.179	0.046	0.328	1.918
<b>F-statistic</b>	7.450	1.933	3.631	0.439	0.392	9.684

<b>Log likelihood</b>	-109.801	20.793	16.181	68.552	-7.392	-76.267
<b>Akaike AIC</b>	6.041	-0.656	-0.419	-3.105	0.789	4.321
<b>Schwarz SC</b>	6.382	-0.314	-0.078	-2.764	1.130	4.662
<b>Mean dependent</b>	-0.379	0.036	0.043	0.061	0.082	0.207
<b>S.D. dependent</b>	6.704	0.172	0.218	0.044	0.309	3.092
<b>Determinant resid covariance (dof adj.)</b>		1.81E-06				
<b>Determinant resid covariance</b>		4.57E-07				
<b>Log likelihood</b>		-47.367				
<b>Akaike information criterion</b>		5.198				
<b>Schwarz criterion</b>		7.501				

**VECM (3):**

<b>Error Correction:</b>	<b>D(RGDPR)</b>	<b>D(LBCP)</b>	<b>D(LINVR)</b>	<b>D(LGEDU)</b>	<b>D(LNOILB)</b>	<b>D(FDI)</b>
<b>CointEq1</b>	-0.470	-0.003	-0.012	0.000	-0.007	0.254
	(0.116)	(0.003)	(0.005)	(0.001)	(0.007)	(0.047)
	[-4.037]	[-1.009]	[-2.273]	[ 0.235]	[-0.957]	[ 5.323]
<b>D(RGDPR(-1))</b>	-0.306	0.006	0.002	0.001	0.009	-0.174
	(0.140)	(0.004)	(0.006)	(0.001)	(0.008)	(0.057)
	[-2.189]	[ 1.296]	[ 0.429]	[ 0.816]	[ 1.079]	[-3.035]
<b>D(LBCP(-1))</b>	8.029	0.594	0.640	0.042	1.338	-10.269
	(6.405)	(0.213)	(0.291)	(0.067)	(0.408)	(2.631)
	[ 1.253]	[ 2.791]	[ 2.194]	[ 0.634]	[ 3.274]	[-3.902]
<b>D(LINVR(-1))</b>	-12.726	0.096	-0.210	-0.015	-0.053	4.109
	(3.497)	(0.116)	(0.159)	(0.036)	(0.223)	(1.436)
	[-3.639]	[ 0.833]	[-1.322]	[-0.410]	[-0.239]	[ 2.860]
<b>D(LGEDU(-1))</b>	-16.660	0.361	-0.765	0.215	0.102	11.189
	(17.515)	(0.582)	(0.798)	(0.185)	(1.117)	(7.196)
	[-0.951]	[ 0.621]	[-0.958]	[ 1.161]	[ 0.091]	[ 1.554]
<b>D(LNOILB(-1))</b>	0.559	0.073	-0.041	-0.018	-0.312	4.003
	(2.758)	(0.091)	(0.125)	(0.029)	(0.175)	(1.133)
	[ 0.202]	[ 0.797]	[-0.332]	[-0.642]	[-1.778]	[ 3.532]
<b>D(FDI(-1))</b>	-1.507	-0.008	-0.005	-0.000	-0.031	0.232
	(0.312)	(0.010)	(0.014)	(0.003)	(0.019)	(0.128)
	[-4.824]	[-0.854]	[-0.368]	[-0.099]	[-1.577]	[ 1.807]
<b>C</b>	0.317	0.034	0.009	0.043	-0.092	0.427
	(1.376)	(0.045)	(0.062)	(0.014)	(0.087)	(0.565)
	[ 0.230]	[ 0.747]	[ 0.150]	[ 3.003]	[-1.052]	[ 0.756]
	0.654	0.384	0.323	0.115	0.338	0.725

<b>R-squared</b>						
<b>Adj. R-squared</b>	0.576	0.246	0.170	-0.084	0.189	0.663
<b>Sum sq. resids</b>	590.279	0.652	1.226	0.066	2.402	99.654
<b>S.E. equation</b>	4.363	0.145	0.198	0.046	0.278	1.792
<b>F-statistic</b>	8.387	2.772	2.114	0.578	2.266	11.726
<b>Log likelihood</b>	-108.320	24.418	12.116	69.099	-0.990	-73.632
<b>Akaike AIC</b>	5.965	-0.841	-0.211	-3.133	0.461	4.186
<b>Schwarz SC</b>	6.306	-0.500	0.130	-2.792	0.802	4.527
<b>Mean dependent</b>	-0.379	0.157	0.043	0.061	0.082	0.207
<b>S.D. dependent</b>	6.704	0.167	0.218	0.044	0.309	3.092
<b>Determinant resid covariance (dof adj.)</b>	3.38E-06					
<b>Determinant resid covariance</b>	8.53E-07					
<b>Log likelihood</b>	-59.524					
<b>Akaike information criterion</b>	5.821					
<b>Schwarz criterion</b>	8.125					

**VECM (4):**

<b>Error Correction:</b>	<b>D(RNOIL)</b>	<b>D(LM1)</b>	<b>D(LINVR)</b>	<b>D(LGEDU)</b>	<b>D(LNOILB)</b>	<b>D(FDI)</b>
<b>CointEq1</b>	0.011	-0.000	-0.000	2.55E-05	0.000	-0.009
	(0.008)	(0.000)	(0.000)	(5.4E-05)	(0.000)	(0.001)
	[ 1.248]	[-1.240]	[-2.695]	[ 0.470]	[ 0.924]	[-4.920]
<b>D(RNOIL(-1))</b>	0.032	-0.000	0.001	0.000	-3.41E-05	0.028
	(0.178)	(0.003)	(0.004)	(0.001)	(0.007)	(0.038)
	[ 0.179]	[-0.084]	[ 0.426]	[ 0.516]	[-0.004]	[ 0.743]
<b>D(LM1(-1))</b>	-14.55	0.056	1.076	0.009	0.043	0.537
	(14.98)	(0.334)	(0.368)	(0.090)	(0.621)	(3.206)
	[-0.970]	[ 0.170]	[ 2.923]	[ 0.102]	[ 0.070]	[ 0.167]
<b>D(LINVR(-1))</b>	-13.406	0.431	-0.039	-0.018	-0.067	6.300
	(6.657)	(0.148)	(0.163)	(0.040)	(0.276)	(1.424)
	[-2.013]	[ 2.902]	[-0.240]	[-0.461]	[-0.243]	[ 4.424]
<b>D(LGEDU(-1))</b>	6.858	-0.707	-0.451	0.232	1.354	3.487
	(29.745)	(0.664)	(0.730)	(0.179)	(1.234)	(6.363)
	[ 0.230]	[-1.065]	[-0.617]	[ 1.294]	[ 1.097]	[ 0.548]
<b>D(LNOILB(-1))</b>	-9.265	0.057	0.028	0.005	0.049	0.513
	(6.298)	(0.140)	(0.154)	(0.038)	(0.261)	(1.347)
	[-1.471]	[ 0.407]	[ 0.182]	[ 0.153]	[ 0.188]	[ 0.380]
<b>D(FDI(-1))</b>	-1.738	0.025	-0.000	-0.001	-0.016	0.006

	(0.506)	(0.011)	(0.012)	(0.003)	(0.021)	(0.108)
	[-3.434]	[ 2.215]	[-0.066]	[-0.418]	[-0.786]	[ 0.060]
<b>C</b>	1.709	0.042	0.040	0.046	-0.002	-0.399
	(2.288)	(0.051)	(0.056)	(0.013)	(0.094)	(0.489)
	[ 0.747]	[ 0.830]	[ 0.717]	[ 3.400]	[-0.026]	[-0.816]
<b>R-squared</b>	0.404	0.320	0.377	0.086	0.112	0.764
<b>Adj. R-squared</b>	0.269	0.167	0.236	-0.119	-0.087	0.711
<b>Sum sq. resids</b>	1871.496	0.932	1.129	0.068	3.221	85.643
<b>S.E. equation</b>	7.7698	0.173	0.190	0.046	0.322	1.662
<b>F-statistic</b>	3.005	2.092	2.679	0.421	0.563	14.369
<b>Log likelihood</b>	-130.821	17.456	13.733	68.477	-6.712	-70.677
<b>Akaike AIC</b>	7.119	-0.484	-0.294	-3.101	0.754	4.034
<b>Schwarz SC</b>	7.460	-0.1436	0.047	-2.760	1.095	4.376
<b>Mean dependent</b>	-0.182	0.031	0.043	0.061	0.082	0.207
<b>S.D. dependent</b>	9.092	0.190	0.218	0.044	0.309	3.092
<b>Determinant resid covariance (dof adj.)</b>	4.16E-06					
<b>Determinant resid covariance</b>		1.05E-06				
<b>Log likelihood</b>		-63.547				
<b>Akaike information criterion</b>		6.028				
<b>Schwarz criterion</b>		8.331				

#### VECM (5):

<b>Error Correction:</b>	<b>D(RNOIL)</b>	<b>D(LM2)</b>	<b>D(LINVR)</b>	<b>D(LGEDU)</b>	<b>D(LNOILB)</b>	<b>D(FDI)</b>
<b>CointEq1</b>	-0.013	0.000	0.001	-5.54E-05	-0.000	0.015
	(0.018)	(0.000)	(0.000)	(0.000)	(0.000)	(0.004)
	[-0.721]	[ 0.698]	[ 3.735]	[-0.514]	[-0.472]	[ 3.609]
<b>D(RNOIL(-1))</b>	0.026	-0.001	0.002	0.000	-0.000	0.028
	(0.190)	(0.003)	(0.004)	(0.001)	(0.007)	(0.046)
	[ 0.137]	[-0.434]	[ 0.604]	[ 0.415]	[-0.053]	[ 0.617]
<b>D(LM2(-1))</b>	-11.70	-0.074	1.208	-0.002	0.097	-0.857
	(17.11)	(0.344)	(0.387)	(0.101)	(0.710)	(4.145)
	[-0.683]	[-0.216]	[ 3.117]	[-0.027]	[ 0.137]	[-0.206]
<b>D(LINVR(-1))</b>	-12.534	0.370	0.030	-0.019	-0.028	5.957
	(6.868)	(0.138)	(0.155)	(0.040)	(0.284)	(1.663)
	[-1.824]	[ 2.683]	[ 0.193]	[-0.482]	[-0.099]	[ 3.581]
<b>D(LGEDU(-1))</b>	6.951	-0.549	-0.538	0.244	1.422	1.713
	(30.24)	(0.608)	(0.685)	(0.179)	(1.255)	(7.325)
	[ 0.229]	[-0.902]	[-0.786]	[ 1.357]	[ 1.133]	[ 0.233]

<b>D(LNOILB(-1))</b>	-10.171	0.085	-0.034	0.001	-0.021	1.097
	(6.429)	(0.129)	(0.145)	(0.038)	(0.266)	(1.557)
	[-1.582]	[ 0.663]	[-0.235]	[ 0.049]	[-0.078]	[ 0.704]
<b>D(FDI(-1))</b>	-1.712	0.023	-0.010	-0.000	-0.014	-0.077
	(0.545)	(0.010)	(0.012)	(0.003)	(0.022)	(0.132)
	[-3.138]	[ 2.107]	[-0.810]	[-0.237]	[-0.650]	[-0.589]
<b>C</b>	1.731	0.042	0.037	0.046	-0.005	-0.249
	(2.364)	(0.047)	(0.053)	(0.014)	(0.098)	(0.572)
	[ 0.732]	[ 0.897]	[ 0.693]	[ 3.329]	[-0.057]	[-0.435]
<b>R-squared</b>	0.385	0.307	0.453	0.084	0.084	0.688
<b>Adj. R-squared</b>	0.246	0.151	0.330	-0.122	-0.121	0.618
<b>Sum sq. resids</b>	1930.536	0.781	0.990	0.068	3.323	113.234
<b>S.E. equation</b>	7.891	0.158	0.178	0.046	0.327	1.911
<b>F-statistic</b>	2.778	1.970	3.676	0.406	0.411	9.788
<b>Log likelihood</b>	-131.427	20.906	16.290	68.419	-7.318	-76.123
<b>Akaike AIC</b>	7.150	-0.661	-0.425	-3.098	0.785	4.314
<b>Schwarz SC</b>	7.491	-0.320	-0.083	-2.757	1.126	4.655
<b>Mean dependent</b>	-0.182	0.036	0.043	0.061	0.082	0.207
<b>S.D. dependent</b>	9.092	0.172	0.218	0.044	0.309	3.092
<b>Determinant resid covariance (dof adj.)</b>		2.96E-06				
<b>Determinant resid covariance</b>		7.47E-07				
<b>Log likelihood</b>		-56.942				
<b>Akaike information criterion</b>		5.689				
<b>Schwarz criterion</b>		7.992				

**VECM (6):**

<b>Error Correction:</b>	<b>D(RNOIL)</b>	<b>D(LBCP)</b>	<b>D(LINVR)</b>	<b>D(LGEDU)</b>	<b>D(LNOILB)</b>	<b>D(FDI)</b>
<b>CointEq1</b>	0.003	-7.75E-06	0.000	-3.06E-08	0.000	-0.001
	(0.001)	(2.4E-05)	(3.0E-05)	(7.7E-06)	(4.2E-05)	(0.000)
	[ 3.627]	[-0.318]	[ 3.568]	[-0.003]	[ 2.648]	[-3.318]
<b>D(RNOIL(-1))</b>	-0.035	0.001	-0.006	0.000	-0.006	0.100
	(0.139)	(0.003)	(0.003)	(0.000)	(0.005)	(0.043)
	[-0.256]	[ 0.462]	[-1.705]	[ 0.332]	[-1.287]	[ 2.307]
<b>D(LBCP(-1))</b>	12.627	0.386	0.599	0.034	1.365	-4.841
	(8.060)	(0.179)	(0.217)	(0.056)	(0.308)	(2.507)
	[ 1.566]	[ 2.152]	[ 2.756]	[ 0.606]	[ 4.426]	[-1.930]
<b>D(LINVR(-1))</b>	-1.742	0.069	0.009	-0.015	0.198	1.791

	(5.892)	(0.131)	(0.159)	(0.041)	(0.225)	(1.833)
	[-0.295]	[ 0.526]	[ 0.060]	[-0.364]	[ 0.880]	[ 0.977]
<b>D(LGEDU(-1))</b>	-10.368	0.501	-0.693	0.205	0.005	6.542
	(26.43)	(0.589)	(0.713)	(0.185)	(1.011)	(8.224)
	[-0.392]	[ 0.850]	[-0.971]	[ 1.108]	[ 0.005]	[ 0.795]
<b>D(LNOILB(-1))</b>	2.099	0.024	0.209	-0.014	0.029	1.572
	(5.341)	(0.119)	(0.144)	(0.037)	(0.204)	(1.661)
	[ 0.393]	[ 0.203]	[ 1.452]	[-0.399]	[ 0.145]	[ 0.946]
<b>D(FDI(-1))</b>	-2.660	-0.006	-0.010	-0.001	-0.050	0.236
	(0.459)	(0.010)	(0.012)	(0.003)	(0.017)	(0.143)
	[-5.787]	[-0.602]	[-0.816]	[-0.506]	[-2.893]	[ 1.655]
<b>C</b>	-0.916	0.060	-0.020	0.045	-0.130	0.254
	(2.105)	(0.046)	(0.056)	(0.014)	(0.080)	(0.655)
	[-0.435]	[ 1.291]	[-0.365]	[ 3.063]	[-1.618]	[ 0.388]
<b>R-squared</b>	0.559	0.352	0.443	0.086	0.442	0.631
<b>Adj. R-squared</b>	0.460	0.206	0.318	-0.119	0.316	0.548
<b>Sum sq. resids</b>	1382.633	0.687	1.008	0.068	2.024	133.836
<b>S.E. equation</b>	6.678	0.148	0.180	0.046	0.255	2.077
<b>F-statistic</b>	5.634	2.412	3.533	0.420	3.517	7.600
<b>Log likelihood</b>	-124.918	23.418	15.943	68.474	2.349	-79.383
<b>Akaike AIC</b>	6.816	-0.790	-0.407	-3.101	0.289	4.481
<b>Schwarz SC</b>	7.157	-0.449	-0.066	-2.760	0.630	4.822
<b>Mean dependent</b>	-0.182	0.157	0.043	0.061	0.082	0.207
<b>S.D. dependent</b>	9.092	0.167	0.218	0.044	0.309	3.092
<b>Determinant resid covariance (dof adj.)</b>		5.83E-06				
<b>Determinant resid covariance</b>		1.47E-06				
<b>Log likelihood</b>		-70.138				
<b>Akaike information criterion</b>		6.366				
<b>Schwarz criterion</b>		8.669				

The VECM short-run results in Table 5.7 show no relationship between the economic growth variables (RGDPR and RNOIL) and the capital market development variables (LM1, LM2 and LBCP) in all of the six VAR models. This is consistent with the ‘independent’ view that argues that capital market development and economic growth is not causally related (e.g. Stiglitz 1985, Mayer 1988, Boyd and Smith 1998, Boulila and Trabelsi 2004, Mosesov and Sahawneh 2005, Abu-Bader and Abu-Qarn 2006, Naceur and Ghazouani 2007). These empirics were mostly conducted in the developing Middle East and North Africa (MENA) countries.

These results are contrasted with Al-Awad and Harb (2005) who used a sample of ten MENA countries for the period 1969–2000 and by using panel cointegration approach concluded that the long-run capital market development and economic growth may be related to some level. In addition, the evidence of unidirectional causality that runs from capital market development to economic growth can be seen in Saudi Arabia in the short-run.

#### *5.4.1.2 Granger Causality Test*

This section presents Granger causality test results for the short-run relationship between both of the economic growth variables (RGDP and RNOIL) and the capital market development variables of (LM1, LM2 and LBCP). Since these variables are cointegrated. As concluded earlier, the Granger causality test is appropriate to examine the short-run dynamic relationships between these five variables.

The reported results of the Granger causality test in Table 5.8 are based on 1 and 2 lag models, which were chosen objectively since annual data is used. The results of the 1 lag models shows a bidirectional relationship between the economic growth variable RGDP and the capital market development variable LBCP at 5 per cent significance level. A unidirectional relationship runs from the capital market development variable LBCP to the economic growth variable RNOIL at 5 per cent significance level. Meanwhile, a weak unidirectional relationship runs from the economic growth variable RGDP to the capital market development variable LM2 at 10 per cent significance level. Another weak unidirectional relationship runs from the economic growth variable RNOIL to the capital market development variable LBCP at 10 per cent significance level. The results of the 2 lags models shows that RGDP Granger-cause LM2 and LBCP Granger-cause RNOIL. However, the result of the 1 and 2 lags models show that there are no relationships between the economic growth variables RGDP and RNOIL and the capital market development variable LM1.

The bidirectional relationship between the economic growth variable RGDP and the capital market development variable LBCP in the short run is consistent with the result of the long-run analysis, supporting the feedback view contends that there is bidirectional causality between capital market development and economic growth (Patrick 1966, Jung 1986). A

country with a well-developed capital market could promote high economic expansion through technological changes, products and services innovation, which in turn creates a high demand for the financial institutions. As the financial institutions effectively respond to this demand, these changes will stimulate higher economic achievement. Both capital market and economic developments are therefore positively interdependent (Majid 2007). Many of these empirics are recent that mainly applied the ARDL and VAR cointegration methods on developing countries (Darrat 1999, Al-Yousif 2002, Chuah and Thai 2004, Hondroyiannis, Lolos and Papapetrou 2005, Majid 2007, Demirhan, Aydemir and Inkaya 2011).

Furthermore, bidirectional relationship was found in the early study of Darrat (1999) who investigated the relationship between financial deepening and economic growth for three developing Middle-Eastern countries (Saudi Arabia, Turkey and the UAE). He applied Granger-Causality tests and VAR method over the period of 1964-1993 for Saudi Arabia. The study found long run bidirectional relationship between financial deepening and economic growth in the case of Saudi Arabia. Likewise, Al-Yousif (2002) examined the nature and direction of the relationship between financial development and economic growth employing a Granger-causality test within a VECM method. He used both time-series and panel data from 30 developing countries including Saudi Arabia for the period 1970-1999. The study found bidirectional causality between capital market development and economic growth.

Similar results found by Chuah and Thai (2004), they used real non-hydrocarbon GDP in order to capture the real impact of bank based development variables on economic growth for six GCC countries including Saudi Arabia. Chuah and Thai (2004) used annual data over the period 1962-1999 for Saudi Arabia. They applied a bivariate time series model and concluded that capital market development provides critical services to increase the efficiency of intermediation, leading to a more efficient allocation of resources, a more rapid accumulation of physical and human capital, and faster technological innovation.

**Table 5.8: Pairwise Granger Causality Tests Between RGDP, RNOIL, LM1, LM2 and LBCP**

**Lags: 1**

<b>Null Hypothesis</b>	<b>Obs</b>	<b>F-Statistic</b>	<b>Prob.</b>
LM1 does not Granger-cause RGDP RGDP does not Granger-cause LM1	40	0.04 2.01	0.83 0.16
LM2 does not Granger-cause RGDP RGDP does not Granger-cause LM2	40	0.02 2.58	0.87 0.11
LBCP does not Granger-cause RGDP RGDP does not Granger-cause LBCP	40	4.92 9.95	0.03 0.00
LM1 does not Granger-cause RNOIL RNOIL does not Granger-cause LM1	40	2.25 0.40	0.14 0.52
LM2 does not Granger-cause RNOIL RNOIL does not Granger-cause LM2	40	2.34 0.56	0.13 0.45
LBCP does not Granger-cause RNOIL RNOIL does not Granger-cause LBCP	40	6.84 4.06	0.01 0.051

**Lags: 2**

<b>Null Hypothesis</b>	<b>Obs</b>	<b>F-Statistic</b>	<b>Prob.</b>
LM1 does not Granger-cause RGDP RGDP does not Granger-cause LM1	39	1.53 1.37	0.23 0.26
LM2 does not Granger-cause RGDP RGDP does not Granger-cause LM2	39	1.13 2.44	0.33 0.10
LBCP does not Granger-cause RGDP RGDP does not Granger-cause LBCP	39	1.09 3.27	0.34 0.05
LM1 does not Granger-cause RNOIL RNOIL does not Granger-cause LM1	39	0.97 0.10	0.38 0.38
LM2 does not Granger-cause RNOIL RNOIL does not Granger-cause LM2	39	1.39 0.24	0.26 0.78
LBCP does not Granger-cause RNOIL RNOIL does not Granger-cause LBCP	39	4.55 0.90	0.01 0.41

## 5.5 Conclusion

The objective of this chapter is to determine the relationship between capital market development and economic growth in Saudi Arabia. To achieve this, we used annual data from 1970 to 2010 that contains 41 observations of the following variables: (1) real GDP growth rate (RGDPR) and (2) real non-oil GDP growth rate (RNOIL) as proxies of economic growth. The capital market development (CMD) variables are, (1) the bank credits to the private sector (LBCP); (2) the narrow money supply (LM1) divided by nominal GDP; (3) the broad money supply (LM2) divided by nominal GDP; The control variables are (1) The nominal north sea (Brent) oil prices (LNOILB); (2) The level of investment (LINVR), proxied by the gross fixed capital formation (GFCF) divided by nominal GDP; (3) foreign direct investment (FDI); (4) general education student (LGEDU).

These variables were statistically analysed through a process that began with descriptive statistics then long-run and short-run analysis was undertaken using, unit root tests, optimal lag tests, Johansen-Juselius cointegration tests, the VECM and the Granger causality test.

The results from the ADF and PP unit root tests provided additional support for treating all the individual variables in the series as non-stationary in their levels but stationary in their first differences. The analysis is preceded by the use of 1 lag suggested by the SC test.

The results of the Johansen and Juselius cointegration tests showed that all the variables in the VAR models are significantly cointegrated.

The short-run analysis for the cointegrated variables is performed using a VECM as developed by Engle and Granger (1987). Granger (1988) states that using a VECM rather than a VAR in differences will not result in any loss in long run information, as is the case for the Granger causality test. The VECM short-run results showed no relationship between the economic growth proxies and the capital market development proxies, this is consistent with the 'independent' view that capital market development and economic growth are not causally related (Stiglitz 1985, Lucas 1988, Mayer 1988, Boyd and Smith 1998).

Meanwhile, the Granger causality test is used to examine the short-run dynamics of the relationship between the economic growth variables (RGDP and RNOIL) and the capital

market development variables (LM1, LM2 and LBCP). The results of the (1) lag models showed a bidirectional relationship between the economic growth variable RGDP and the capital market development variable LBCP at 5 per cent significance level. This is supported by the 'feedback' view that contends that there is a bi-directional causality between capital market development and economic growth (Patrick 1966, Jung 1986, Darrat 1999, Al-Yousif 2002, Chuah and Thai 2004). A country with a well-developed capital market could promote high economic expansion through technological changes, products and services innovation, which in turn creates a high demand for the financial institutions. As the financial institutions effectively respond to this demand, these changes will stimulate higher economic achievement. Both capital market and economic developments are therefore positively interdependent (Majid 2007).

In addition, a unidirectional relationship runs from the capital market development variable LBCP to the economic growth variable RNOIL at 5 per cent significance level. More, a weak unidirectional relationship runs from the economic growth variable RGDP to the capital market development variable LM2 at 10 per cent significance level. However, the results of the 2 lags models shows that RGDP Granger-cause LM2 and LBCP Granger-cause RNOIL. Another weak unidirectional relationship runs from the economic growth variable RNOIL to the capital market development variable LBCP at 10 per cent significance level. However, the results of the 1 and 2 lags models showed that there are no relationship between the economic growth variables (RGDP and RNOIL) and the capital market development variable LM1.

The last and remaining chapter 6 will conclude this study with summary, remarks and recommendations, regarding lack of relationship between the Saudi capital market and the economy.

## **Chapter 6: Conclusions**

### **6.1 Overview**

This chapter draws conclusions about the thesis aims and puts forward policy recommendations, discuss thesis limitations and offer suggestions for future research on capital market development in Saudi Arabia.

### **6.2 Thesis Aims**

The aim of the thesis is to determine the relationship between capital market development and economic growth in Saudi Arabia. Such a study on capital market development is timely because Saudi Arabia is moving aggressively toward strengthening the private sector role in the economy via privatisation, establishment of the Capital Market Authority (CMA) in 2003, and the creation of the new seven economic cities. The following key aims will be the focus of the thesis:

1. To review the historical development of the Saudi economy and capital market.
2. To investigate the relationship between capital market development and economic growth in Saudi Arabia.
3. To identify existing inefficiencies in the Saudi capital market.
4. To determine the impact of existing inefficiencies of the Saudi capital market on the economy.
5. To articulate policies to improve the efficiency of the capital market for the Capital Market Authority (CMA) and the Ministry of Economy and Planning (MEP).

#### **6.2.1 The First Aim**

This thesis presented an historical review of Saudi Arabian economic and financial development and planning, as well as a statistical review of the performance of the Saudi economy and financial system from 1969 to 2010. This fulfilled the first aim of the thesis, which is to review the historical development of the Saudi economy capital market.

Since 1970 Saudi Arabia has adopted a sophisticated development planning system through implementing a series of medium-term five-year plans. The process of planning has evolved as the economic structure of the country has undergone transformation with the private sector assuming more importance in both consumption expenditure and GFCF. The economic and financial strategic choices that early planners made to shift the economy from overwhelming dependence on oil are still being felt today. Thus planning is now shifting from a 'directive' to an 'indicative' role as the economy becomes more globalised and interdependent with the rest of the world.

The growing unemployment numbers, whether official or voluntary, are having an impact on poverty levels in Saudi Arabia. Again, no official statistics exist on what constitutes a national poverty level, or of the total number of those depending on social security assistance, but there are some official figures to illustrate the magnitude of the problem. The issue of poverty is one of the concerns of the Saudi government, and the 2008 and 2009 national budgets allocated increased social security benefits.

Saudi Arabia's WTO accession in 2005 helped to bring changes to the Kingdom's investment environment under the Agreement on Trade Related Investment Measures (TRIMs). However, prior to WTO accession, the Kingdom had been taking some measures to attract FDI and a new Foreign Investment Law was enacted in 2000 to replace and liberalise the 1979 Foreign Investment Law. The 2000 law established the Saudi Arabian General Investment Authority (SAGIA) as responsible for approving foreign investment projects; SAGIA also serves as the enquiry point on laws, regulations and procedures relating to foreign investment. Saudi Arabia became the largest recipient of FDI flows by an Arab country and recently has been successful in attracting sizeable FDI due to the size of its economy, market depth and more recent enhancements to the Foreign Investment Law, such as a reduction to 20 per cent in foreign corporate profit tax. However, cross-border mergers and acquisitions are still not common in the Middle East. Investor perception is that more is needed to enhance the legal and operating frameworks such as labour, company and bankruptcy laws.

SAMA has evolved from being a monetary agency with a limited role into a fully fledged central bank with relative independence, a broad range of monetary tools at its disposal and with effective supervisory powers over the financial sector. Monetary policy is the primary

focus of SAMA, whose key objectives are to stabilise inflation and the general level of prices, to maintain a fixed exchange rate policy against the US dollar and to allow a free movement of currency and capital. SAMA uses four main policy instruments in conducting monetary policy: cash reserve ratio/minimum reserve policy, repos and reverse repos, foreign exchange swaps and placement of public funds. It has increasingly relied on repos and reverse repos, the so called 'open-market' operations. SAMA's monetary policy assigns a high priority to its current fixed exchange policy as a means of controlling inflation, despite recent depreciation of the US dollar against major international currencies.

Domestic money supply creation is a function of dollar reserves held abroad, domestic government spending and the effects of domestic purchases of foreign currencies for trade and remittances.

SAMA is faced by future challenges including more effective participation in the GCC monetary union and the proposed single currency, developing a corporate bond market, the supervision and control of cross-border Saudi bank mergers and 'new wave' foreign bank entry to the Saudi market, as well as overseeing the growth of Islamic finance and banking products in Saudi Arabia and combating inflationary trends.

The Saudi banking sector is one of the financially strongest and most profitable in the world, with high capitalisation in excess of international required levels, advanced automation and a diversified range of banking services delivered to well-defined target market segments. Banking supervision is through SAMA control. The transformation of previously wholly foreign-owned bank branches into *Saudised* banks, passing on technology and management skills, has been of benefit to the banking sector.

The Saudi financial markets passed through several phases of evolution, each laying a foundation for the next phase. Currently the banking sector is going through a phase of consolidation and mergers, preparing to face the international competitive environment following its WTO accession as well as the granting of banking licences for wholly owned foreign banks to enter the Saudi market.

Saudi banks are characterised by a high degree of shareholder concentration levels, which could be counterbalanced by partial privatisation of government-held shares in some Saudi

banks. In addition, Saudi banks lending policies are still limited by their small capital base as well as SAMA mandated loans-to-deposit ratios, but consumer lending has become a major growth sector.

Islamic finance has acquired more importance, and both Islamic and non-Islamic banks have entered this market segment.

Saudi banks have escaped relatively unscathed during the 2008/2009 global financial crisis but certain lessons have been learned, especially the centrality of credit extension.

The Saudi capital market has evolved from the formal establishment of a stock market in the 1980s to the passing of the CMA in 2003, which created an independent Securities Exchange Commission (SEC) and later the CMA to oversee the stock market. The establishment of the CMA has helped to overcome some of the previous obstacles in expanding the capital market, namely an increase in the number of listed companies, increase in the number of shareholders, expansion of brokerage and investment advisory services and licensing of non-bank financial institutions.

The benefits of the CMA could be felt in several areas: potential to draw back Saudi resources invested abroad, growth of non-oil financial services sector, improvement in risk management practices and response to the infrastructure services demand.

In terms of performance, the Saudi capital market dominates the rest of the Arab world in size and has registered impressive performances, especially during 2003–2004, when it outperformed most international market indexes but saw sharp retreats after 2006. The Saudi market has improved in terms of turnover ratio and market capitalisation as a percentage of GDP.

However, The Saudi capital market is experiencing three issues; first, the total ‘free float’ shares for trading is around 50 per cent of all listed shares; second, the low number of listed companies. These could benefit from additional planned government privatisation sales and private sector initial public offering (IPOs); finally, the investor behaviour in the capital market is characterised by a majority of Saudi individuals with no formal training in stock

trading who depend on opinion and make the lowest profits (Al-Twajjry 2007, Ramady 2010 and Khoshhal 2004).

The Saudi capital market has made some progress in opening up to foreign investors through swap facilities. There have been some developments in the capital market through the creation of bond and *sukuk* market in mid-2009 and exchange traded funds (ETFs) and index funds market in mid-2010.

## **6.2.2 The Second Aim**

The second aim of this thesis is to investigate the relationship between capital market development and economic growth in Saudi Arabia. Thus, chapter 3 offered the theoretical background, chapter 4 the method and chapter 5 the results.

### *6.2.2.1 Literature Review*

Endogenous theories of economic growth have motivated research on identifying the factors that could stimulate long-run growth rates in developing countries especially those in GCC. It has been suggested that there are many sectors on which countries across GCC can focus their economic objectives, in order to ameliorate their economic situation, as discussed in chapter one of this study. Among others, the development of the capital market is proposed to be significant for GCC countries in order to achieve sustainable economic growth. The theory behind this was discussed earlier in chapter 3, with particular reference to the works of Solow (1956), Lucas (1988), Schumpeter (1912), McKinnon (1973), Shaw (1973) and proponents of their views.

According to the latter scholars, capital market development is not only good for economic growth, but also causes it. Although they provide an understanding of the role and importance of capital market development in economic growth, there are other economists who offer different opinions on the relationship between the two variables. For example, Robinson (1952) argued that capital market development is not that important, but is simply a response to economic growth.

As with the theoretical overview, the empirical review in this thesis also reveals this ambiguity regarding the importance of capital market development. The empirical debate about the relationship between capital market development and economic growth is centred around three points: firstly, the mechanism through which the former affects the latter, secondly, the real direction of the causality between them and the third point is around the type of financial institution which affects economic growth the most.

Studies focusing on the different mechanisms by which finance affects growth arrive at the same conclusion that capital market development is important for economic growth. In contrast studies conducted on the direction of causality between capital market development and growth, have provided mixed results. Those studies that have supported the view that capital market causes economic growth are mainly those that have focused more on developing countries than on developed countries. Other studies that have focused on both developing and developed countries have however suggested opposing results i.e., that causality is running from economic growth to capital market development for developed countries finding no relationship between the two variables for developing countries. Furthermore, other studies that report a bi-directional relationship between financial development and economic growth explain it by the fact that in the early stages of development of one country capital market first causes growth and later on it is the reverse.

However, some studies conclude that the direction of causality between capital market development and economic growth is sensitive to the choice of the measurement instrument for capital market development. Furthermore, other studies explain that the result obtained could depend on the type of financial institutions prevailing in a country. According to the latter, the capital markets of countries where both banks and stock markets are well developed will not affect economic growth in the same way as in countries where only banks are well developed.

Thus, before conducting comparative studies on many countries, it is important to acknowledge the different levels of development of their capital markets and that they are at different levels of economic development as well. This is important because it can have an impact on the relationship as well as the direction of causality between the capital market and economic growth. It can also help in achieving a deeper understanding of the situation when analysing or interpreting the results of the econometric tests.

However, it is apparent that the study of the relationship between economic growth and capital market development is country specific and that the results vary depending on the time period, variables and methodology of a study. This has led to many mixed results. Previous studies on Saudi Arabia were merely part of a cross-country panel studies or utilised pre-2000 data, using various methodologies with different results.

Thus, chapter 2 of this thesis provided an overview of the capital market, as well as the economic growth experiences of Saudi Arabia. Here the study found many impediments that hindered the development of the economy and the capital market, there is evidence that certain indicators of capital market development have positively impacted on economic growth. The econometric analysis in chapter 5 has tried to verify this finding.

The thesis reviewed four empirical research views regarding the relationship between capital market development and economic growth. The ‘independent’ view argues that capital market and economic growth is not causally related. The ‘demand-following’ view states that capital market development follows economic growth: as the economy expands, its demand for certain financial instruments increases, leading to the growth of these services. The ‘supply-following’ view contends that a well-functioning capital market channels limited resources from surplus units to deficit units, providing an efficient allocation of resources, which thereby results in economic growth. The ‘feedback’ view contends that there is bi-directional causality, from capital market to economic development and vice versa. A country with a well-developed capital market could promote high economic expansion through technological changes, products and services innovation, which in turn creates a high demand for the financial institutions. As the financial institutions effectively respond to this demand, these changes will stimulate higher economic achievement. Both capital market and economic developments are therefore positively interdependent.

#### *6.2.2.2 Methodology*

A VAR model is adopted to estimate the effects of the capital market development on economic growth. The VAR model is a flexible model for the analysis of multivariate time series. It is a natural extension of the univariate autoregressive model for dynamic

multivariate time series. The VAR model is especially useful for describing the dynamic behaviour of economic and financial time series. In addition to data description, the VAR model is also used for structural inference and policy analysis. VAR models and VECMs were generally used in previous studies. They also offered a feasible approach to this study due to the robustness and rigour of the data.

Thus, the secondary data was collected from the IMF, SAMA and TadawuL. And the VAR model was used to estimate the effects of capital market development on economic growth. In order to test the causal relationships, the following multivariate model was estimated:

The annual data from 1970 to 2010 for Saudi Arabia contains 41 observations of the following variables: (1) real GDP growth rate (RGDPR) and (2) real non-oil GDP growth rate (RNOIL) as proxies of economic growth. The capital market development (CMD) variables are, (1) the bank credits to the private sector (LBCP); (2) the narrow money supply (LM1) divided by nominal GDP; (3) the broad money supply (LM2) divided by nominal GDP; The control variables are (1) The nominal north sea (Brent) oil prices (LNOILB); (2) The level of investment (LINVR), proxied by the gross fixed capital formation (GFCF) divided by nominal GDP; (3) foreign direct investment (FDI); (4) general education student (LGEDU). These variables were statistically analysed, starting with descriptive statistics and then undertaking long-run and short-run analyses using Johansen-Juselius cointegration tests, the VECM and the Granger causality test.

### 6.2.2.3 Results

The descriptive statistics provide a historical background for the behaviour of the data in this study. For instance, the standard deviations indicate that RGDPR, RNOIL and ROILB are more volatile than M1, M2, INVR and FDI. This is perhaps because the nature of the oil-based economy depends on the fluctuations of the oil prices (SAMA 2013). Furthermore, the standard deviation indicates that the level of investment (INVR) is the least volatile compared to other macroeconomic variables during the same time. *P*-values associated with the *Jarque-Bera* statistics, a test for departures from normality, show that the sample skewness and kurtosis are significantly different from zero and three respectively. Given that the kurtosis of INVR, M1, M2 and GEDU variables are all less than three, the distributions of

these variables exhibit non-normality (Stock and Watson 2006). The positive values of the skewness tests for RGDP, RNOIL, BCP, GEDU, NOILB and FDI suggest that these variables have long right tails, while negative values of the skewness tests for M1 and M2 suggest that these two variables have long left tails (Stock and Watson 2006). On the other hand, the narrow money supply (M1) grew at less than one per cent on average each year during the whole period. This is comparable to the growth rate of all other variables included in the analysis with the exception of RGDP, which had an average annual growth rate of -17 per cent. Although there is no indication of causation, the results reported in Table 5.3 reveal information on the strength of the relationships connecting the macroeconomic variables. In particular, Table 5.3 shows a negative relationship between both of the economic growth variables (RGDP and RNOIL) and the rest of the macroeconomic variables in the time-series (INVR, M1, M2, BCP, GEDU, NOILB and FDI). On the other hand, a positive relationship exists between all the capital market and control variables in the series.

The results from the ADF and PP unit root tests provide additional support for treating all the individual series as non-stationary in their levels but stationary in their first differences. The analysis is preceded by the use of 1 lag suggested by the SC test.

The results of the Johansen-Juselius's cointegration tests show that all the variables in the VAR models are significantly cointegrated.

The short-run analysis for the cointegrated variables is performed using a VECM as developed by Engle and Granger (1987). Granger (1988) states that using a VECM rather than a VAR in differences will not result in any loss in long run information, as is the case for the Granger causality test. The VECM short-run results shows no relationship between the economic growth proxies and the capital market development proxies, this is consistent with the 'independent' view that capital market development and economic growth are not causally related (Stiglitz 1985, Lucas 1988, Mayer 1988, Boyd and Smith 1998).

Meanwhile, the Granger causality test is used to examine the short-run dynamics of the relationship between the economic growth variables (RGDP and RNOIL) and the capital market development variables (LM1, LM2 and LBCP). The results of the (1) lag models

showed a bidirectional relationship between the economic growth variable RGDP and the capital market development variable LBCP at 5 per cent significance level. This is supported by the 'feedback' view that contends that there is a bidirectional causality between capital market development and economic growth (Patrick 1966, Jung 1986, Darrat 1999, Al-Yousif 2002, Chuah and Thai 2004). A country with a well-developed capital market could promote high economic expansion through technological changes, products and services innovation, which in turn creates a high demand for the financial institutions. As the financial institutions effectively respond to this demand, these changes will stimulate higher economic achievement. Both capital market and economic developments are therefore positively interdependent (Majid 2007).

In addition, a unidirectional relationship runs from the capital market development variable LBCP to the economic growth variable RNOIL at 5 per cent significance level. More, a weak unidirectional relationship runs from the economic growth variable RGDP to the capital market development variable LM2 at 10 per cent significance level. However, the results of the 2 lags models shows that RGDP Granger-cause LM2 and LBCP Granger-cause RNOIL. Another weak unidirectional relationship runs from the economic growth variable RNOIL to the capital market development variable LBCP at 10 per cent significance level. However, the results of the 1 and 2 lags models showed that there are no relationship between the economic growth variables (RGDP and RNOIL) and the capital market development variable LM1.

### **6.2.3 The Third and Fourth Aims**

The third and fourth aims of this thesis are to identify existing inefficiencies in the Saudi capital market, and to determine the impact of existing inefficiencies of the Saudi capital market on the economy. The thesis approached these aims in chapter 2 that offered a review of the historical development of the Saudi economy, financial system and capital market. Eventually, the empirical results presented in chapter 5 showed an existing relationship between the capital market development and economic growth.

A well-developed capital market will lead to economic growth and vice versa. The Saudi capital market should develop through increases in the number of listed companies and the free-float shares ratio, as well as the shift towards financial and corporate investors' market

orientation. In addition, the capital market should be more active in the bonds and ETF's markets and offer more diverse financial tools. The banking sector needs to focus on more small and medium business lending, with less shareholders' concentration. Furthermore, the capital market should be more balanced and move away from its current bank-base market orientation toward more market-base capital market. These improvements will strengthen the role of the private sector to shift the Saudi economy into sustainability away from an oil-based economy.

Here are the main inefficiencies in the Saudi capital market and their impact on the Saudi economy as identified in this thesis:

**(A) The stock market:**

- 1 At the end of 2009, free-floating shares on the TASI index accounted for 37.9 per cent of total issued shares (Tadawul 2013).
- 2 The number of listed companies is very little compare to the size of the market as the Arab, Middle East and North Africa (MENA) biggest capital market ( Al-Twajjry 2007; Ramady 2010, SAMA 2011, Tadawul 2013)
- 3 The capital market is still characterised by a high degree of sectoral concentration and the dominance of banking, electricity and telecommunications, with six companies accounting for nearly 70 per cent of the total market capitalisation (SAMA 2011, Tadawul 2013).
- 4 90 per cent of investors are Saudi individuals who are characterised by irrational exuberance and herd mentality (Al-Twajjry 2007; Ramady 2010, Tadawul 2013).
- 5 The bond and *sukuk* market and the exchange traded funds (ETFs) and index funds market sizes are very small and not active.

**(B) The banking sector:**

- 1 The issue of shareholder concentration is one of the major concerns for the Saudi banking sector, as it is for most other publicly listed Saudi joint stock companies (Ramady 2010, SAMA 2010). The trend towards far fewer shareholders is unmistakable and there are several implications. First, holding a higher concentration of shares in fewer hands might enable some business groups to influence day-to-day operations and bank management through board representation. Second, the concentration of shares in a few hands with block votes 'de-democratises' the role of annual general meetings in joint stock companies. Concentration eliminates transparency and leads to joint stock companies operating like partnerships (Ramady 2010).

- 2 The issue of competition and the banking sector domination of three banks, NCB, SAMBA and Al Rajhi, although Riyad Bank came a close fourth (Ramady 2010, SAMA 2011). Despite new entrants into the Saudi banking sector, the top three continued to dominate, the only erosion being seen in their loan and asset share. Studies conducted in the area of bank concentration and economic efficiency indicates that a high concentration ratio may induce banks to charge borrowers with higher interest rates than when there is a low banking concentration (Ramady 2010). According to Saudi studies, the non-interventionist policy of SAMA in this area of bank regulation could hamper the growth of companies, particularly SMEs, due to more restrictive credit conditions by the banks within a system of imperfect competition (Essayad, Ramady and Al Hejji 2003).
- 3 Saudi banks have traditionally a low loans-to-deposit ratio and thus more liquidity compared to other Western institutions (Ramady 2010). The majority of bank lending was of less than a year's duration, which is not conducive to long-term industrial investment and planning (SAMA 2011). Filling a need for long-term investment capital was the prime reason for the Saudi government's establishment of its own lending agencies.
- 4 Saudi banks suffer from widening asset-liability maturity mismatch, raising major concerns about banks' liquidity risk as well as credit risk (Ramady 2010).
- 5 Consumer loans represented around 38 per cent of all private sector loans. According to SAMA (2011), the majority were for financing motor vehicles and 'other' unspecified personal loans; real estate and credit-card financing remained steady. This lack of SME's lending culture and investment participation weakened the private sector through the reduction of raising capital options.
- 6 The Saudi capital market is bank-base oriented. Almost all the capital raised by the private sector is through issuing bank loans.

There is a view that capital 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:

- 1 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.

- 2 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.
- 3 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.
- 4 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.
- 5 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).

#### **6.2.4 The Fifth Aim**

The fifth aim is to articulate policies to improve the efficiency of the capital market for the Capital Market Authority (CMA) and the Ministry of Economy and Planning (MEP). This thesis reached the following recommendations to improve the efficiency of the Saudi capital market:

1. Policy makers should be encouraged to expand the capital market, through an increase in the number of listed companies, increase in the number of shareholders, expansion of brokerage and investment advisory services and licensing of non-bank financial institutions, expanding the use of bonds, *Sukuks*, ETFs and index funds. The potential

benefits of that are to: draw back Saudi resources invested abroad, growth of non-oil financial services sector, improvement in risk management practices and response to the infrastructure services demand.

2. Policy makers should be encouraged to undertake serious and strategic initiatives to open the Saudi market and economy as a whole for foreign investors and investments and make it more attractive. This could be done by relaxing regulations and the public sector orthodoxy.
3. Commercial banks are the second largest supplier of credit in the Saudi economy after the government's mutual funds and special purposes banks. In the modern economy, they create most of the money supply by issuing loans. Therefore, when banks create an excess supply of money, the prices of assets, goods, and services tend to rise. Conversely, when not enough money is created, the prices of assets, goods, and services decrease (Ramady 2010). Therefore, policy makers should encourage the creation of investment banks. They also need to boost the private banks participation in the economy, through active and aggressive investment and lending to SMEs.

### **6.3 Thesis Limitation and Suggestions for Future Research**

The main limitation of this thesis is the small number of observations. Only annual data are available for most of the Saudi Arabian economic indicators. Thus, 41 observations are available from 1970-2010. For example, the earliest economic data can be traced back in 1968 for gross domestic product and gross fixed capital formation, and 1985 for the stock market data. The small sample size limitation could be dealt with by applying data frequency conversion techniques, such as geometric interpolation used by Darrat and Al-Sowaidi's (2010) empirical study on UAE that experience similar data availability issues with Saudi Arabia. However, these newly produced data are fictional and will affect the outcomes of the thesis.

Finally, this thesis encourages further research on the subject of the relationship between capital market development and economic growth through the applications of both qualitative and quantitative methodologies. Specifically, when measuring the nation's economic growth using quantitative measurements such as GDP. Again, policy makers must offer more frequent and wider spectrums of data when conducting census or any other economic studies to the public. This will be most beneficial to future research that will offer accurate and greater outcomes.

## References

- Abalkhail, Mohammed. 2002, 'The Role of Fiscal Policy in Realizing the Vision', *Centre for Economic and Management Studies. Future Vision of Saudi Arabia*. Riyadh.
- Abdullatif, Ahmed. 2002, 'Future Role of Banking Sector', *Shoura Council. Future Vision of Saudi Arabia*. Riyadh.
- Abu-Bader, S and Abu-Qarn, AS 2006, Financial development and economic growth nexus: time series evidence from Middle Eastern and North African countries, Discussion Paper 06–09, Monaster Centre for Economic Research, Ben Gurion University of the Negev, Beer-Sheva, Israel.
- Abu-Mustafa, N. 2007, 'A review of regulation, opportunity and risk in Gulf Cooperation Council stock markets: the case of Kuwait', *International Research Journal of Finance and Economics*, vol. 8, pp. 134–146.
- Abu-Sharia, R., 2005, *A Theoretical and Empirical Study of Stock Market Development, Economic Reform and Economic Growth: A Case Study Of Arab Countries*, Thesis for Doctor of Philosophy (Economics and Finance), University of Western Sydney, Australia.
- Acaravci A, Ozturk I and Acaravci, SK 2007, 'Finance-growth nexus: evidence from Turkey', *International Research Journal of Finance and Economics*, no. 11, pp. 30–40.
- Ackert, Lucy, Bryan, C. and Deaves, R. 2003, 'Emotion and Financial Markets', *Economic Review*. Second Quarter, vol. 88, p.33,
- Agarwal, Sumit 2001, 'Stock market development and economic growth: preliminary evidence from African Countries', Memo, <http://publicpolicy.subr.edu//JSDA/Spring>).
- Agrawalla, R and Tuteja, S 2007, 'Causality between stock market development and economic growth: a case study of India', *Journal of Management Research*, vol. 7, no. 3, pp. 158–168.
- Aitken, Brian, Gordon H. Hanson and Ann E. Harrison, 1997, 'Spillovers, foreign investment, and export behaviour', *Journal of International Economics*, vol. 43, pp. 103–132.
- Ake, B and Ognaligui, R. W. 2010, 'Financial stock market and economic growth in developing countries: the case of Douala Stock Exchange in Cameroon', *International Journal of Business and Management*, vol. 5, no. 5, pp. 82–88.
- Akinlo, Anthony Enisan and Egbetunde, Tajudeen 2010, 'Financial development and economic growth: the experience of 10 Sub-Saharan African countries revisited', *The Review of Finance and Banking*, vol. 2, no. 1, pp. 17–28.

- Alajekwu, Udoka Bernard and Achugbu, Austin A 2012, 'The role of stock market development on economic growth in Nigeria: a time series analysis', *African Research Review*, vol. 6, no. 24, pp. 51–70.
- Alsheekh, S. A. 2001, 'Demography movement in the Kingdom of Saudi Arabia and its effect on the labour market and economic growth', *The Saudi Economic Journal*, no. 5.
- Al-Awad and Harb, Nasri. 2005. 'Financial development and economic growth in the Middle East', *Applied Financial Economics*, vol. 15, pp. 1041–1051.
- Al-Dukheil, Abdulaziz M 1995, *The banking system and its performance in Saudi Arabia*, Saqi Books, London.
- Alexander, P. 2009, 'Sukuk market faces stern test of maturity', *The Banker*, viewed 21 April 2010, [http://www.thebanker.com/news/fullstory.php/aid/6727/Sukuk\\_market\\_faces\\_stern\\_test\\_of\\_maturity.html?current\\_page=2](http://www.thebanker.com/news/fullstory.php/aid/6727/Sukuk_market_faces_stern_test_of_maturity.html?current_page=2).
- Al-Farsi, Fouad 1982, *Saudi Arabia: A case study in development*, Routledge and Kegan Paul International, London.
- Al-Malkawi, Husam-Aldin N, Marashdeh, Hazem A and Abdullah, Naziruddin 2012, 'Financial development and economic growth in the UAE: empirical assessment using ARDL approach to co-integration', *International Journal of Economics and Finance*, vol. 4, no. 5, pp. 105–117.
- Al-Omar, F. 1996, 'Privatization in the Gulf Cooperation Council (GCC) countries: the need and the process', *Islamic Economic Studies*, vol. 2, no. 2, pp. 35–55.
- Al-Suhaimi, Jammaz 2002 'Consolidation, competition, foreign presence and systematic stability in the Saudi banking industry', *SAMA*, Riyadh.
- Al-Tamimi, Hussein A., Al-Awad, Hassan. and Charif, A. Husni. 2002, 'Finance and Growth: Evidence from Some Arab Countries', *Journal of Transnational Management Development*, vol. 7, no. 2, pp. 3-18.
- Al-Tamimi, Sultan. 2010, 'Saudis on the Dole Up by 1.39%', *Arab News*. Jeddah.
- Al-Twaijry, A. 2007, Saudi stock market historical view and crisis effect: graphical and statistical analysis, retrieved 21 November 2011, [http://beepdf.com/doc/210906/saudi\\_stock\\_market\\_historical\\_view\\_and\\_crisis\\_effect\\_\\_graphical\\_and\\_.html](http://beepdf.com/doc/210906/saudi_stock_market_historical_view_and_crisis_effect__graphical_and_.html)
- Al-Yousif, Yousif Khalifa 2002, 'Financial development and economic growth: another look at the evidence from developing countries', *Review of Financial Economics*, vol. 11, pp. 131–150.
- Ang, J 2008, *Financial development and economic growth in Malaysia*, Routledge, Abingdon, England.

- Antonios, A. 2010, 'Financial development and economic growth: a comparative study between 15 European Union member-states', *International Research Journal of Finance and Economics*, no. 35, pp. 143–149.
- Ardic, O. P and Damar H. E 2006, 'Financial sector deepening and economic growth: evidence from turkey', MPRA Paper No. 4077.
- Arellano and Bond 1991, 'Some Tests Specification for Panel Data: Monte Carlo Evidence and an Application to Employment Equations', *The Review of Economic studies*, vol. 58, pp. 277-297.
- Arellano and Bover 1995, 'Another Look t the Instrumental Variable Estimation of Error-Components Models', *Journal of Econometrica*, vol. 68, pp. 29-51.
- Arestis, P, Demetriades, P and Luintel, K 2001, 'Financial development and economic growth: the role of stock markets', *Journal of Money, Credit and Banking*, vol. 33, no. 1, pp. 16–41.
- Asante, Stephen, Agyapong, Daniel and Adam, Anokye M. 2011, 'Bank competition, stock market and economic growth in Ghana', *International Journal of Business Administration*, vol. 2, no. 4, pp. 33–41.
- Askari, Hossein. 1990, 'Saudi Arabia's economy: oil and the search for economic development', *Contemporary Studies in Economic and Financial Analysis*. no. 67.
- Asiegbu, B. C and Akujuobi, C. 2010, 'Performance indicators of capital market and the economic growth of Nigeria', *Interdisciplinary Journal of Contemporary Research In Business*, vol. 2, no. 2, pp. 399–417.
- Athanasios, V and Antonios, A 2010, 'The effect of stock and credit market development on economic growth: an empirical analysis for Italy', *International Research Journal of Finance and Economics*, no. 41, pp. 33–42.
- Athapathu, A. R and Jayasinghe, P 2012, 'Stock market performance and economic growth: the case of Sri Lanka', Research Paper, 4 April, University of Colombo, Sri Lanka, pp. 83–92.
- Atje, Raymond and Jovanovic, Boyan 1993, 'Stock markets and development', *European Economic Review*, no. 37, pp. 632–640.
- Austrade. 2010, 'Islamic Finance', *Austrade*, Australia.
- Auty, R. M. 2001, *Resource abundances and economic development*, Oxford University Press, Oxford, UK.
- Azzam, H 1997, *The emerging Arab capital markets*, Kegan Paul International, New York.
- Azzam, H 2002, *The Arab world: facing the challenges of the new millennium*, IB Tauris, London.
- Bange, M 1996, 'Capital market forecasts of economic growth: new tests for Germany, Japan, and the United States', *Quarterly Journal of Business and Economics*, vol. 35, no. 4, pp. 3–17.

- Barna, F and Mura, P. O 2010, 'Capital market development and economic growth: the case of Romania', *Annals of the University of Petroșani, Economics*, vol. 10, no. 2, pp. 31–42.
- Barro, Robert J 1990, 'The stock market and investment', *Review of Financial Studies*, vol. 3, pp. 115–31.
- Beck, T and Levine, R 2004, 'Stock markets, banks, and growth: panel evidence', *Journal of Banking and Finance*, vol. 28, pp. 423–442.
- Bekaert, G and Harvey, C 1997, *Growth, capital markets: an engine for economic growth*, National Bureau of Economic Research, Cambridge, MA.
- Bekaert, G, Harvey, C and Lumsdaine, R 2002, 'Dating the integration of world equity markets', *Journal of Financial Economics*, vol. 65, no. 2, pp. 203–247.
- Bekaert, G, Harvey, C and Lundblad, Christian 2001, 'Emerging equity markets and economic development', *Journal of Development Economics*, vol. 66, pp. 465–504.
- Bencivenga, V, Smith, B. D and Starr, R 1996, 'Equity markets, transaction costs, and capital accumulation: an illustration', *World Bank Economic Review*, vol. 10, no. 2, pp. 241–265.
- Bernstein, H. 1973, *Underdevelopment and Development*, Harmondsworth: Penguin Books.
- Bertola, Giuseppe 1993, 'Factor shares and savings in endogenous growth', *American Economic Review*, vol. 83, pp. 1184–1198.
- Bhide, Amar, 1993, 'The Hidden Costs of Stock Market Liquidity,' *Journal Economic Theory*, vol. 34. No. 1, pp. 51.
- Binswanger, M. 1999, *Stock markets, speculative bubbles and economic growth: new dimensions in the co-evolution of real and financial markets Growth*, Edward Elgar, Cheltenham.
- Bisisu, Adnan 1984, *Offshore banking in Bahrain*, Bahrain Chamber of Commerce and Industry Press, Bahrain.
- Blanchard, O 2003, *Macroeconomics*, Prentice Hall Series in Economics, Massachusetts Institute of Technology, MA.
- Blundell, Richard. and Bond, Stephen. 2000, 'GMM Estimation with Persistent Panel Data: An Application to production Functions', *Econometric Reviews*, vol. 19. Pp. 321-340.
- Bodie, Zvi, Kane, Alex and Marcus, Alan J 2002, *Investments*, McGraw-Hill Higher Education, New York.
- Bolbol, A. A, Fatheldin, A and Omran, M. M. 2005, 'Financial development, structure, and economic growth: the case of Egypt, 1974–2002', *Research in International Business and Finance*, vol. 19, no. 1, pp. 171–194.

- Boulila, Ghazi, and Trabelsi, Mohamed. 2004. 'The Causality Issue in the Finance and Growth Nexus: Empirical Evidence from Middle East and North African Countries', *Review of Middle East Economics and Finance*, vo. 2, no. 2, pp. 123-38.
- Boyd, J and Smith, B 1998, 'The evolution of debt and equity markets in economic development', *Economic Theory*, vol. 12, no. 3, pp. 519–560.
- Brandt, P. T. and Williams J. T. 2006, *Multiple Time Series Models. Series: Quantitative Applications in the Social Sciences*. Sage Publications Ltd, London.
- Brasoveanu, L, Dragota, V, Catarama, D and Semenescu, A 2008, 'Correlations between capital market development and economic growth: the case of Romania', *Journal of Applied Quantitative Methods*, vol. 3, no.1, pp. 64–75.
- Buch, C. Kleinert, J. Lipponer, A. Toubal, F. 2005,'Determinants and effects of foreign direct investment: evidence from German firm-level data', *Economic Policy*, pp. 51–110.
- Calderón, C and Liu, L 2003, 'The direction of causality between financial development and economic growth', *Journal of Development Economics*, vol. 72, no. 1, pp. 321–334.
- Capasso, S 2006, 'Stock market development and economic growth', *World Institute for Development Economic Research*, Research paper no. 2006/102.
- Caporale, G. M, Howells, P and Soliman, A. M 2004, 'Stock market development and economic growth: the causal linkage', *Journal of Economic Development*, vol. 29, pp. 33–50.
- Caporale, G. M, Howells, P and Soliman, A. M 2005, 'Endogenous growth models and stock market development: evidence from four countries', *Review of Development Economics*, vol. 9, no. 2, pp. 166–176.
- Capital Market Authority (CMA) 2012, 'Annual Report: 2012', *CMA Press*, Saudi Arabia.
- Chapra, U 2009, 'The global financial crisis: can Islamic finance help?', *New Horizon, IIBI*, viewed 21 April 2010, <http://www.newhorizonislamicbanking.com/index.cfm?section=academicarticles&action=view&id=10733>
- Chadhury, Kiren Aziz 1989, 'The price of wealth: business and state in labor remittance and oil economies', *International Organization*, vol. 43, Winter, pp. 101–45.
- Chadhury, Kiren Aziz 1997, *The price of wealth: economies and institutions in the Middle East*, Cornell University Press, Ithaca, NY.
- Chenery, H. 1979, *Structural Change and Development Policy*, Oxford University, London.
- Choe, Chongwoo and Moosa, Imad 1999, 'Financial system and economic growth: the Korean experience', *World Development*, vol. 27, no. 6, pp. 1069–1082.

- Choi, In 1992, 'Effects of data aggregation on the power of tests for a unit root: a simulation study', *Economics Letters*, vol. 40, no. 4, pp. 397–40.
- Choong, Chee Keong, Zulkornain Yusop, Siong Hook Law and Khim Venus Sen 2003, 'Financial development and economic growth in Malaysia: the stock market perspective', Economics Working Paper Archive at WUSTL.
- Chuah, H. L. and Thai, V. 2004. 'Financial Development and Economic Growth: Evidence from Causality Tests for the GCC countries', IMF Working Paper, no. WP/04/XX.
- Claus, Iris, Haugh, David, Scobie, Grant and Tornquist, Jonas 2001, 'Saving and growth in an open economy', Treasury Working Paper 01/32.
- Cordesman, A. H 2003, *Saudi Arabia enters the twenty-first century*, Greenwood Publishing Group, Cincinnati.
- Cordesman, A. H and Al-Rhodhan, K. R 2006, *The changing dynamics of energy in the Middle East*, Greenwood Publishing Group, Cincinnati.
- Darrat, Ali 1999, 'Are financial deepening and economic growth causally related? Another look at the evidence', *International Economic Journal*, vol. 13, no. 3, pp. 19–35.
- Darrat, Ali and Al-Sowaidi, Saif 2010, 'Information technology, financial deepening and economic growth: Some evidence from a fast growing emerging economy', *Journal of Economics and International Finance*, vol. 2, no. 2, pp. 28–35.
- De Gregorio, Jose and Guidotti, Pablo E 1995, 'Financial development and economic growth', *World Development*, vol. 23, no. 3, pp. 433–448.
- Demetriades, Panicos and Hussein, Khaled 1996, 'Does financial development cause economic growth? Time-series evidence from 16 countries', *Journal of Development Economics*, vol. 51, pp. 387–411.
- Demirguc-Kunt, Asli and Levine, Ross 1996, 'Stock markets, corporate finance, and economic growth an overview', *World Bank Economic Review*, vol. 10, no. 2, pp. 223–239.
- Demirhan, E, Aydemir, O and Inkaya, A 2011, 'The direction of causality between financial development and economic growth: evidence from Turkey', *International Journal of Management*, vol. 28, no. 1, pp. 3–19.
- Devereux, M and Smith, G 1994, 'International risk sharing and economic growth', *International Economic Review*, vol. 35, no. 4, pp. 535–550.
- DFID (Department for International Development) 2004, 'The importance of financial sector development for growth and poverty reduction', *Policy division working paper*, Policy Division.

- Dickey, D and Fuller, W 1979, 'Distributions of the estimators for autoregressive time series with a unit root', *Journal of the American Statistical Association*, vol. 75, pp. 427–431.
- Dornbusch, Rudiger and Fischer, Stanley 1980, 'Exchange rates and current account', *American Economic Review*, vol. 70, pp. 960–971.
- Dritsaki, C and Dritsaki-Bargiota, M 2005, 'The causal relationship between stock, credit market and economic development: an empirical evidence for Greece', *Economic Change and Restructuring*, vol. 38, no. 1, pp. 113–127.
- Ellahi, N and Khan, M. A 2011, 'Testing finance growth nexus: an auto regressive distributed lag (ARDL) methodology approach for selected SAARC countries', *South Asian Journal of Management*, vol. 18, no. 2, pp. 76–91.
- Eltony, M. Nagy 2003, 'Can an Oil Based Country be Diversified? A Case study of Kuwait', *Journal of Energy and Development*, vol. 27, no.2.
- Enders, W. 2004, *Applied econometric time series*, 2nd edn, John Wiley and Sons, New York.
- Enders, W. 2010, *Applied econometric time series*, 3rd edn, John Wiley and Sons, New York.
- Engle, R. and Granger, C. 1987, 'Cointegration and error correction: Representation, estimation and testing', *Econometrica*, vol. 55, pp. 251–276.
- Essayad, M, Ramady, M. and Al Hejji, M. 2003, 'Determinants of bank profitability of petroleum economy: the case of Saudi Arabia', *Petroleum Accounting and Financial Management Journal*, vol. 22, no. 3, pp. 69–101.
- Ewah, S, Esang, A and Bassey, U 2009, 'Appraisal of capital market efficiency on economic growth in Nigeria', *International Journal of Business and Management*, vol. 12, no. 4, pp. 219–228.
- EViews 2012, 'User's guide I and II', Version 7.0.
- Fasnacht, D 2009, *Open innovation in the financial services: growing through openness, flexibility and customer integration*, Springer, Berlin.
- Filer, Randall K, Hanousek, Jan and Campos, Nauro F 1999, 'Do stock markets promote economic growth?', *William Davidson Institute, University of Michigan*, Working Paper Series no. 267.
- Fischer, Stanley 2003, 'The importance of financial markets in economic growth', Speech at the International Derivatives and Financial Market Conference, The Brazilian Mercantile and Futures Exchange (Citigroup, Campos do Jordao, Brazil), <http://www.piie.com/fischer/pdf/fischer081103.pdf>
- Fisher, I. 1930, *The theory of interest*, Macmillan, New York.
- Fisher, I. 1933. 'The debt-deflation theory of Great Depressions', *Econometrica*, vol. 4, pp. 337-357.
- Fisher, G., Hughes, R. Griffin, R. and Pustay, M. 2006, *International Business: managing in the Asia-Pacific*, Pearson Education. Australia.

- Fischer, S. and Merton, R. 1984, 'Macroeconomics and Finance: the Role of the Stock Market. *Carnegie-Rochester Conference Series on Public Policy*, vol. 21, pp. 57-108.
- Goaied, Mohamed. and Sassi, Seifallah, 2011, 'Financial Development, Islamic Banking and Economic Growth Evidence from MENA Region' *International Journal of Business and Management Science*, vol. 4, no. 2, pp. 105-128.
- Garcia, Valeriano and Liu, Lin 1999, 'Macroeconomic determinants of stock market development', *Journal of Applied Economics*, vol. 11, pp. 29–59.
- Ghali, K 1999, 'Financial development and economic growth: the Tunisian experience', *Review of Development Economics*, vol. 3, no. 3, pp. 310–322.
- Ghirmay, T 2004, 'Financial development and economic growth in sub-Saharan African countries: evidence from time series analysis', *African Development Review*, vol. 16, no.3, pp. 415–432.
- Goldsmith, R. W 1969, 'Financial structure and development', *Studies in Comparative Economics*, no. 9, Yale University Press, New Haven, CT.
- Graff, M 1999, 'Financial development and economic growth: A new empirical analysis', *Dresden discussion paper in economics*, no. 05/99,
- Granger, C. W. J 1969, 'Investigating causal relations by econometric models and cross spectral methods', *Econometrica*, vol. 37, no. 3, pp. 428–438.
- Granger, C. W. J 1986, 'Developments in the study of cointegrated economic variables', *Oxford Bulletin of Economics and Statistics*, vol. 48, pp. 213–228.
- Granger, C. W. J 1988, 'Some recent developments in a concept of causality', *Journal of Econometrics*, vol. 39, pp. 199–211.
- Greenwood, J and Jovanovic, B 1990, 'Financial development, growth, and the distribution of income', *The Journal of Political Economy*, vol. 98, pp. 1076–1107.
- Greenwood, J and Smith, B 1997, 'Financial markets in development, and the development of financial markets', *Journal of Economic Dynamics and Control*, vol. 21, no. 1, pp. 145–181.
- Gronski, Ortrun Anne 2001, *Stock markets and economic growth: evidence from South Africa*, Peter Lang, Frankfurt.
- Grossman, Gene M and Helpman, Elhanan 1994, 'Endogenous innovation in the theory of growth', *Journal of Economic Perspectives*, vol. 8, pp. 23–44.
- Grossman, S and Hart, O 1986, 'The costs and benefits of ownership: a theory of vertical and lateral integration', *Journal of Political Economy*, vol. 94, no. 4, pp. 691–719.
- Gurusamy, S. 2009, *Capital Markets*, 2<sup>nd</sup> edn, Tata McGraw-Hill, New Delhi
- Handa, J and Khan SR 2008, 'Financial development and economic growth: a symbiotic relationship', *Applied Financial Economics*, vol. 18, no. 13, pp. 1033–1049.

- Hanware, K 2009, 'Profitability prospects bright for Saudi banks', *Sukuk.net*, viewed 21 April 2010, [http://sukuk.net/news/articles/1/Profitability\\_prospects\\_bright\\_for\\_Saudi\\_banks.html](http://sukuk.net/news/articles/1/Profitability_prospects_bright_for_Saudi_banks.html)
- Harrison, Ann. 1997, 'Determinants and Consequences of Foreign Investment in Three Developing Countries', in Mark Roberts and James Tybout, (eds.), *Industrial Evolution in Developing Countries*. Oxford University Press, New York.
- Harvey, C. R. 1995, 'Predictable risk and return in emerging markets', *Review of Financial Studies*, vol. 8, pp. 773-816.
- Helpman, E., Melitz, M.J. and Yeaple, S.R. 2004, 'Exports versus FDI with heterogeneous firms', *American Economic Review*, vol. 94, no. 1, pp. 300–316.
- Henry, P. B 2000, 'Stock market liberalisation, economic reform, and emerging market equity prices', *The Journal of Finance*, vol. 55, pp. 529–564.
- Holmstrom, B and Tirole, J 1993, 'Market liquidity and performance monitoring', *Journal of Political Economy*, vol. 101, no. 4, pp. 678–709.
- Hondroyannis G, Lolos S and Papapetrou, E 2005, 'Financial markets and economic growth in Greece, 1986–1999', *International Financial Markets, Institutions and Money*, vol. 15, pp. 173–188.
- Hossain, S and Kamal, M 2010, 'Does stock market development cause economic growth? A time series analysis for Bangladesh economy', *Journal of International Finance and Economics*, vol. 10, no. 2, pp. 87–95.
- IFIS, 2013, <http://www.islamicfinanceservice.com>.
- IMF (International Monetary Fund) 1999, 'Improvements in global financial system hinge on transparency and management of risk', *IMF Press* (Survey 5 September, p. 110) New York.
- Jasser, Sulaiman, Al and Banafe, Ahmed. 2003, 'Monetary Policy Investments and Procedures in Saudi Arabia', *Saudi Arabian Monetary Agency (SAMA)*. Riyadh.
- Jones, Z. D 2009, 'Strong Saudi sukuk marks turning point', *Maktoob Business*, viewed 21 April 2010, [http://business.maktoob.com/20090000006998/Strong\\_Saudi\\_sukuk\\_marks\\_turning\\_point\\_/Article.htm](http://business.maktoob.com/20090000006998/Strong_Saudi_sukuk_marks_turning_point_/Article.htm).
- Johany, Ali D, Berne, Michel and Mixon, Wilson Jr 1986, *The Saudi Arabian Economy*, John Hopkins University Press, Baltimore, MD.
- Johansen, S and Juselius, C 1990, 'Maximum likelihood estimation and inference on cointegration: with applications to the demand for money', *Oxford Bulletin of Economics and Statistics*, vol. 52, no. 2, pp. 169–210.

- Johansen, S 1988, 'Statistical analysis of cointegrating vectors', *Journal of Economic Dynamics and Control*, vol. 12, pp. 231–254.
- Johansen, S 1991, 'Estimation and hypothesis testing of cointegration vectors in Gaussian vector autoregressive models', *Econometrica*, vol. 59, no. 6, pp. 1551–80.
- Johansen, S 1995, *Likelihood-based inference in cointegrated vector autoregressive models*, Oxford University Press, Oxford.
- Jung, W. S 1986, 'Financial development and economic growth: international evidence', *Economic Development and Cultural Change*, vol. 34, no. 2, pp. 333–346.
- Juselius, K 2006, *The cointegrated VAR model: methodology and applications*, Oxford University Press, Oxford, England.
- Kar, M and Pentecost, EJ 2000, 'Financial development and economic growth in Turkey: further evidence on the causality issue', *Economic Research Paper* No. 00/27.
- Kar, Muhsin. Nazlıoğlu, Şaban. and Ağır, Hüseyin. 2011, 'Financial development and economic growth nexus in the MENA countries: Bootstrap panel granger causality analysis', *Economic Modelling*, vol. 28, pp. 685–693.
- Karam, Souhail 2009, 'Saudi Arabia plans sukuk, bonds market: regulator', *Arabian Business.com*, 6 June, viewed 21 April 2010,  
<http://www.arabianbusiness.com/bahraininvestor/feature/557926?marketid=Bahrain>
- Karl, Terry Lynn. 1997, *The Paradox of Plenty: Oil Booms and Petro-States*, Berkeley and Los Angeles: University of California Press, CA.
- Kargbo, S. M and Adamu, P. A 2009, 'Financial development and economic growth in Sierra Leone', *Journal of Monetary and Economic Integration*, vol. 9, pp. 30–61.
- Katos, A 2004, *Econometrics: Theory and practice*, Thessaloniki, Greece.
- Khan, A 2000, 'The finance and growth nexus', *Federal Reserve Bank of Philadelphia Business Review*, pp. 3–14
- Khan, Mohsin and Senhadji, Abdelhak. 2000, 'Financial Development and Economic Growth: An Overview', *IMF Working Paper* No. 00/209.
- Khan, A, Qayyum, A and Sheikh, S 2005, 'Financial development and economic growth: the case of Pakistan', *Pakistan Development Review*, vol. 44, no. 4, pp. 819–837.
- Khoshhal, Khader. 2004, 'Investment Behavioral Decision Making – A Case Study of the Saudi Stock Market', *King Fahd University of Petroleum and Minerals*, Saudi Arabia.
- King, R. G and Levine, R 1993a, 'Finance and growth: Schumpeter might be right', *Quarterly Journal of Economics*, vol. 108, no. 3, pp. 717–738.

- King, R. G and Levine, R 1993b, 'Finance, entrepreneurship and growth: theory and evidence', *Journal of Monetary Economics*, vol. 32, no. 3, pp. 513–42.
- Kirankabeş, Mustafa Cem and Başarir, Çağatay 2012, 'Stock market development and economic growth in developing countries: an empirical analysis for Turkey', *International Research Journal of Finance and Economics*, no. 87, pp. 134–146.
- Kolapo, F. T and Adaramola, A. O 2012, 'The impact of the Nigerian capital market on economic growth (1990–2010)', *International Journal of Developing Societies*, vol. 1, no. 1, pp. 11–19.
- Kugler, Maurice. 2006, 'Spillovers from foreign direct investment: Within or between Industries?', *Journal of Development Economics*, vol. 80, no. 2, pp. 444–477.
- Kularatne, C 2001, 'An examination of the impact of financial deepening on long-run economic growth: an application of a VECM structure to a middle-income country context', *Trade and Industrial Policy Strategies*, annual forum.
- Kwiatkowski, D, Phillips, P, Schmidt, P and Shin, Y 1992, 'Testing the null hypothesis of stationarity against the alternative of a unit root', *Journal of Econometrics*, vol. 54, pp.159–178.
- Kyle, A 1984, 'Market structure, information, futures markets, and price formation', in G Story, A Schmitz and A Sarris (eds), *International agricultural trade: advanced readings in price formation, market structure and price instability*, Westview Press, Boulder, CO.
- Laurenceson, James 2002, 'The impact of stock markets on china's economic development: some preliminary assessments', Memo, The University of Queensland, Brisbane.
- Leahy, Michael, Schich, Sebastian, Wehinger, Gert, Pelgrin Florian and Thorgeirsson, Thorsteinn 2001, 'Contributions of financial systems to growth in OECD Countries', OECD Economic Department Working Papers No. 280.
- Levine, R 1991, 'Stock markets, growth, and tax policy', *Journal of Finance*, vol. 46, no. 4, pp. 1445–1465.
- Levine, R 1997, 'Financial development and economic growth: views and agenda', *Journal of Economic Literature*, vol. 35, pp. 688–726.
- Levine, R and Zervos, S 1996, 'Stock market development and long-run growth', *World Bank Economic Review*, vol. 10, no. 2, pp. 323–339.
- Levine, R and Zervos, S 1998, 'Stock markets, banks, and economic growth', *American Economic Review*, vol. 88, no. 3, pp. 537–558.
- Levine, R, Loyaza, N and Beck, T 2000, 'Financial intermediation and growth: causality and causes', *Journal of Monetary Economics*, vol. 46, pp.31–77.

- Liu, X., Siler, P., Wang, C. and Wei, Y. 2000, 'Productivity spillovers from foreign direct investment', *Journal of International Business Studies*. Third Quarter, pp. 407–425.
- Looney, R. 1989, 'Saudi Arabia's Development Strategy: Comparative Advantage versus Sustainable Development', *Orient*. Pp. 75–96.
- Lucas, Robert E 1988, 'On the mechanics of economic development', *Journal of Monetary Economics*, vol. 22, pp. 3–42.
- Luintel, Kul B and Khan, Moshahid 1999, 'A quantitative reassessment of the finance-growth nexus: evidence from a multivariate VAR', *Journal of Development Economics*, vol. 60, pp. 381–405.
- Luintel, K., Khan, M. and Arestis, P. 2008. 'Financial structure and economic growth', *Journal of Development Economics*, vol. 86, no. 1, pp. 181-200.
- Lütkepohl, H 2005, *New introduction to multiple time series analysis*, 2nd edn, Springer, Berlin.
- Majid, M. S 2007, 'Does financial development and inflation spur economic growth in Thailand?', *Chulalongkorn Journal of Economics*, vol. 19, no. 2, pp. 161–184.
- Masih, Mansur. Al-Elg, Ali. and Madani, Haider. 2009, 'Causality between financial development and economic growth: an application of vector error correction and variance decomposition methods to Saudi Arabia', *Applied Economics*, vol. 41, no. 13, pp. 1691-1699.
- Mayer, C 1988, 'New issues in corporate finance', *European Economic Review*, vol. 32, no. 5, pp. 1167–1188.
- McKinnon, R 1973, *Money and capital in economic development*, Brookings Institutions, Washington, DC.
- Melo, Jaime de 1988, 'Commutable General Equilibrium Models for Trade Policy Analysis in Developing Countries: A Survey', *Journal of Policy Modeling*, vol. 10, no. 4, pp. 469-503.
- Minier, JA 2003, 'Are small stock markets different?', *Journal of Monetary Economics*, vol. 50, pp. 1593–1602.
- Minsky, H. P. 1959. 'A Linear model of cyclical growth', *Review of Economics and Statistics*. vol. XLI, pp. 137-145.
- Mishal, Zakia 2011, 'Financial development and economic growth: evidence from Jordan', *Economy Journal of Business & Economic Studies*, vol. 17, no. 2, pp. 20–34.
- Mishra, P. K 2009, 'Capital market development and economic growth in India: a causality analysis', Working paper series, *Institute of Technical Education and Research, Jagamara, Bhubaneswar, Orissa, India*.
- Mishra et al. 2010, 'Capital market efficiency and economic growth: the case of India', *European Journal of Economics, Finance and Administrative Sciences*, no. 27, pp. 130–138.

- Mohamed, S. E 2008, *Finance-growth nexus in Sudan: empirical assesment based on an application of the autoregressive distributed LAG (ARDL) model*, Arab Planning Institute, Kuwait.
- Mohd, Rosylin, Shabri, Yusof M and Majid, Abd 2008, 'Towards an Islamic international financial hub: the role of Islamic capital market in Malaysia', *International Journal of Islamic and Middle Eastern Finance and Management* vol.1, no. 4, pp. 313–329.
- Mohtadi, H and Agarwal, S 1997, 'Stock market development and economic growth: evidence from developing countries', Research paper, Department of Economics, University of Wisconsin, Milwaukee, WI.
- Moody's, 2008, 'Middle East: Resurgent Inflation Sharpen Fiscal and Political Riskd', *Moody' Investor Services*.
- Morck, R, Shleifer, A and Vishny, R 1990a, 'Do managerial objectives drive bad acquisitions?', *Journal of Finance*, vol. 45, no. 1, pp. 31–48.
- Morck, R, Shleifer, A and Vishny, R 1990b, 'The stock market and investment: is the market a sideshow?', *Brookings Papers on Economic Activity*, vol. 2, pp. 157–215.
- Mosesov, A and Sahawneh, N 2005, 'UAE: financial development and economic growth', *Skyline Business Journal*, vol. 1, pp. 1–11.
- Mukherjee, T. K and Atsuyuki N 1995, 'Dynamic relations between macroeconomic variables and the Japanese stock market: an application of a vector error correction model', *Journal of Financial Research*, vol. 18, pp. 223–237.
- Mundaca, B. G 2009, 'Remittances, financial market development, and economic growth: the case of Latin America and the Caribbean', *Review of Development Economics*, vol. 13, no. 2, pp. 288–303.
- Naceur, B and Ghazouani, S 2007, 'Stock markets, banks, and economic growth: empirical evidence from the MENA region', *Research in International Business and Finance*, vol. 21, no. 2, pp. 297–315.
- Nasib, Hannan 2008, 'Islamic finance: a global proposition', *Capco*, viewed 21 April 2010, <http://www.capco.com/node/218>
- National Commercial Bank (NCB), 2001a, 'The Evolving role of Financial Institutions in the New Decade'. First Quarter 2001, *NCB*. Jeddah.
- National Commercial Bank (NCB) 2001b, 'What is Monetary Policy and Fiscal Policy? How does it work in the U.S. and Saudi Arabia?', *Saudi Economic Review*. Third/Fourth Quarter 2001.
- Naughton Shahnaz and Naughton, Tony 2000, 'Religion, ethics and stock trading: The case of an Islamic equities market', *Journal of Business Ethics* vol. 23, no. 2, pp. 145–159.

- Ndako, U 2010, 'Stock markets, banks and economic growth: time series evidence from South Africa', *African Finance Journal*, vol. 12, no. 2, pp. 72–92.
- Ndikumana, L 2000, 'Financial Determinants of Domestic Investment in Sub-Saharan Africa: Evidence from Panel Data', *World Development*, vol. 28, no. 2, pp. 381-400.
- Ngugi, R, Amanja, D and Maana, I 2009, 'Capital market, financial deeping and economic growth in Kenya', Research paper for *Centre for the Study of African Economies, Oxford University*, Oxford, England.
- Niblock, T and Malik, M 2007, *The political economy of Saudi Arabia*, Routledge, New York.
- Nowbutsing, Baboo M 2009, 'Stock market development and economic growth: the case of Mauritius', *International Business & Economics Research Journal*, vol. 8, no. 2, pp. 77–88.
- Obiakor, R and Okwu, A 2011, 'Empirical analysis of impact of capital market development on Nigeria's economic growth (1981–2008) (Case study: Nigerian stock exchange)', *De La Salle University Business & Economics Review*, vol. 20, no. 2, pp. 79–96.
- Obstfeld, M 1994, 'Risk-taking, global diversification, and growth', *American Economic Review*, vol. 84, no. 5, pp. 1310–1329.
- Ocampo, Jose Antoinio and Stiglitz, Joseph 2008, *Capital Market Liberalization and Development*, Oxford University Press Inc. New York.
- Odhiambo, N 2010, 'Finance-investment-growth nexus in South Africa: an ARDL-bounds testing procedure', *Economic Change and Restructuring*, vol. 43, no. 3, pp. 205–219.
- Omran, Mohammed and Bolbol, Ali 2003, 'Foreign direct investment, financial development, and economic growth: evidence from the Arab countries', *Review of Middle East Economics and Finance*, vol. 1, no. 3, pp. 231–49.
- Osinubi, T 2000, 'Does stock market promote economic growth in Nigeria?', Research paper for *University of Ibadan*, Ibadan, State of Oyo, Nigeria.
- Olweny, T. O and Kimani, D 2011, 'Stock market performance and economic growth empirical evidence from Kenya using causality test approach', *Advances in Management and Applied Economics*, vol. 1, no. 3, pp. 177–220.
- OPEC 2013, 'Saudi Arabia'
- Pagano, Marco 1993, 'Financial markets and growth', *European Economic Review*, vol. 37, pp. 613–622.
- Patrick, Hugh. 1966, *Financial Development and Economic Growth in Underdeveloped Countries*, *Economic Development and Cultural Change*, vol. 14, pp. 174-189.
- Pesaran, M. H. and Pesaran, B. 1997, *Working with Microfit 4.0: an interactive approach*, Oxford University Press, Oxford.

- Pesaran, M. H, Shin, Y and Smith, R. J 2001, 'Bounds testing approaches to the analysis of level relationships', *Journal of Applied Econometrics*, vol. 16, pp. 289–326.
- Parker, M. 2006, 'Role of Islamic finance in Saudi industry', *Arab News*, 6 December, viewed 21 April 2010,
- Phillips, P. C. B. and Perron, P. 1988, 'Testing for a unit root in time series regression', *Biometrika*, vol. 75, pp. 335–346.
- Quartey, P and Prah, F 2008, 'Financial Development and Economic Growth in Ghana: is there a causal link?', *African Finance Journal*, vol. 10, no. 1, pp. 28–48.
- Rahman, M. and Salahuddin, M. 2010, 'The determinants of economic growth in Pakistan: does stock market development play a major role?', *Economic Issues*, vol. 15, part 2, pp. 68–86.
- Ram, Rati 1999, 'Financial Development and Economic Growth: Additional Evidence', *The Journal of Development Studies*, vol. 35, no. 4, pp. 164–174.
- Ramady, A. M. 2010, *The Saudi Arabian economy: policies, achievements, and challenges*, 2nd edn, Springer, New York.
- Ray, H, Biswas, J. and Roy, M. K. 2009, 'Capital market: levels of development and impediments to growth: some international evidences', *IUP Journal of Applied Finance*, vol. 15, no. 5, pp. 5–22.
- Robinson, J. 1952, *The Generalization of the General Theory*, in *the Rate of Interest and Other Essays*. MacMillan, London.
- Romer, Paul 1986, 'Increasing returns and long-run growth', *Journal of Political Economy*, vol. 94, pp. 1002–1037.
- Romer, Paul 1990, 'Endogenous technical change', *Journal of Applied Economics*, vol. 98, pp. 71–101.
- Rousseau, P. L. and Wachtel, P. 2000, 'Equity markets and growth: cross-country evidence on timing and outcomes, 1980–1995', *Journal of Banking and Finance*, vol, 24, pp. 1933–1957.
- Ryan, Nick 2008, 'The rise and rise of Islamic finance', *The Market*, 2 August, viewed 21 April 2010,  
<http://www.enterprise-ireland.com/NR/rdonlyres/D71D37D9-9ABB-45E1-8354-53601A09F4D6/0/TheRiseandRiseofIslamicFinance.pdf>
- Şamiloğlu, Famil and Savaş, Bilal 2010, 'Financial development and economic growth in Turkey: an ARDL bounds testing approach', *Çankırı Karatekin University the Institute of Social Sciences*, no.1, pp. 25–34
- SAMA, Annual Report 1997-2013. *SAMA Press*. Saudi Arabia.

- SAMA 2004, *A case study on globalization and the role of institution building in the financial sector in Saudi Arabia*, Riyadh.
- SAMA 2013, Database, [www.sama.gov.sa](http://www.sama.gov.sa).
- Saudi Press Agency, Riyadh, 18 May 2008, 'Government to Increase Subsidies on Basic Foodstuffs to Combat Inflation'.
- Saudi Stock Exchange 2013, official website, <http://www.tadawul.com.sa>.
- 'Saudi Arabia: Shariah index shows increasing trends toward Islamic investment' 2009, Sukuk.net, 26 January, viewed 21 April 2010, [http://sukuk.net/news/articles/1/SaudiArabiaShariah\\_index\\_shows\\_increasing\\_trend.html](http://sukuk.net/news/articles/1/SaudiArabiaShariah_index_shows_increasing_trend.html)
- Schmith, S (n.d.), 'Expanding trade financing opportunities through Islamic finance', *ITA*, viewed 21 April 2010, <[http://www.ita.doc.gov/td/finance/publications/Islamic\\_Banking.pdf](http://www.ita.doc.gov/td/finance/publications/Islamic_Banking.pdf)>
- Schumpeter, J. A 1912, *The theory of economic development*, Oxford University Press, Oxford, England.
- Schwarz, G. W. 1978, 'Estimating the dimension of a model', *Annals of Statistics*, vol. 6, pp. 461–464
- Seetanah, B. 2008, 'Financial development and economic growth: an ARDL approach for the case of the small island state of Mauritius', *Applied Economics Letters*, vol. 15, pp. 809 – 813.
- Shahbaz, M, Ahmed, N and Ali, L 2008, 'Stock market development and economic growth: ARDL causality in Pakistan', *International Research Journal of Finance and Economics*, no. 14, pp. 182–195.
- Shaheen, A. 2010, 'Saudi Arabia five-year plan to create jobs, expand services', *Gulf News*, 11 August, viewed 20 November 2011, <http://gulfnews.com/business/economy/saudi-arabia-five-year-plan-to-create-jobs-expand-services-1.666670>
- Shaw, E. S 1973, *Financial deepening in economic development*, Oxford University Press, New York.
- Sfakianakis, J. 2011 (11 May), 'Holding back: state spending focus restrains private sector, diversification', *Banque Saudi Fransi*, viewed 20 November 2011, <http://www.saudibrit.com/2011/05/20/saudi-arabia-economics-%E2%80%93-may-2011-%E2%80%93-bsf/>
- Shoult, A and Anwar, H. 2009, *Doing business with Saudi Arabia*, 4th ed, GMB Publishing, London, UK.

- Shleifer, A and Summers, L. 1988, 'Breach of trust in hostile takeovers', in A Auerbach (ed.), *Corporate takeovers: causes and consequences*, University of Chicago Press, Chicago, IL.
- Shuaa Capital 2008, 'The project: King Abdullah economic city, equity investment report', 15 April.
- Sinha, Dipendra and Macri, Joseph 2001, 'Financial development and economic growth: The case of eight Asian countries', *MPRA Paper No. 18297*, posted 2 November 2009.
- Singh, Ajil 1997, 'Financial liberalisation, stock markets and economic development', *The Economic Journal*, vol. 107, pp. 771–782.
- Solow, Robert M 1956, 'A contribution to the theory of economic growth', *Quarterly Journal of Economics*, pp. 65–94.
- Solow, Robert M 1994, 'Perspective on growth theory', *The Journal of Economic Perspectives*, vol. 8, pp. 45–54.
- Stern, Nicholas 1989, 'The economics of development: a survey', *The Economic Journal*, vol. 99, no. 397, pp. 597–685.
- Stern, Nicholas 1991, 'The determinants of growth', *The Economic Journal*, vol. 101, pp. 122–133.
- Stiglitz, J. E 1985, 'Credit markets and the control of capital', *Journal of Money, Credit and Banking*, vol. 17, no. 2, pp. 133–152.
- Stiglitz, J. E 1993, 'The role of the state in financial markets', in M Bruno and B Pleskovic (eds) *Proceedings of the World Bank Annual Conference on Development Economics*, World Bank, Washington, DC.
- Stoica, O 2002, *The role of the capital market in economic development*, University of Iasi, Romania.
- Stock, J. H. and Watson, M. W. 2006, *Introduction to Econometrics*. 2<sup>nd</sup> edn, Addison Wesley. New York.
- Sule, K and Momoh, C. 2009, 'The impact of stock market earnings on Nigerian per capita income', *African Journal of Accounting, Economics, Finance and Banking Research*, vol. 5, no. 5, pp. 77–88.
- Swan, Trevor W. 1956, 'Economic growth and capital accumulation', *Economic Record*, vol. 32, pp. 334–61.
- Tachiwou, A. M 2010, 'Stock market development and economic growth: the case of West African Monetary Union', *International Journal of Economics and Finance*, vol. 2, no. 3, pp. 97–103.
- Tadawul, 2013, Website, Tadawul.com.sa.
- Thangavelu, S. M., and James. A. B. J. 2004. 'Financial development and economic growth in Australia: An empirical analysis'. *Empirical Economics*, vol. 29, no. 2, pp. 247–60.
- Thirwall, A.P.1994, *Growth and Development*. Macmillan, London.

- Todaro, M. 1994, *Economic Development*. Longmans, London.
- Unalmiş, Deren 2002, 'The causality between financial development and economic growth: the case of Turkey', Research Department Working Paper No. 3, *The Central Bank of the Republic of Turkey*.
- UNCTAD 2011, *UNCTAD Handbook of Statistics 2011*, United Nations Publication, New York.
- Viney, Christopher 2003, *Financial institutions, instruments and markets*, McGraw-Hill Australia, Australia.
- Vogel, R and Buser, S 1976, 'Inflation, financial repression and capital formation in Latin America', in R McKinnon (ed.), *Money and finance in economic growth and development: essays in honor of Edward S. Shaw*, Marcel Dekkar, New York.
- Were, M, Nzomoi, J and Rutto, N 2012, 'Assessing the impact of private sector credit on economic performance: evidence from sectoral panel data for Kenya', *International Journal of Economics and Finance*, vol. 4, no. 3, pp. 182–190.
- Wilson, Rodney 1983, *Banking and Finance in the Arab Middle East*, Macmillan, London.
- Wilson, R, Malik, M, Al-Salamah, A and Al-Rajhi, A 2004, *Economic development in Saudi Arabia*, Routledge Curzon, London.
- Wilson, R 2008, 'Innovation in the structuring of Islamic sukuk securities', *Humanomics*, vol. 24, no. 3, pp. 170–181.
- Wong, A and Zhou, X 2011, 'Development of financial market and economic growth: review of Hong Kong, China, Japan, the United States and the United Kingdom', *International Journal of Economics and Finance*, vol. 3, no. 2, pp. 111–115.
- Wooldridge, JM 2006, *Introductory econometrics: a modern approach*, 3rd edn, Lachina Publishing Services, Ohio.
- World Bank 2009, *World development indicators*. Washington, DC.
- Wurgler, Jeffrey 2000, 'Financial markets and the allocation of capital', *Journal of Financial Economics*, vol. 58, pp. 187–214.
- Xu, Z 2000, 'Financial development, investment, and economic growth', *Economic Inquiry*, vol. 38, no. 2, pp. 331–344.
- Zang, H and Kim, Y. C 2007, 'Does financial development precede growth? Robinson and Lucas might be right', *Applied Economic Letters*, vol. 14, pp. 15–19.
- Zivengwa, T, Mashika, J, Bokosi, FK and Makova, T 2011, 'Stock market development and economic growth in Zimbabwe', *International Journal of Economics and Finance*, vol. 3, no. 5, pp. 140–150.

## Appendix A

Year	RGDPR	RNOIL	SMI	TR	VT	MC	BCP	M1	M2	INF	EX	NOILB	INVR	FDI	GEDU
1970	12	1.9					1696	0.11567	0.1407			2.23	0.93307	0.1	517402
1971	19.9	13.3					1692	0.10693	0.13109			3.21	1.15565	-1.6	582774
1972	23.5	21.2					1809	0.12408	0.14535			3.61	1.16214	0.4	647815
1973	25.6	28.3					3201	0.12273	0.13979			4.25	1.0629	-4.3	726645
1974	27.5	61.7					5401	0.06689	0.07653			12.93	2.25183	-8.3	822320
1975	5.2	37.3					8507	0.11957	0.12917			11.5	1.45595	4	889803
1976	12.7	3.6					8413	0.13853	0.14656			13.14	2.43593	-0.6	963917
1977	7	7					11217	0.17382	0.18556			14.31	2.4553	1.1	1020531
1978	-1	7.3					19739	0.18543	0.20073			14.26	2.89011	0.7	1106868
1979	9.8	6.1					29240	0.14821	0.17918			32.11	2.40306	-1.1	1201038
1980	6.5	8.6					40252	0.11601	0.15258	4.402		37.89	2.00238	-1.9	1287183
1981	4.7	10.1					46572	0.1231	0.16548	2.811		36.68	1.89822	3.5	1388399
1982	-11.1	5.4					49397	0.16605	0.22147	0.946		33.42	2.33866	7.3	1505307
1983	-8.2	1.5					56002	0.19389	0.2693	0.208	3.5	29.83	3.27701	3.8	1648944
1984	-3.1	-1					59280	0.1977	0.28474	-1.559	3.58	28.8	3.44073	4.1	1800273
1985	-4.4	0.4	690.88	0.011	0.002	0.178	58081	0.22066	0.32611	-0.07	3.65	27.33	2.31386	0.5	1929679
1986	5.1	-5.8	646.03	0.013	0.002	0.195	56137	0.2666	0.3942	-0.17	3.75	14.5	2.17792	1.1	2095889
1987	-3.9	-0.5	780.64	0.023	0.005	0.227	61858	0.27832	0.40202	-0.16	3.75	18.34	2.06172	-1.4	2261708
1988	7	1.3	892	0.023	0.006	0.26	70523	0.28338	0.40586	0.91	3.75	14.97	2.47929	-0.4	2433549
1989	0.5	2	1086.83	0.031	0.009	0.299	73281	0.25696	0.38204	1	3.75	18.22	2.57302	-0.7	2607861
1990	8.4	1.3	979.8	0.045	0.01	0.221	65295	0.23384	0.32365	2.1	3.75	23.99	1.99788	1.6	2736558
1991	9.4	2.3	1765.24	0.047	0.017	0.368	73616	0.24493	0.33566	4.5	3.75	19.99	2.65223	0.1	2852190
1992	4.2	5	1888.65	0.066	0.027	0.403	86608	0.24579	0.33655	-0.37	3.75	19.33	3.44634	-0.1	3059565
1993	0	2.1	1793.3	0.087	0.035	0.4	101932	0.24551	0.34228	0.8	3.75	17	3.88665	1	3271328
1994	0.9	1.3	1282.9	0.171	0.049	0.288	113192	0.24976	0.35197	0.6	3.75	15.8	3.20489	0.3	3437183
1995	0.4	0.9	1367.6	0.152	0.043	0.286	121153	0.23331	0.34806	5	3.75	17.01	3.2574	-1.3	3634691
1996	3.2	3.7	1531	0.147	0.043	0.291	123547	0.22502	0.34534	0.87	3.75	20.7	3.36278	-0.7	3757230
1997	2.6	5.1	1957.8	0.278	0.1	0.361	133684	0.22849	0.35337	-0.04	3.75	19.06	3.48401	1.8	3868524
1998	2.7	2.4	1413.1	0.322	0.094	0.292	160655	0.2566	0.40924	-0.17	3.75	12.71	4.37306	2.9	4000820
1999	-0.7	3.2	2028.53	0.247	0.093	0.379	162190	0.25956	0.40095	-0.13	3.75	17.91	4.22545	-0.5	4115106
2000	4.9	4	2258.29	0.256	0.092	0.36	172238	0.2342	0.36274	-1.1	3.75	28.44	3.83145	-1	4186574
2001	1	3.5	2430.11	0.304	0.122	0.4	187064	0.2614	0.39499	-1.14	3.75	24.46	3.96151	0	4271590
2002	0.1	3.7	2518.08	0.476	0.189	0.397	205829	0.28617	0.43895	0.2	3.75	25.03	4.22875	-0.3	4291685
2003	7.7	3.6	4437.58	1.011	0.741	0.733	228486	0.27717	0.41808	0.6	3.75	28.81	4.36452	-0.3	4355658
2004	5.3	4.6	8206.23	1.543	1.889	1.224	313928	0.289	0.43459	0.3	3.75	38.23	4.32994	-0.1	5621551
2005	5.6	5.2	16712.64	1.697	3.499	2.061	435926	0.23978	0.37953	0.7	3.75	54.37	4.2551	3.8	5838443
2006	3.1	5.1	7933.29	4.291	3.939	0.917	476020	0.23416	0.4034	2.2	3.75	65.14	4.5169	5.1	5920257
2007	2	4.7	11038.66	1.314	1.773	1.348	577882	0.26588	0.4621	4.1	3.75	72.55	5.34873	6.3	5999481
2008	4.2	4.3	4802.99	2.122	1.098	0.517	734557	0.23822	0.44404	9.9	3.75	97.37	5.87402	8.3	6137186
2009	0.1	3.5	6121.76	1.056	0.894	0.846	734237	0.36922	0.59814	5.1	3.75	61.68	6.81123	9.7	6309502
2010	5.1	6.2	6620.75	0.572	0.452	0.789	775756	0.36907	0.54505	5.3	3.75	79.51	6.346	6.5	6388538

# Appendix B

