



Essays on Financial Development and Economic Growth

By

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Abstract

The financial sector is generally considered a key element of the financial system of an economy and as such its overall contribution and effectiveness can be gauged in terms of the role it plays in a country's economic development and growth. Since the 1980s, the United Arab Emirate (UAE) has undergone several economic changes and reforms, the purpose of which has been to diversify the economy away from its dependence on a declining oil sector towards the creation of a stable and vibrant economy in which newly established industries, based on financial services and tourism, can prosper. The empirical literature has examined issues specific to finance and growth using data for the UAE, but few studies examine the extent to which financial development has progressed using a longer time series data, and whether financial development has been influential in stimulating economic growth with almost all studies using cross-sectional data. The main contribution of this thesis is to provide a detail analysis of the main drivers of financial development and, in particular, the linkages between financial sector development and economic growth as well as the exploration of the savings-growth nexus. The study uses time series data for the period of analysis covers 1980 to 2013. This period has seen the UAE project itself as being an emerging and more diversified developing economy. Accompanying this development has been improvements in the UAE financial system and the gradual emergence of more financial institutions and financial instruments.

The study employed the ARDL approach to investigate the short-run and long-run association between financial deepening and growth in the real economy. Two models were estimated separately using the ARDL approach. One model covered the financial deepening by

applying domestic credit to the private sector as percentage of GDP, as dependent variable, and monetisation ratio, real per capita income and number of bank branches as dependent variables. The estimators were found cointegrated with all independent variables found to affect financial deepening in the short-run. However, in the long-run only the real per capita income and the monetisation ratio were found cointegrated with the domestic credit to private sector as percentage of GDP. In the second model GDP was taken as the dependent variable and gross investment as percent of real GDP, domestic credit to private sector as percent of GDP, total trade percentage of GDP as a measure of trade openness, and oil prices taken as independent variables. It was found that gross investment as percent of GDP and trade openness were statistically insignificantly affecting growth. However, domestic credit to private sector in percentage of real GDP and oil prices were affecting growth patterns in the long-run. This suggests that the development in financial sector causes changes in the growth patterns in the UAE in the long-run. Furthermore, the variations in the oil prices in international market affect the growth pattern positively.

The study further examines the savings-growth nexus. One reason is the absence of enough empirical evidence in the literature using time series data analysis. Studies involving cross-sectional data analysis seem to be prone to certain limitations as they unrealistically assume that saving-growth association is homogenous across countries. The causal link and long-run association between saving and growth can only be established using time series data. The study finds that saving is statistically significantly affected by domestic liquidity percentage of real GDP, foreign savings as percent of real GDP, dependency ratio and real interest rate. In case of all independent variables, the sign and magnitude of the associated coefficients were strong and statistically significant. This implies that growth in case of the UAE is dependent upon saving in long-run and conforms with the group of authors claiming that the

causality goes from saving to economic growth.

Finally, the existing literature on the statistical linkage between stock market development and growth in the real economic activities presents a mixed response. There are several cross-sectional studies, which argue that there is a positive link between stock variables and the real economy while others argue that the development in the stock market does show any significant impact on real economic activities. This study filled the gap in the literature by exploring the financial development and economic growth relationship using time series data. The results from this study support the hypothesis that the size of equity markets is positively linked with economic growth. This implies that Arab countries and UAE in particular should consider these determinants to increase the GDP growth rate when formulating policies for the development of the stock market.

Declaration

“Whilst registered as a candidate for the above degree, I have not been registered for any other research award. The results and conclusions embodied in this thesis are the work of the named candidate and have not been submitted for any other academic award”.

Signed:

Reem Abdulaziz Lanjawi

Statement of Originality

I hereby certify that this paper constitutes my own product, that where the language of others is set forth, quotation marks so indicate, and that appropriate credit is given where I have used the language, ideas, expressions or writing of others.

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Reem Abdulaziz Lanjawi

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Dedication

This thesis is dedicated to
The father of the UAE's Nation
Late Sheikh Zayed bin Sultan Al Nahyan

And

His Highness Sheikh Khalifa bin Zayed bin Sultan Al Nahyan
The President of the United Arab Emirates

And

Lieutenant General Sheikh Mohammed bin Zayed bin Sultan Al Nahyan
The Crown Prince of Abu Dhabi and Deputy Supreme Commander of the
UAE Armed Forces

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List of Abbreviations and Acronyms

ADCB	Abu Dhabi Commercial Bank
ADX	Abu Dhabi Stock Exchange
ADF	Augmented Dickey Fuller test
ADSM	Abu Dhabi Securities Market
AED	United Arab Emirates Dirham
AGRY	Agriculture to GDP Ratio
ARDL	Auto Regressive Distributed Lag
BLUE	Best Linear Unbiased Estimators
CIA	The World Fact book
CIR	Cost Income Ratio
DC	Domestic Credit to private sector
DGCX	Dubai Gold and Commodities Exchange
DEPEND	Dependency Ratio
DFSA	Dubai Financial Services Authority
DFM	Dubai Financial Market
DGP	Data Generation Process
DIB	Dubai Islamic Bank
DIFC	Dubai International Financial Corporation
DIFX	Dubai International financial Exchange
DOMCR_GDP	Domestic Credit Provision to the Private Sector to GDP
DW	Durbin-Watson
EAGLE	Emerging and Growth- Leading Economies
ECM	Error Correction Model
ECT	Error Correction Term
EMH	Efficient Market Hypothesis
ENBD	Emirates National Bank of Dubai
ESCA	Emirates Securities and Commodities Authority
ETISALAT	Emirates Telecommunications Corporation
FDI	Foreign Direct Investment

FGB	First Gulf Bank
FS_Y	Foreign Savings Ratio to GDP
GAFTA	Greater Arab free Trade Area
GCC	Gulf Cooperation Council
GDP	Gross Domestic Product
GFDD	Global Financial Development Database
GMM	Generalised Method of Moments
GNP	Gross National Product
GRINV_GDP	Ratio of Gross Investment to GDP
IAS	International Accounting Standards
IFS	International Financial Statistics
IMF	International Monetary Fund
IPO's	Initial Public Offerings
L_REAL	Real Interest Rate
L_RPCI	Real Per Capita Income
LBank_Br	Number of Bank Branches
LDC	Credit Provision to Private Sector
LM2Y	Natural log of Monetisation Ratio
LR_PCI	Log of Real Per Capita Income
MENA	Middle East and North Africa
MKT_CAP_Y	Market Capitalisation Ratio
MPC	Marginal Propensity to Consume
MPS	Marginal Propensity to Save
M2Y	Money supply Ratio
M2	Domestic Liquidity
NBAD	National Bank of Abu Dhabi
OLS	Ordinary Least Squares
OTC	Over The Counter
P_oil	Global Price of Oil
PCI	Per Capita Income
Real_Int	Real Interest Rate
RPCI	Real Per Capita Income
RTGS	Real Time Gross Settlement
SCA	Securities and Commodities Authority

SME's	Small to Medium – sized Enterprises
TR	Trade as Percentage of GDP
Tur_Ov_Ratio	Turnover Ratio
TURN_OVER	Turnover Ratio
UAE	United Arab Emirates
USD	United States Dollar
VAL_TR	Value Traded Ratio
Val_Tr_Ratio	Value Traded Ratio
VAR	Vector Auto Regression
VECM	Vector-based Error Correction Model
WTO	World Trade Organisation
Y_GR	GDP Growth Rate

Chapter 1 – Introduction

1.1 Overview of the Study

The World Bank defines the financial sector as interrelated and interdependence roles of financial institutions and markets, where financial instruments are designed and traded. These institutions and markets are regulated and supervised by a legal and regulatory framework within a given economy. The financial sector performs major functions like mobilise and pooling savings, producing information ex-ante related to possible investments and allocating capital, facilitating trade, diversifying and managing risks, monitoring investments and risks by implementing effective corporate governance practices and making the exchange of financial commodities easy. Therefore, financial development occurs when the financial sector performs these functions efficiently and effectively. A simple conceptual framework of four by two (4x2) is designed by the World's Bank Financial Database. This framework provides the basis to measure financial development. It entails four proxy variables, namely, financial depth, access, efficiency and stability. These four proxies are measured for the development of financial sector in both financial institutions and markets. Financial markets are classified as capital market or money market. Capital markets are sources of long-term funds like in issuance of bonds and shares through initial public offerings (IPOs). Money markets on the other hand provide the short period's funds to run the operations of firms and provide liquidity to investors in exchange markets.

Economic growth is measured in terms of Gross Domestic Product (GDP) or Gross National Product (GNP). GDP is measured by the market value of the commodities produced in a given country during a year. GDP has distinct proportions of different sectors' contribution

and these vary over a period of time. For example, the contributions of manufacturing and services sectors increases/decreases from year-to-year. In the same way the contributions of subsectors of manufacturing and services sectors may also vary from year-to-year.

The role of financial sector development in emerging economies has always been raised by the incorporation and expansion of financial institutions in both banking and non-banking sectors. Theoretically, these functions are the basic stepping-stones for the growth in any economy. Nevertheless, there are agreements and disagreements among economists regarding the linkages of saving-growth, saving-interest, financial sector and growth associations and causal directions. Various studies argue that higher level of savings leads to higher growth levels. This is because higher levels of savings ensure higher capital accumulation and investment. There are however other studies suggesting that it is not savings that lead to higher economic growth but rather high economic growth leads to higher level of savings. Higher economic growth levels are the source of higher national income and higher rates of savings, among others. In the same way, it is argued that income and interest rates are the major determinants of savings. Higher incomes lead to higher savings. However, the savings and interest rates have ambiguous relationship. At higher interest rates, the level of savings should rise as the incentive to save more is higher. However, due to substitution and income effects of interest on savings the total effect remains ambiguous. This is because as interest rises income also rises. A rise in income leads to higher spending and savings.

1.2 Financial Development and Economic Growth

The financial sector through its banking and nonbanking institutions mobilises savings and produces information useful for investment projects and efficient allocation of resources. It is generally believed the collection of information about a firms managers and market

conditions sometimes denies the occurrence of the transaction at all. For the continues growth in the real economic sector, it seems mandatory the country to have a dynamic and vibrant financial system. Some studies, for instance Jorgenson (1995) and Jorgenson (2005), go beyond the physical capital accumulation and argue that the evaluation of market conditions and the elimination of information asymmetries by financial systems is crucial for growth and economic expansion.

However, the literature is not free from controversies over the finance-growth nexus. On one hand, it is argued that financial growth is the pre-requisite and integral component for economic growth. These studies include Robinson (1952) Gurley, J., and Shaw (1967), Goldsmith (1969), Jung (1986) Ireland, P. (1994), Komal, and Abbas (2015). In contrast, other studies promote the argument that financial sector development is over emphasised and it is not an integral part of an economic-growth strategy. It is further argued that the type of data (cross-section or time-series) used in estimations also leads to different results.

Furthermore, it is also believed that the finance-growth causality does not go from finance to growth, rather it goes from economic growth to financial development. As the economy grows, more comprehensive and complex tools of financing are required. A dynamic and vibrant financial system responds to the financial needs of the growing economy and the financial sector adapts to new and innovative tools of finance, and hence the argument suggests that growth leads to finance. This argument, is supported by Jorgenson (1995) and Jorgenson (2005). Some authors have argued that the development of the financial sector is unnecessarily emphasised. The development of the financial sector has nothing to do with the growth in the real economy. (see Patrick, 1966; Demetriades and Hussein, 1996; Luintel and Khan, 1999; Greenwood and Smith, 1997; Rafindadi and Ozturk, 2016).

Stock markets are a fundamental part of the financial system in any country. Because of their liquid nature, they attract long-term investments at low transaction costs (Levine and Zervos (1998); Arestis et al. (2001); Bencivenga et al. (1995)). Higher liquidity in the stock market provides investors with the opportunity to sell their equities at any point in time, even before maturity. In this way, stock markets mobilise savings and lead to productivity growth.

Moreover, stock markets are integrated worldwide, therefore, the relationship between risk and uncertainty is what boosts investors' confidence to shift portfolio to high return and long-term investment Devereux and Smith (1994). The argument is extended that stock markets are facilitating the risk-averse investors and savers to carry on safer investment options at lower costs by diversifying their portfolio. This is done because the provision of more liquid means of sharing risk ensures that capital flows towards more promising investment projects (Dailami and Atkin, 1990).

The literature review on economic growth also explores its effect on the development of both the banking sector and stock market and includes contradicting views of different researchers. The literature includes studies claiming the superiority of the banking sector over the stock market development regarding their role in the growth prospect of a country. These studies include, among others, Stiglitz and Weiss (1981), Arestis and Demetriades (2002), Boyd and Prescott (1986), Stiglitz (1985) and Azeem and Mohammad (2015).

1.3 Research Motivations

One of the most important questions in economics is how economic growth is achieved and what factors affect it. Previous studies have explored the main drivers of economic growth. Most studies were done at the same point of time and across a number of countries for comparison purposes. Previous studies however do not include countries specific

characteristics, government structure, monetary and fiscal policies, financial system and governing and regulatory systems. Furthermore, most previous studies do not highlight the progress and development of economic growth over an extended period of time.

Therefore, the motivation of the study is to explore the factors that drive economic growth related to financial development determinants, such as financial deepening, savings, real interest rate and investment and the stock market, over an extended period of time (from 1980 to 2013). This study focuses on UAE policy and practices leading towards the expansion of the financial systems in both banking and nonbanking sectors, stock exchange, monetary policies and economic growth. Moreover, this research also explores the determinants of financial development, saving, investment and economic growth as well as their relationships.

1.4 Rationale of the Study

This study uses time series data of a single economy, United Arab Emirates, over a sample period from 1980 to 2013. To the author's best knowledge, it is first study that captures the uniqueness and specific attributes of the UAE financial development, economic growth and performance of its financial system. Agrawal (2001) argued that cross sectional data analysis needs to identify a representative country for comparison and this is not appropriate to examine a specific country over a period of time. Further, Beck et al. (2000) argued that cross-sectional analysis does not control for the endogeneity factors for all the repressors.

United Arab Emirates (UAE) being a small (in population) but oil rich country is new to the idea of stock market development relative to western and more developed countries.

Empirical evidence regarding the relationship between stock market development and the

economic growth in UAE context is scant. One study, Neame (2002), has argued that the stock markets for MENA (Middle East and North Africa) region are unsophisticated. In 2000, the formation of Securities and Commodities Authority (SCA) was a strong and bold step towards the establishment of an effective stock market. The market capitalisation in any newly born stock market is fluctuating quite erratically because of lack of, or not developed enough, regulation and the presence of short-term speculative activities. Nevertheless, Moustafa (2004) has concluded that UAE stock market is weak form efficient based on the Efficient Market Hypothesis (EMH). Although it can be argued that the financial market in UAE is still new and recent it was upgraded from a frontier market to an emerging market in 2013¹. It is argued that the capital market in UAE has always been driven with hydrocarbon revenues. The capital market boomed during 1975-1982 when the oil prices were rising. Furthermore, uncertainty around the regional financial markets, like crash of Kuwaiti stock market in 1983, had serious consequences for the financial market in UAE [Bin Sabit (2000) also cited in Moustafa (2004)].

Keeping in view the gap in the empirical body of knowledge on time series studies on stock market and economic growth relationship, this study has been initiated using a long time series data (1980-2013) on market capitalisation ratio, value added ratio, turnover ratio and GDP growth as model variables. Similar variables have also been used by Caprale et al. (2004), Levine and Zervos (1998), Demirguc-Kunt and Levine (1996).

1.5 Research Problem

It seems to be mandatory that a country should have a dynamic and vibrant financial system

¹Capital Finance International (retrieved on 29.11.2015 <http://www.grantthornton.ae/content/files/defining-period-for-uae-capital-markets-cfi-co.pdf>).

for the real economy to continue to grow. UAE is one of the fast-growing economies in the region. It is one of the countries which have been enjoying the highest Real Per Capita Income in the world. However, The Real Per Capita Income is showing a declining trend because of a significant rise in population². This rise in population has always been instrumental in achieving high economic growth rates. The rise in the number of migrants reflects the fact that the economy was expanding. Mega projects that were financed through the financial sector caused the demand for labor to rise. With the rise in population the activities in wholesale and retail trading sector were also rising.

The banking sector in UAE has been in a strong and robust position over the last decade³. In addition, the Central Bank of UAE report has highlighted the fact that the country's banking sector is well integrated with global financial markets with an increasing trend in the loans extended to borrowers, particularly from 2010 to 2015⁴. This shows the degree of activity of the financial sector in UAE regarding the investment financing in the country. Assets to GDP ratio in the banking sector peaked in 2008-09 at US\$ 545 Billion (AED 2 trillion approximately) and started to decline afterwards as a result of the financial crisis. The sustainable recovery started only in 2013 when assets to GDP ratio started rising again. On the contrary, falling property values forced the banks to restructure their loans with the intention of absorbing their contingent liabilities. The authorities regained access to financial markets in September 2010 with higher costs (Financial Sector-Performance and Issues,

²For instance, the highest Real Per Capita Income of the country was US\$ 101447.5 observed in 1981 and the lowest US \$ 30755.42 was in 2009. The rise in population between 2004 and 2012 was 41.65% approximately. It rose from 3.761 in 2004 to 9.031 in 2012.

³According to the (Central Bank of UAE 2014) the country's banking sector has maintained its capital adequacy ratio at 18% (2014) and Returns on assets and equity were 1.7% and 13.6% respectively. Systemic risk of financing is subdued and liquidity ratio for banking system is 15.6% by end of 2014.

⁴The net amount increased from slightly higher than AED 1000 Billion in 2010 to approximately AED 1320 Billion in 2015. This is almost 13 times rise in 5 years with a year on year percentage rise from less than 1% in 2010 to 11% in 2015.

2012). More so, the financial system in UAE is under liquidity and funding pressure. The huge rising cost of deposits and reduced access to the international capital market has emerged as one of the greatest challenge to the financial sector in meeting the set objectives of development by the government. In addition, the assets' quality considerably deteriorated in 2009 and 2010⁵. Furthermore, the profitability of the financial sector in UAE also suffered due to the financial crisis that affected the region. The challenges faced by the UAE financial sector are further accelerated by the declining trends in property prices and decreasing rental rates (Wissam Moukahal, 2012).

Loan to GDP ratio measures the degree of credit base in the economy relative to the total output. This ratio went up significantly between 2006 and 2013⁶. Saving to GDP ratio from 1980 to 2013 also changed significantly⁷. The literature suggests that the saving behavior among local and the expatriate population is significantly different in UAE. Furthermore, financial deepening in UAE improved drastically between 1980 and 2013⁸.

Based on the philosophy of diversification, the government of UAE is restructuring the economy towards nonoil industries like construction, tourism and financial sectors⁹.

Furthermore, the high growth pattern in construction and real estate sectors together with financial sector development during 1980-2013 made a noteworthy impact on the economy of UAE (Central Bank of UAE, 2014). The major sectors where the economic resources are

⁵ Average NPL to gross loan ratio rose from 1.7 % in 2008 to 4.3% in 2009.

⁶ The figure indicates that initially (2006) it was slightly less than AED 150 Billion that reached AED 322 Billion in 2013.

⁷ For example, the average value of saving-GDP ratio during the selected time period has been around 21.331% with minimum and maximum values of 11.532% in 1991 and 49.721% in 2012.

⁸ For further details see Figures 1.12 and 1.13 showing the degree of financial deepening during the study years in the UAE

⁹ Official figures suggest that the share of nonoil sectors in GDP of UAE has been rising from (National Bureau of Statistics), 36.75% in 1980 to 61.45% in 2013 recording a substantial decline in oil dependence during last two decades.

being allocated are the wholesale and retail sector, real estate, construction and the financial sector. Prudential monetary policy laid the foundation for financial deepening. Whereas, financial reforms would have to travel a long way for sound financial depth and to effectively allocate resources.

The interlinkage of capital market and economic growth is of paramount importance for researchers as well as policy makers. Capital markets, and in particularly the stock market, is considered as one of the most crucial components of an economy. Since the creation of the stock market in UAE, the economy is marching toward an important financial hub in the region. From 2004 onward there has been considerable improvement in the stock market in term of both volume of capital and number of companies listed¹⁰. Moreover, the number of traders and investors increased by almost fivefold in 2005. This growth in the capital market was mainly subject to huge invested inflow to the country (Safa Mohana, 2015). In 2007 the stock market in UAE displayed rising trends because of improved performance of the companies, low interest rate and lucrative economic conditions. However, and subject to the financial crisis, in 2008 the performance of the stock market was severely affected and the index dropped to 1,536 points on 25th December 2008¹¹. The declining trend continued and the overall performance decreased by 9.6 % in 2010. In addition, the activities in the stock market revolve around local and regional trading companies issued by shareholding companies (Trabelsi and Fadhel, 2016).

In view of the above, it is quite logical to argue that UAE financial sector, stock market and

¹⁰The public shareholding companies had risen from 17 to 127 in numbers over 10 years period (2000 to 2010), and capital also increased five times more (from one billion to five billion AED).

¹¹ In the post-crisis period the market crossing the 2,000 point level in late 2009 because of reversing trend. Its performance decreased by 9.6% and it reached 1630.5 points at the end of the year 2010 because recover is slow

economy has achieved reasonable performance over the years. In spite of high performance over the last decade relative to several regional countries, UAE financial system as well as the economy is facing various challenges. Given its paramount importance in the region, UAE investigating the financial development as well as deepening, investment and saving patterns and factors affecting financial development is of crucial importance. Furthermore, examining the financial development and economic growth relationship in UAE can provide further insights in the subject. The saving-growth nexus can also provide very fruitful insight to both researchers and policy makers. The recent developments in the stock market provides an opportunity to examine their relationship with economic growth in UAE, a subject that is not explored in the literature. Despite of their great significance, most of the aforementioned avenues are unexplored in the UAE and hence provides an opportunity to reveal new and important outcomes that will enrich the existing literature and can be useful for both policy makers and investors.

1.6 Research Objectives

The main objectives of the study are given as under:

1. To investigate the finance-growth nexus in UAE with specific focus on:
 - a. Identifying the factors affecting financial development: financial deepening and economic growth in UAE (1980-2013).
 - b. Estimating a financial deepening equation along with its determinants using annual time series data for UAE (1980-2013).
 - c. Determining the relationship between financial deepening and its selected determinants in terms of long run, short run or both (1980-2013).
 - d. Exploring the relationship and causality between financial development and

economic growth. In particular, explore whether causality goes from financial development to economic growth or from economic growth to financial development and the direction of causality between finance and growth indicators (1980-2013).

2. To estimate the dynamic relationship of the savings, investment and growth with specific focus on:
 - a. Estimating the determinants of saving in UAE economy (1980-2013).
 - b. Investigating the relationship between savings and its selected determinants in terms of long run, short run or both (1980-2013).
 - c. Estimating the growth equation along with its determinants using time series data for UAE (1980-2013).
 - d. Exploring the long run and short run relationship between economic growth and its selected determinants (1980-2013).
 - e. Estimating the relationship between saving and growth in UAE economy (1980-2013).

3. To estimate the stock market developments and economic growth relationship in UAE with specific focus on:
 - a. Estimating stock market development equation along with its determinants using time series data for UAE (2002-2013).
 - b. Determining the long run and short run relationship (in growth model) between economic growth and stock market development (2002-2013).

1.7 Research Questions

Given the stated objectives of the study the following research questions are considered as the bench mark:

1. What is the finance-growth nexus in UAE with specific focus on:
 - a. What are the factors affecting financial development, financial deepening and economic growth in UAE (1980-2013)?
 - b. What is the appropriate financial deepening equation along with its determinants using annual time series data for UAE (1980-2013)?
 - c. Which type of relationship is between financial deepening and its selected determinants (1980-2013) in terms of long run or short run or both?
 - d. What is the relationship and causality between financial development and economic growth? Does causality go from financial development to economic growth or from economic growth to financial development over the sample period (1980-2013)?

2. What is the dynamics relationship of the savings, investment and growth with specific focus on:
 - a. What are the determinants of saving in UAE economy (1980-2013)?
 - b. Which type of relationship is between savings and its selected determinants (1980-2013) in terms of long run or short run or both?
 - c. Which type of relationship is between saving and growth in UAE economy (1980-2013)?

3. Which type of relationship is between the stock market development and economic growth in UAE with specific focus on:

- a. What is the appropriate stock market development equation along with its determinants using time series data for UAE (2002-2013)?
- b. Which type of relationship is between economic growth and stock market development in terms of long run or short run or both (2002-2013)?

1.8 Research Methodology

Descriptive as well as inferential statistical and econometrics techniques are used to investigate and explore the research objectives and questions. Descriptive statistics utilise tables and charts. Inferential statistics include tests of stationarity with and without structural breaks. Structural breaks are used to see the changes in the regulatory environment. Auto Regressive Distributed Lag Model (or ARDL) approach of cointegration is used in this study to establish statistical link between finance and growth indicators and saving and growth. ARDL approach is also applied to investigate the dynamic association between stock market developments and economic growth in UAE. The ARDL approach offers two major advantages in analysis and in cointegration process. First of the advantage is associated with the order of the integration in the variables selected. The technique allows using variables of different levels of integration. Due to this feature of flexibility of the model, ARDL has been very popular among researchers. The other advantage of using ARDL approach of cointegration is that sufficient number of lags can be undertaken to catch the data generating process in a general to specific modeling framework (Laurence, Son and Chai, 2003). The Error Correction Model technique is used to see the long run relationship among the variables.

1.9 Significance of Study

The theoretical literature on the finance-growth nexus has been subject to controversies.

There are agreements and disagreements among researchers. One group of authors has been of the opinion that growth in financial sector leads to the growth in real economy. These studies include Robinson (1952) Gurley and Shaw (1967), Goldsmith (1969), Jung (1986) and Ireland, P. (1994).

Another group of authors has been proposing that growth in financial sector may not be leading to the growth in real economic indicators. This argument, is supported by Jorgenson (1995) and Jorgenson (2005) among others. Furthermore, among the authors who have been offering arguments in favor of the link between financial sector and real economy there is disagreement over the direction of the causality¹². Hence in absence of consensus on finance-growth nexus it can be concluded that the association and causality between financial growth and real economic growth is not a general phenomenon but a country specific subject matter. Another issue that appears in the literature is the use of different types of data sets, namely time series and cross sectional data. Most of the studies on financial sector development and growth nexus have been using cross sectional or pooled time series data. One drawback of using cross-sectional data for the investigation of the finance-growth association is the inherent unrealistic assumption of homogeneity across the countries in their financial sectors. Therefore, the causality analysis in cross-sectional will not be able to cover unique causal links for each country, rather it will be valid only for the average representative country (Agrawal, 2001; Beck et al., 2000).

Hence, and specifically with respect to UAE, it is of significant importance to explore which school of thought is true by using time series data. Unfortunately, there is no such empirical

¹² For the sake of these controversies among the researchers, the body of knowledge in this context is full of research studies and voluminous work like Levine (2004); Levine (1998), Eschenbach (2004); Demirguc-Kunt and Maksimovic (2002) and others. It is also cited in Al-Malkawi et al. (2012).

study exploring this very important avenue so far. Thus, the present study aims to investigate the nature of association between growth in financial sector and that of the real economic sector. This would be an attempt to add up in the body of knowledge on the subject matter specifically with respect to UAE.

The evidence on the link between savings and growth in the existing literature is not clear and straight forward. The empirical works provide evidence in support of saving-growth positive association¹³. It is further claimed in the literature that the positive linkage is in harmony with the theoretical findings of Solow (1956) model. However, these findings are in contrast with the outcomes of the other contemporary studies that have found the reverse causation from growth to savings (Gavin and Talvi, 1997). These studies have argued in favor of positive association that does not imply causality (Maite Alguaci, 2004). The issue of causality from savings to growth or from growth to saving has been far from being settled. The controversy on the issue has been the main question mark in macroeconomic research¹⁴. In addition, the limitations of these studies include no tests for unit root and lack of time series analysis, therefore it may be assumed that these studies are not immune to the problem of spurious regressions (Banerjee et al., 1993). The empirical evidence on the savings-growth link is sparse may be due to the non-availability of studies with sufficiently large time series datasets¹⁵. The existing literature has evidently argued that the findings from the cross-sectional analytical studies seem to be prone to certain limitations. These limitations may include the inherently unrealistic assumption of the homogeneity of saving-growth relationship in the countries included in the analysis. Secondly, the cross section nature of the

¹³ Maite Alguaci (2004), Fry (1998), Giovannini (1983, 1985), Lahiri (1988). Maite Alguaci used Granger causality test procedure to investigate the causal link between higher savings rates with the higher levels of economic growth and concluded positive association.

¹⁴ For more on the remarks on the present controversy see Schmidt-Hebbel, K., Serven, K. L. and Solimano (1996).

¹⁵With exceptions of studies like (World Bank 1993) and (Carroll & Weil 1994).

study ignores the fact that there may be some countries where causality is from savings to growth and in others it is from growth to savings. Hence, in view of above, it is very crucial to explore the saving-growth nexus in an economy but unfortunately there is no such empirical study in UAE exploring this significant avenue. Therefore, the current research study is undertaking to explore the saving-growth nexus in UAE with time series data from 1980-2013.

The empirical study by Gurley and Shaw (1955) has been arguing that the key difference between developed and developing countries has been quality, efficiency and effectiveness of the financial sector. The focus on stock market development is a recent phenomenon and even more recent is the initiatives taken by researchers to study stock market development in the developing countries (Caprale et al., 2004). The controversies around the link between financial sector and economic growth have created a disagreement in the role of stock markets and real economic sectors in a country. For instance, Mayer (1988) has argued that the size of the stock markets has no significant impact on the growth of the economy. Levine and Zervos (1998) used cross country regressions on a number of countries for 18 years between 1976 and 1993. They demonstrate their results on link between various measures of equity market and that of the real activities in the economy. They suggested a positive link between them. Studies on Middle East regarding financial sector and growth nexus are scant. However, there are a couple of studies on stock markets development in Middle East and North Africa (MENA) region. The stock markets in the MENA region are unsophisticated (Neaime, 2012). Hence, despite of its well know significance, the studies particularly in an emerging economy like UAE are very scare. Therefore, eyeing this potential research gap the current research thesis is aiming to explore the suspicious relationship between the stock market development and economic growth in UAE by employing time series data.

Specifically, with respect to UAE, this study provides several benefits. Firstly, it is widely believed that financial development in any country has been considered as the integral part of the economic growth and development. However, the statement is always subject to controversies in both the theoretical and empirical perspective. Therefore, exploring the determinants of financial deepening, saving, stock market developments and economic growth will provide fruitful insight to the policy makers in order to develop more effective financial and economic policy. For this purpose, applying long times series data from 1980-2013 has several advantages. Such as, use of such data period will provide more detailed movement of financial, saving and economic determinates. More so, this period has seen the UAE projecting itself as an emerging and more diversified economy. During this period, there have been improvements in the UAE financial system and the gradual emergence of more financial institutions and financial instruments. Secondly, investigating the relationship of financial development, saving and stock market developments with economic growth in economic experience of United Arab Emirates, hopefully will reveal the extent to which improvements in the UAE's financial system contributed to the process of economic development since the implementation of policies directed towards the restructuring of the economy took effect. Thus, it will help to understand the evolving role of the financial system and the interacting components between financial sector development and economic growth over sampled time period 1980-2013.

1.10 Practical significance for UAE

This study entails the insights of UAE specific and unique characteristics like overall saving behavior, financial deepening, financial instruments, financial policies and their role in UAE economic growth.

This time series study (1980 to 2013) helps the researchers and policy makers to consider the significant determinants in formulation of UAE regulatory framework. Such as the domestic credit provision to the private sector ratio is an indicator of smooth business and investment transactions and measures financial deepening in UAE economy. Real per capita income explains the living standard and spending pattern of UAE peoples. Monetisation ratio as a proxy for the size of money stock and number of bank branches are explanatory factors to explain the financial deepening. These determinants would be considered while incorporating and formulating the financial regulatory framework. Therefore, this research study may help them to understand how changes in these factors may affect the UAE economic growth.

For economic growth model, GDP as a proxy for growth and gross investment to GDP as a proxy for change in capital stock is used to determine the growth pattern. Whereas, total trade volume shows the trade openness of the UAE and oil prices in the world explain the variations in UAE spending on the development projects. Hence, the study of these factors provides fruitful directions to policy makers. More so, focusing the stock market in terms of its development and liquidity provides in-depth understanding and consequently leads the policy makers to develop effective policy and investors to diversify their portfolio. In nutshell, this study is beneficial for UAE stakeholders like market participants both local and foreign, policy makers and researchers in finding how UAE economy behaves with the change in one or more than one determinant.

This study is not generalisable to the other economies since it captures only the specific characteristics of UAE economy and its growth pattern. One should focus on country specific factors while applying it to any other country.

1.11 Research Hypotheses

Chapter two reviews the literature on financial development (deepening) and economic growth. One group of researchers argue for a positive relationship between financial Deepening and economic growth. They argued that it is the financial development that drives the economic growth (Robinson, 1952; Gurley, J., and Shaw, 1967; Goldsmith, 1969; Jung, 1986; Ireland, P., 1994). The second group of researchers argue that economic growth stresses to financial development (Jorgenson, 1995; Jorgenson, 2005). However, a third group of researchers argue that a bidirectional relationship exists between economic growth and financial development (Majid, 2007; Patrick, 1966; Demetriades, P., and Hussein, 1996; Luintel, K. B., and Khan, 1999; Al-Yousif, 2002; Calderon and Liu, 2003). A fourth strand of the literature supports the Independent Hypothesis. They argue that the relationship between these two is unimportant (Lucas, 1998; Stern, 1989; Meier, G. M., and Seers, 1984; Ram, 1999). There are also studies in this strand of the literature showing nonlinear relationship between financial development and economic growth (Deidda and Fattouh, 2002; Acemoglu and Zilibotti, 1997; Greenwood and Jovanovic, 1990; Khan, 2001). Their findings show that in low income countries there is no significant relationship between finance and growth while strong positive relationship in richer countries.

Based on the previous literature and data generating processing in UAE, we argue that the relationship in UAE should conform to the first group of authors. Given that the financial market in UAE is at its infant stage, the development and expansion of the financial markets should be perceived positively and welcomed by both private investors and companies. This therefore will have as an effect the rapid expansion initially of the local firms and consequently the expansion of the local economy. The financial development therefore should drive the economic growth and hence we argue for the following research hypothesis:

H₁: The development in financial sector of UAE causes changes in the economic growth patterns in UAE in long run.

There are two growth models based on the relationship between the savings, investment and economic growth. The classical model proposed by Bagehot (1873) followed by a chain of breaks classified as neoclassical model and endogenous growth theory. The contributions are from Schumpeter (1911), Harrod (1939), Domar (1946), Lewis, Arther (1954), Solow (1956) and Modigliani (1970). The contributions in endogenous growth theory are from the foundational work by Arrow (1971), Uzawa (1965), Barro, R. J.Sala-i-Martin (2004) and Sidrauski (1967). Based on the existing literature review there are three schools of thoughts. The first group statistically justifies causal relationship from saving to economic growth. The second group argued that casual association is from economic growth to savings and third group empirically tested bidirectional link between these two.

Although the existing literature is rich with empirical evidence from emerging and developed countries there is not much evidence on the relationship between savings, investment and growth for frontier and developing countries and in particular UAE. Given the evidence in the literature, there is no clear justification as to which direction the relationship should have (whether savings affects growth or growth affects savings) in the UAE. Although an argument could be made that savings in UAE should have a positive effect on growth in the long run this is not so clear cut. Given the small size of the market, increased savings should provide sufficient funds to private companies for development, which ultimately will lead to economic growth. On the other hand, UAE is a rich resourced country, heavily relying on oil exports, with an already increased economic growth. An increase in savings therefore, may be argued, is the outcome of the increased wealth the country and people experience because

of the growth in the economy which relies on oil resources. Hence, the study will aim to explore the relationship between savings and growth in UAE by testing the following two hypotheses:

H_{2a}: The UAE saving causes Economic growth patterns in UAE in long run.

H_{2b}: The UAE economic growth causes saving patterns in UAE in long run.

Gurley and Shaw (1955) argued that the history of stock market in developing countries is a recent phenomenon and an important part of financial development. It needs a long time to be more deepened and mature in order to play an important role for economic growth. One school of thought argued that banking sector development has more importance than the stock market for economic growth in the long run (Stiglitz and Weiss, 1981; Arestis and Demetriades, 2002). Boyd and Prescott (1986) and Stiglitz (1985) have also shared views that the matter of efficient allocation of scarce resources can better be watched out by the banking sector than the equity market.

The other school of thoughts argued that stock markets are facilitating the risk-averse investors and savers to carry on their safer investment options at lower costs by diversifying their portfolio. That is done because of the provision of more liquid means of sharing risk ensures that the capital flows towards more promising investment projects (Dailami and Atkin, 1990; Demirguc-Kunt and Levine, 1996; Levine and Zervos 1998; Levine and Zervos 1993; Levine and Zervos 1999). Furthermore, Levine (1991) and Bencivenga et al. (1995) argued that more liquid stock markets lead higher levels of growth in the economy. Others (Harris, 1997; Seetanah et al., 2008; Levine and Zervos, 1998; and Adjasi and Biekpe, 2006) argued that the link between stock market development and economic growth is the

inducement of savings mobilisation. Mayer (1988) has argued that the size of the stock markets has no significant impact on the growth of the economy. Levine and Zervos (1998) found a positive relationship of equity markets and economic growth and argued that this relationship is relatively strong in case of developing countries.

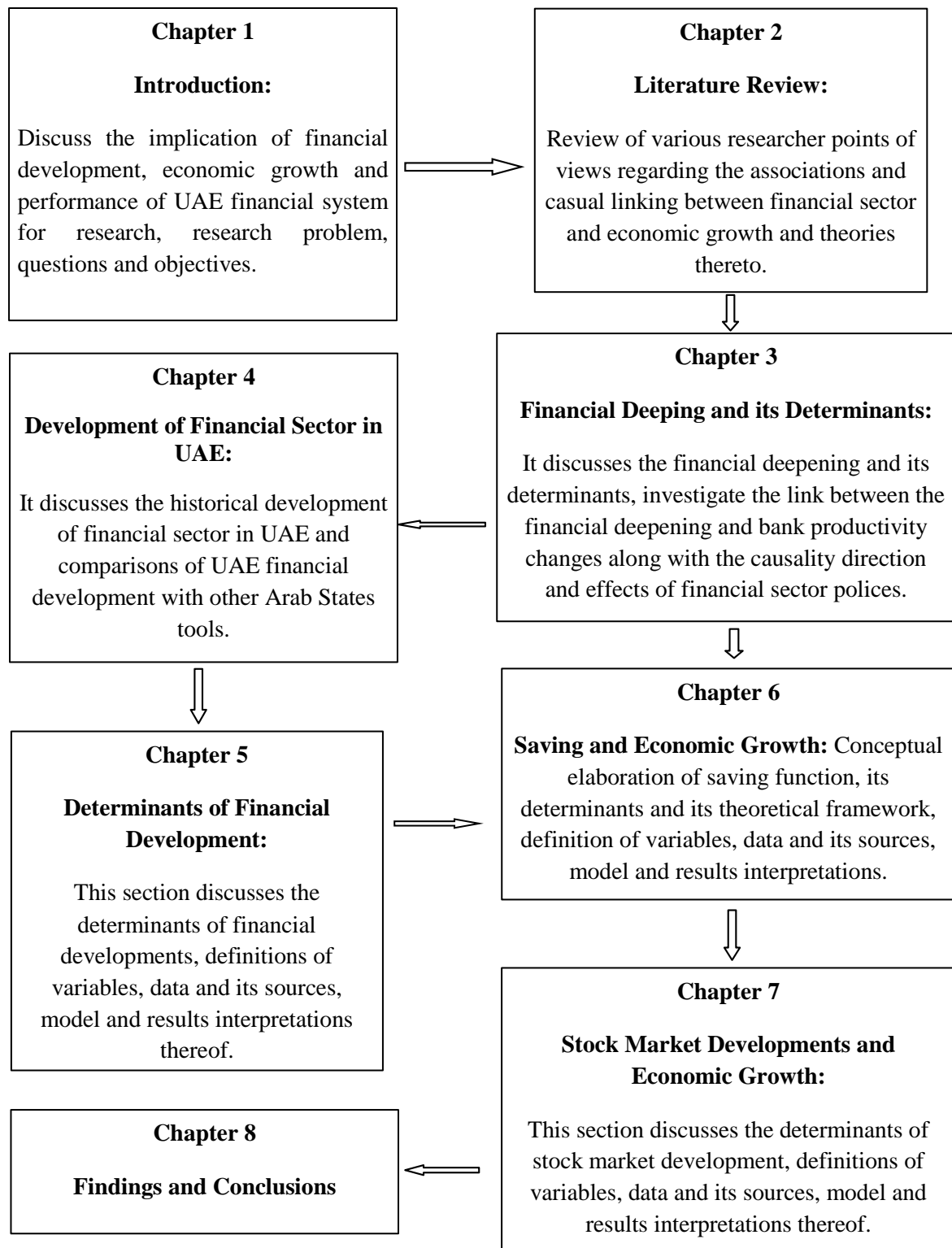
The financial market in UAE and other Arab countries are still at their infant stages and they are all classified as frontier markets. Using a similar argument as in the case of financial deepening it can be argued that the expansion of the financial markets in frontier markets should be perceived positively and welcomed by both private investors and companies. A small equity market should have a minimal effect on economic growth, however, as the market expands its effect should be evident on economic growth. We argue therefore that the size of the financial market should be one of the determinants and drive the economic growth. This is of particular importance for frontier and emerging markets. Based on the previous literature and given the scant literature on frontier markets our last research hypothesis is as follow:

H₃: The size of equity markets is positively associated with economic growth in Arab countries.

1.12 Research Design

The following graph provides a visual representation of this research and the linkage between different chapters.

Figure 1.1: Research Design



1.13 Conclusion

The nexus between financial growth, savings and growth in real economy has been subject to

controversies in the economic and financial literature. Cross sectional research claims existence of significant statistical links between finance and growth. Furthermore, it is generally believed that dynamic and vibrant financial sector mobilises savings and boosts the confidence of investors through removing the information asymmetries from the economy. In addition, saving and interest have been showing an ambiguous relationship because of the opposing substitution and income effects of interest changes on the savings. Moreover, some authors are of the opinion that the existing literature has overemphasised the relationship between financial development and economic growth and it does not seem to be a relationship between the two.

The key objectives of this research include discussing and exploring the controversies embedded in the literature on the above nexuses in the context of UAE. Availability of time series data on the selected variables for UAE was a big challenge for this research, however a significant aspect of the study was to collect data from official annual reports and online databases of international financial organisations and develop a dataset for the period of 1980-2012. Data for the stock market variables were available for the period 2000 to 2012. This is because of the recent establishment of the stock market in the country. Identifying the relevant literature on UAE's finance and growth nexus was also a challenge in this research. There are only few studies available written in English on the empirical estimations of finance-growth nexus and savings patterns. The available studies on UAE have been presented and discussed in the relevant sections and subsections in the respective chapters.

Cointegration technique using ARDL approach is used throughout the study since it is found superior to other cointegration techniques with respect to its flexibility in the integration

order and the number of lags applied on the models.

The detailed discussion on the savings, finance-growth nexus and stock market and growth link along with the related discussion on the literature is provided in subsequent chapters. The discussion on the econometrics results for the three cointegration and error correction models is also provided in respective sections in chapters .

A detailed overview and the controversies over the nexus have is presented in the chapter on literature review (chapter 2). Separate sections and subsections are included in all chapters to link the theoretical and empirical evidence present in the existing literature of the United Arab Emirates.

Chapter 2 – Literature Review

2.1 Financial Development and Growth

The literature on the link between financial sector development and the growth in the real economy has been prone to several controversies. These controversies however revolve around several factors such as the causal direction between finance and growth variables (if any), the type and nature of the empirical studies (time series or cross-sectional studies), the selection of countries given their income levels or even on the very existence of any significant statistical link between the two. The historical track-record of the research on finance-growth nexus begins with the seminal work of authors like Hamilton (1781), Bagehot (1873), Schumpeter (1911), who have presented their claims that financial development is a necessary component for the fast-economic growth of a nation. The exploration of the theoretical support of the finance-growth nexus proceeds with Schumpeterian theory of development (Schumpeter, 1911). Jorgenson (2005) studied the depth of the link of financial sector with real economic sector and argued that it goes beyond the change in savings rate. The growth accounting literature does not find any evidence of a sustained long run link between the rise in physical accumulation of capital and the real economic growth (Levine, 2004).

There is a dispute among researchers in relation to the link between financial development and economic growth. The first school of thought argues that there are linkages between them and the second schools of thought argue that there is no relationship between them (Arestis and Demetriades, 1997).

The first school of thought gives three contradicting arguments on the linkages of financial and economic growth. One group in the first school of thought has been of the opinion that growth in financial sector leads to the growth in real economy. The direction of causality is from the financial sector development to the development and growth in the real economic sector. The argument has been extended in this way. A well-functioning and well-developed financial sector with efficient and vibrant financial instruments, offers a foundation for efficient allocation of limited resources in priority potential investment areas. This, in turn, accelerates economic growth. More examples can be reviewed in Al-Yousif (2002) and Majid (2007). This approach of the finance-growth nexus is categorised as the “supply-leading” approach and is supported by Robinson (1952), Gurley and Shaw (1967), Goldsmith (1969), and Jung (1986). Another group of authors has proposed that growth in the financial sector may not be leading to the growth in real economic indicators. In their opinions, the expansion in the real economic sector instigates the growth and sophistication in the financial sector and exerts pressure on the financial sector to introduce new and dynamic financial instruments, to satisfy the requirements of the growing real economic sector. This approach is categorised as the “Growth-led finance”. This argument, is supported by Jorgenson (1995) and Jorgenson (2005). The third group of studies presents a mixed picture, where the authors argue that the finance and growth nexus is bidirectional. Initially, the development in financial sector causes the innovation and technological advancement in the investment and services sector in the economy. In response to this technological advancement and introduction of the innovative products, the financial sector responds by bringing in new financial instruments, consequently leading towards financial development (Majid, 2007; Patrick, 1966; Demetriades and Hussein, 1996; Luintel and Khan, 1999, Greenwood and Smith, 1997). This approach is categorised as the “bi-directional or feedback approach”.

The second school of thought argues that the association between finance and growth is “over-emphasised”, in the economic literature. The influential study, in which the approach was proposed, was by a noble laureate Robert Lucas (1988). According to the remarks presented in this approach, there is no growth-finance link. Rather, the role of the financial sector is not important, as far as the economic growth is concerned. More studies in support of this hypothesis are Stern (1989), who did not include finance as a factor influencing the growth prospects in his influential survey on the factors of growth process. Another study by Ram (1999), has pleaded for negligible or weakly negative impact of the financial sector development on the real economy. This approach is known as the “Independent Hypothesis”.

2.2 Finance-Growth Nexus: Theoretical and Empirical Evidence

Financial sector comprise of bank and nonbank institutions and are involved in channeling the economy’s precious monetary and financial resources for growth and welfare in the country. The linkage between economic growth and the financial sector of any country has been delineated through savings and investment. The argument proceeds in the following way. The banks and non-bank institutions involved in intermediation of the public and private funds are efficiently relocating them in the best available development and growth options. The surplus funds available in the hands of the general populace and private sector are pooled in these institutions in different forms. These surplus funds, collected in the form of savings by the small savers, are made available to the potential investors in the economy. An interest rate is levied on the borrowings and it is extended to the savers as the profit. The interest rate works as the price of the borrowed funds for the investors who borrow capital from banks and other non-bank financial institutions. On the other hand, the interest rate works as an incentive for the savers to save more in order to earn more profit. Efficiency of any financial system/sector is evidently visible from the fact that how these financial institutions are

mobilising maximum financial resources for investment and growth purposes in the economy. Further, the mechanism of interest rate as the price/incentive for financial resources saved and extended for investments helps in efficiently allocating resources in optimal ways.

The theoretical models, on the finance-growth nexus, elaborate three main areas of difference: Endogenous Growth Theory, finance mechanism and treatment of asymmetric information. The sources of endogenous growth may be the production externalities (Bencivenga et al., 1995b; Paul, 1992). Whereas, King and Levine (1993) and Blackburn and Hung (1998) studied the vertical and horizontal innovation through entrepreneurial funding and heterogeneous agents. Moral hazard can be an issue, arising with respect to the deposit insurance schemes. Though these schemes are originally designed for adjusting the negative externalities from banks' activities to their customers, they may cause and encourage risk taking by bank managers. Genotte and Pyle (1991) argued that implementing more rigorous capital requirements along with deposit insurance schemes may cause a rise in asset risk.

2.2.1 Theories of Finance-Economic Growth Nexus

There has been diversified economic literature on elaboration of the channels through which financial sector development influences the growth process of the real economic sector. Historically, Hamilton (1781), Bagehot (1873), and Schumpeter (1911), presented their claims that financial development is a necessary component for the fast economic growth of a nation. The exploration of the theoretical support of the finance-growth nexus proceeds with Schumpeterian Theory of Development (Schumpeter, 1911). While linking the financial sector's development and economic growth the existing literature has promoted two key points. The first point, raised in studies by Jorgenson (1995, 2005), was the depth of the link of financial sector with real economic sector that goes beyond the change in savings rate. The

growth accounting literature, does not find any evidence of a sustained long-run link between the rise in physical accumulation of capital and the real economic growth (Levine, 2004). Therefore, when reviewing the theoretical support for the finance-growth nexus, one should be looking for those theories that describe the decision making on resource allocation in ways that foster the productivity growth. The second point noted regarding the relationship between emergence of the financial sector arrangements for efficient resource allocation and reduction in risk and the growth in the real economy is based on two obscurities. When the higher returns are expected, the savings rate may respond in an ambiguous way and may increase or decrease due to the income and the substitution effects of the higher returns. In case of lower risk and efficient resource allocation, instead of the rise in the savings rate the opposite may occur. The saving rates may fall as a result of efficient resource allocation and the reduced risk due to financial reforms.

The following paragraphs and subsections present a detailed discussion on Bagehot's arguments and a review of Schumpeter's theory of development. Finally, "McKinnon's Complementarity Hypothesis is elaborated.

2.2.1.1 Bagehot's Role of Commercial Banks

The idea behind the richness and the economic growth of England as perceived by Bagehot (1873), was not indeed the savings rate per se, rather it was the capacity and capability of the economy's financial system that allocates the nation's resources in the best possible investments. The point of view extended in his scientific work, Bagehot advocated the need of the efficient financial system for growth and richness of the country. The importance of information costs involved in assessing the market conditions and evaluation of the business units and the managers, was well defined and explained in the study. Large investments

mostly involve monetary as well as other huge costs. In absence of symmetrical information, the potential investor would be reluctant to invest as the lack of the right information leads to higher risk. Since the motivation behind any business or economic activity is the maximisation of profit and capital flows to the most profitable investment, then it is assumed that the investors have a priori good and right information about risk, profit and other important quarters of the activity (Bagehot, 1873). Further, the study focused on the role of banks in providing the intermediation service for use of surplus funds in appropriate investments. The argument was extended in favour of the financial system, where better banks are more skilled at identifying firms that can be trusted for business or able to mobilise maximum public savings, diversifying and pooling risks and facilitate the transactions of investors and business people. The whole cascade of activities leads to the higher levels of economic growth for the nation (Levine, 1998). Though the study took account of the financial system at initial stages with elaboration restricted to only banks, it has been viewed by authors as the influential study in understanding the intricacies of the financial system.

2.2.1.2 Schumpeter's Theory of Growth and Development

The scope of the services provided by financial intermediaries embraces the mobilisation of savings and capital, evaluation of projects put forth for investment, handling of risk through offering diversified options of investment, corporate governance through monitoring of the firms and managers, as well as easing and facilitating the process of the transactions. These services consequently, lead to innovation and technological enhancement in the production processes. Controversies have been hovering around the finance-growth linkage in the context of Schumpeter's claims of positive links (Robinson, 1952; Lucas, 1988). Nevertheless, there has been some empirical evidence proving the positive link between financial developments and growth. It is further argued in Schumpeter's seminal work, in a

developing economy in cases where a new innovation prompts the replacement of old business with a new business (a process called “Creative Destruction”), both recessions and booms are not only inevitable but cannot be removed nor corrected. New wealth is created through innovation. As per the discussion undertaken in previous sections on the financial functions of the financial sector, it can be presumed that the financial development at higher levels leads to growth in productivity. In case of cross-country analysis of the divergence between poorest and richest countries, it is claimed that if the financial development is undertaken beyond the threshold level the diverging trends between growth patterns of the countries may not persist in the long run (Aghion et al., 2005; Acemoglu and Zilibotti, 1997).

2.2.1.3 McKinnon's Complementarity Hypothesis

In 1973, McKinnon and Shaw argued in their work that the financial repression in terms of low real interest rate, domestic controls of credit, high requirements of reserve, and practices of concessional credit will in fact discourage savings (McKinnon, 1973; Shaw, 1973; Bouzid et al., 2003). It is argued by McKinnon (1973) that the linkage between financial deepening and economic growth is conditional to the complementarity between real money balances and capital (Nejib, 2005). Further, it was hypothesised that real interest rates that are negative or low discourages savings leading to the reduction in the availability of funds used as loans for investment. According to the model proposed by McKinnon (1973), financial intermediaries observe expansion in their activities and promote investment, given that the amount of savings grow more than the existing real economic activities. A fall in the loanable funds lowers the investment and hence the real rate of growth in the economy. Alternatively, the higher real rates of interest offered by financial institutions encourages higher rate of savings and the availability of loanable funds increases. This leads to the financial deepening in the system by mobilising the increased amounts of savings and promotes higher levels of

productivity of capital. This pushes the real rate of investments and capital accumulation across the economy, ultimately leading to the higher levels of economic growth.

Mathematically, the model is constructed as follows. The McKinnon-Shaw Complementarity hypothesis is represented by two equations. One is the long run standard money demand equation and the second is about the private investment function.

$$\frac{M}{P} = f \left[Y, \frac{I}{Y}, (d - \pi^a) \right] \quad (\text{Equation 2.1})$$

Here Y is the measure of real income; I is the investment and I/Y is the ratio of investment to the real income, d is the nominal rate of interest, π^a is the anticipated inflation rate and $(d - \pi^a)$ is the real rate of interest. M/P represents the demand for money balances in the economy. Equation (2.1) depicts the functional relationship of real money balances demanded in an economy with its key determinants. The variables given in square brackets [], are the determinants of the real demand for money balance. The relationship of demand for real money balance with real income, as was hypothesised by McKinnon-Shaw in McKinnon (1973), is presented below in terms of the partial derivative of the dependent variable (demand for real money balance) and independent variable (real income):

$$\frac{\partial \left(\frac{M}{P} \right)}{\partial Y} > 0 \quad (\text{Equation 2.2})$$

The estimate of the partial derivative given above, should assume positive sign to validate the complementary hypothesis. This suggests that as the real income in an economy rises, it generates a strong monetary detention. In other words, the money demand in the system rises as the real income of the economy rises. Similarly, the demand for real money balances is associated with the ratio of investment to real income in a positive way. The high ratio of investment to GDP (expenditure) would mean the indivisibility of investment, so large would be the demanded quantity of money.

$$\frac{\partial\left(\frac{M}{P}\right)}{\partial\left(\frac{I}{Y}\right)} > 0 \quad (\text{Equation 2.3})$$

This confirms the notion that as the rate of investment in the economy rises the monetary savings are rising. Therefore, the estimate of the partial derivative given above (Equation 2.3) should assume positive sign to validate the complementarity hypothesis. Furthermore, in case of financial repression the transmission of investment to saving does not take place. For successful transmission of the investment to savings, the financial sector reforms are advised to avoid financial repression leading to low or even negative real interest rate.

Moreover, the demand for real money balance is also function of real interest rate, given in the partial derivative below:

$$\frac{\partial\left(\frac{M}{P}\right)}{\partial(d-\pi^{\alpha})} > 0 \quad (\text{Equation 2.4})$$

This suggests that there is a positive causal association between real money balance and the real interest rate. The partial derivative shows that when there is positive real interest rate offered it allows money demand to rise (Bouزيد, 2003).

The second equation on the private investment function, takes the ratio of investment to real income as dependent variable and the physical capital average current rate and real rate of interest as the independent variables is given, as bellow:

$$\frac{I}{Y} = f[r, (d - \pi^{\alpha})] \quad (\text{Equation 2.5})$$

In equation 2.5, r is the physical capital average rate. The sign for the two partial derivatives is positive. One partial derivative is of the ratio of investment to real income and the physical

capital average rate. The second partial derivate is the ratio of investment to real income, to the real rate of interest rate. The two partial derivatives respectively are given as under:

$$\frac{\partial\left(\frac{I}{Y}\right)}{\partial r} > 0 \quad (\text{Equation 2.6})$$

and

$$\frac{\partial\left(\frac{I}{Y}\right)}{\partial(d-\pi^a)} > 0 \quad (\text{Equation 2.7})$$

The above two partial derivatives and their positive signs suggest it is not the cost of capital that matters for investment and economic growth, but it is the availability of loanable funds that matter for economic growth and investment in presence of financial repression in an economy. In absence of financial repression or introduction of the liberalisation reforms in financial sector, the real deposit rate rises leading to rise in investment due to increased availability of the loanable funds in the system. In other words, the complementarity hypothesis suggests that indivisible investment projects involving relatively huge costs can only be undertaken in financially liberalised markets. This is so that the money and real capital assets are complementary to each other (see Pentecost and Moore, 2009, for further discussion).

This is against the traditional theory, where the rise in deposit rate results in the fall of investment rate. The Complementarity Hypothesis by McKinnon (1973) can be observed from the two partial derivatives and their anticipated signs given below:

$$\frac{\partial\left(\frac{M}{P}\right)}{\partial\left(\frac{I}{Y}\right)} > 0 \quad (\text{Equation 2.8})$$

and

$$\frac{\partial\left(\frac{M}{P}\right)}{\partial(d-\pi^{\alpha})} > 0 \quad (\text{Equation 2.9})$$

Another study on the test of McKinnon's Complementarity Hypothesis was conducted by Rehman and Gill (2005). They investigated the validity of the complementarity hypothesis in the context of Pakistan's financial market. They argue the the important point of the McKinnon's Complementarity Hypothesis is that an increase in the desired rate of capital (private savings) at any given level of income leads to an increase in the average ratio of M/P to income or GDP. This implies that rise in return on capital leads to increase in the need of real cash balances for accumulation purpose (Rehman and Gill, 2005). Further, the analysis presented by Azeem and Mohammad (2015) argued that the:

“Deep financial markets in developing countries and the lack of financial intermediation system balance should be deposited before investing their money because of the physical capital amount. In order to finance the investment projects of a company, they are determined by the savings they hold in the form of monetary assets and is considered as a highly decentralised structure because independent savers” (McKinnon, 1973; p. 57-58).

The Complementarity Hypothesis presented by the McKinnon, provides a theoretical basis for financial liberalisation in the developing countries through complementarity between money and physical capital. Nevertheless, there have been several limitations and problems identified by authors in various studies. One of the key problem in the hypothesis as argued by Azeem and Mohammad (2015), “... is the difficulty in calculating the average yield of the capital in real terms” (Azeem and Mohammad, 2015; p. 24). The same argument was also presented by Moore (2009), in which it was argued that the empirical measurement of the real

rate of return on capital is nearly impossible; therefore McKinnon (1973), has suggested investment to income ratio is likely to change in the same direction as the average real rate of return changes. The study by Eschenbach (2004) has argued that the key feature of McKinnon's theory leads to high rates of economic growth for smaller periods of time, mostly accompanied with highly excessively volatile real interest rates. Moreover, Eschenbach (2004) put his argument on the absence of consensus on the direction of causality between finance and growth. Eschenbach (2004), delineating prominent studies like Schumpeter (1911), Robinson (1952), Gerschenkron (1962), Patrick (1966), Goldsmith (1969) and Cameron (1963), who have maintained their contention regarding propulsive role that the financial sector can in fact play a role in economic growth and development.

2.2.2 Financial Sector: Banking Sector and the Stock Markets

The financial sector in any country is the set of institutions, instruments and the regulatory framework that are responsible to facilitate transactions by incurring and settling debts by extending credits. First, in other terms, the financial sector provides services of pooling the surplus funds to be used in the sectors where they are in deficit. The prime services that are provided by the financial sector are to reduce the information, project implementation and the transaction costs in the economy. As the economy grows at higher levels, the financial sector should deepen, strengthen and widen. Financial deepening or strengthening of the sector entails that the financial instruments are increasing in number and smoothening in nature. Further, it includes that inter-relationship of the financial institutions and sophistication of financial instruments are able to satisfy the needs of the growing economic sector needs. Second, financial markets are generally classified into two types keeping in view the length of time period involved in the monetary investments. One part of the financial market is the money market, which comprises of the organised lending and borrowing activities (banks and

nonbank financial institutions) and unorganised or informal money lending or borrowing by individuals. Another part of the financial market is the capital market that mobilises funds for longer time periods. The institutions involved in capital market are the stock market and the bonds markets. Given the above categorisation of the financial sector one can conclude that there are two types of financial systems: one is bank based and the other is market based. (Levine, 2004). The theoretical foundations of the finance-growth nexus, market-based and bank-based systems are elaborated below.

2.2.2.1 Bank-Based and Market Based System

A well-functioning system facilitates financial transactions and overcomes the informational asymmetries. Functions of the financial system given above as information availability on firms, degree of creditors control over firm's decision making, risk reducing arrangements, mobilising of savings, and making transactions easy are some of the arguments in favour of the banking system. There has been a very strong debate on the efficiency and effectiveness of the bank based or market based systems. Some authors have argued that the bank-based system is superior due to free rider problem in the market based system (Stiglitz, 1985; Gerschenkron, 1962; Boot et al., 1993). The argument suggests that well-developed markets based system reveals information quickly to investors at large, which dissuades individuals from investing in the researching firms. In the case a of bank based system, the investors are given enough incentive to research firms, managers and markets to ensure investment options with positive ramifications on the output and growth. It is also argued that powerful banks are always in a better position to pressurise firms for payment of the outstanding debts than the atomistic market (Rajan and Zingales, 1999; Shleifer and Vishny, 1997). Corporate governance, by initiating owner-manager leveling of the interests does not succeed in market based system. Shleifer and Vishny (1997) argue that takeovers might not be the right tool for

corporate control as insiders always have an upper edge over the outsiders in access to information. Takeover threats may also suffer from the free-rider problem. In case of managers resisting any takeovers, they may take desperate actions, ultimately leading towards weakening of the markets. On the other side, studies discussing the supremacy of the market-based system over bank-based system argue that powerful banks may be able to influence firms in negative ways and securing rents from firms. This is possible because banks have substantial inside information about the firms (Hellwig, 1991).

This may keep firms from undertaking innovative and profitable ventures (Rajan, 1992). Since bankers act in their own best interest, it can also be doubted that in times of conflict between their, the firms', and society's best interest, bankers' interest would be preferred. Black and Moersch (1998) stressed that the countervailing arguments presented in the literature reject the supremacy of one system over the other. It is viewed by many authors that as far as the finance and growth nexus is concerned, the role of the financial sector (be it bank-based or market based) does not matter in the development and growth of the real economic sector (Merton, 1992; Merton, 1995; Merton and Bodie, 1995; Levine, 1999). They argue, that based on the financial functional view, the primacy of one system over the other does not hold. Further, the simultaneity bias does not influence the conclusions and the constraints that impede external financial resources from entering the country. They are also supposed to be smoothening if the country has a well-functioning and efficient financial system (Levine, 2004). Other research sees both systems complementary to each other, as both systems are providing complementary financial services to the economy that enhance the economic growth and output (Boyd and Smith, 1992; Levine and Zervos, 1998).

Indeed, it is the structure of law and legalities of the countries that make the international

differences in the financial development. La Porta et al. (2002) argue that the quality and level financial functions supported by the legal structure of the economy determine the efficient resource allocation and economic growth.

2.3 Empirical Evidence on Finance-Growth Nexus

Amid controversies, researchers who have conducted studies on the finance-growth nexus have claimed results both in favour and against the link between finance and growth. In addition, authors who claim existence of a statistical link between finance and growth have been contradicting on the direction of causality. There are authors who advocate that development in financial sector is an integral component of the development and growth strategies and a pre-requisite for the growth in the economy (Al-Yousif, 2002; Majid, 2007). There are other prominent essays in “pioneers of development economics” who never even discuss finance (Meier and Seers, 1984). Levine (2004) and three key noble laureates including Lucas (1988), have dismissed the idea of finance affecting the growth prospects of the economy and rejected the role of finance as “over-stressed”. Robinson (1952), has argued that growth leads finance and it is not the finance that causes growth but vice versa. According to Miller (1998), “... the idea that financial markets contribute to economic growth is a proposition too obvious for serious discussion” (Miller, 1998; p. 14).

On the other side, are authors who have suggested a bidirectional link between finance and growth (Demetriades and Hussein, 1996; Luintel and Khan, 1999; Greenwood and Smith, 1997). These authors suggest that growing economies need sophisticated financial tools for ease of transactions and exchange of goods and services. A dynamic financial sector always responds to the needs of growing economies. Given modern tools of finance, which facilitate innovation and productivity growth, the result is higher growth rates in the economy. In fact,

there may be the case where the relationship between finance and growth is nonlinear rather than linear, as assumed in the study of Patrick (1966).

Two main problems have been identified in studies using pooled time series or cross-sectional data. One is an unrealistic assumption of homogeneity in the financial sector among the countries. This assumption, leads authors to take a representative country for the analysis. The deviation between the financial indicators from their mean values of the countries would result in a misleading outcome. To identify which country is representative and which is not makes this notion invalid (Agrawal, 2001). Secondly, the causality between growth and finance assumes a different nature across countries. The causal link and the direction of causality between finance and growth is unique in various countries. Since the cross-sectional analysis does not allow for country differences, the link would not remain unique and may end up with over generalisations being made.

In case of the UAE, the studies on growth-finance or vice versa, are very scant. Those studies that attempted to scrutinise the financial sector have argued that the restrictiveness and rigidity in the financial regulations have been eased in majority of MENA countries (Grais and Kantur, 2003; Berthelemy, 2004). Similar claims have been made by Heritage Foundation (2003), which were very high during 1990s. This seems to be a good omen for growth prospects of the economy, amid diversification plans for expanding the structure of the economy to the non-oil sectors of the country. Economic diversification plans in Gulf Cooperation Council (GCC) countries have been devised to avoid shortfalls in their revenues due to fluctuations in the global oil market. Fluctuations in the oil market led to several years of negative growth rates in the 1980s (1982, 1983, 1985, 1986 and 1988) due to the decline in the value added during the decade. There have been comprehensive discussions on the

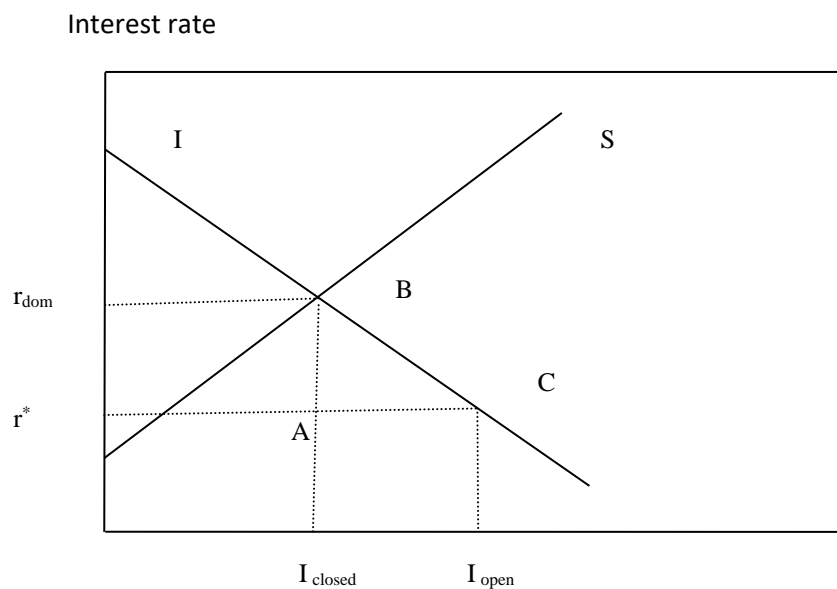
structure of economy in the UAE and GCC countries and their dependence on oil revenue during last decades (Al Sadik, 2001). As a move towards restructuring the whole economic system of the UAE and the country's different non-oil sectors have been observing a rising trend during the time period under study. The share of non-oil sectors in GDP have been consistently rising from 36.3% in 1980 to 60% in 2012 (UAE National Bureau of Statistics, 2012). During the same time period, the role of the financial sector has been improving in GDP growth of the UAE. In addition, the share of financial sector in non-oil sectoral development has been rising continuously from approximately 5% in 1980 to 11% in 2013. Furthermore, the share of the same in GDP has also improved, though modestly, from approximately 2% in 1980 to 6.6% in 2013. This spectacular growth through the last two decades in the UAE and subsequent incline of policy makers towards non-oil sectors has necessitated that the researchers understand and comprehend the complexities of nexus between financial sector and the growth in the UAE real economy.

2.4 Savings-Growth Link: Theoretical and Empirical Evidence

Saving in an economy is treated as the amount of money that remains after the cumulative expenditures of public sector are covered (Pettinger, 2013). The literature on savings is classified into domestic savings and foreign savings. Domestic savings arises from the household saving, business savings, public saving and state enterprises saving. Foreign savings are capital inflows from abroad. The net deficit of current account of any economy is summarised as the net foreign savings inflow or the net of domestic investment over domestic savings. Foreign savings may be in the form of foreign direct investment or foreign aid or foreign debts. The net surplus of current account is equal to the sum of official, private and unofficial capital outflows. The Neoclassical Model suggests that capital flows from richer economies where capital to labour ratio is relatively high to poor countries where capital to

labour ratio is relatively low. According to the Solow Model, the returns on capital in a poor or developing economy is higher than richer or more developed countries because of diminishing return on capital principle. Gour et al. (2006a), argued that among the best opportunities capital flows to developing economies where growth is fastest. Rodrick (2006) explained the role of foreign capital to growth by plotting the real interest rate against the domestic investment and savings.

Figure 2.1: Interest rate, savings and investment in an undistorted economy



Source: textbook of Roderick (2006)

Point B in Figure 2.1 shows the equilibrium between the savings and investment at the given domestic interest rate r_{dom} , in case of when economy is closed for foreign capital inflows.

When the economy opens for foreign capital inflows (when capital account is liberalised) the investment increases from point B to Point C. This increase in capital flow is fully financed by foreign savings. Hence, the domestic interest rate tends to move toward world interest rate, r^* . Each type of foreign capital inflow has different effects on economy. Foreign Direct

Investment (FDI) is considered as a good source for transferring finance and technology. Equity and debt has its own implications on the volatility of macroeconomic activities. If foreign capital inflows, finance imported capital goods and investment rate rises, then it is argued that economy grow faster. Prasad et al. (2012) conducted an empirical study on foreign capital and growth by using panel and cross-sectional data analysis of industrial and nonindustrial countries and they concluded that nonindustrial countries rely less on foreign capital, and grow faster than those nonindustrial countries relying on more foreign capital. Bresser-Pereira and Nakano (2014) conducted an empirical study on Latin American countries and found that their foreign debt and growth strategy brings a slight increase in rate of investment, but increases the burden of debt obligations.

Ozcelebi and Yildirim (2017) conducted an empirical study of short-term interest rates effect on stock returns and exchange rates across Emerging and Growth-Leading Economies (EAGLE) countries. They concluded that high interest rates tend to prevent capital outflow, decrease stock returns, and negatively influence the real economic activity. Further, they argued that an optimal exchange rate helped to control target inflation, promote foreign competitiveness and effects of exchange rate on stock prices.

On the other hand, Aghion et al. (2005) have claimed that savings are the integral component for capital accumulation. It is the capital accumulation that leads to capital formation and creates opportunities for potential investors to make investment decisions. Further, investment decisions involve huge costs, which are lowered with the help of efficient and vibrant financial sector in the country. Moreover, the authors have also argued that convergence in the growth patterns may not be possible or at least will remain impeded in presence of financial constraints.

The economic literature on savings behavior and the growth trends have highlighted the importance of domestic savings for capital accumulation. The most important determinants of savings, including income, are mainly determined by the rate of interest.

2.4.1 Theoretical Evidence on Saving-Growth Nexus

The most important theoretical determinants of national savings are the rate of interest and the national income. This relationship suggests that at higher levels of national income and real interest rate, households in an economy tend to save more. However, the sensitivity of saving trend with that of the real interest rates depends upon the substitution and income effects associated with each change in interest rate.

The basic GDP equation for a closed economy is given below. The derivations of savings and consumption functions have been taken from Dornbusch, Fischer and Startz (2004). For an open economy, balance of trade may be included.

$$Y = GDP = C + I + G \quad (\text{Equation 2.10})$$

Here GDP is the value of total output (equal to National Income, Y), C is consumption expenditure, I is investment and G is the government expenditure on public purchases.

Rearranging Equation (2.10) for I (investment) following equation can be obtained:

$$Y - C - G = I \quad (\text{Equation 2.11})$$

Equation (2.11) suggests that the investment is the national income Y of the economy, less expenditure on consumption and government purchases. In other words, the left side of the equation (2.11), is the national income after the expenditure on consumption and government purchase is done and can be named as savings. Replacing it with S (savings), the following equation would be obtained:

$$Y - C - G = S = I \quad (\text{Equation 2.12})$$

Or simply written $S=I$. This is the simplest form of investment and saving equilibrium. In this saving investment identity, the savings are the amount that people choose to save and offer to banks in the form of loanable funds. Investment is the amount of loans available with the banking sector, for investment purposes.

The saving-investment equality assumes that savings are equal to the investment. In other words, small savers scattered throughout the country are providing impetus and stimulus for the growth in economy, through making their savings available for investment projects for profit motives. The prime function of the financial sector is to mobilise savings in the economy to facilitate economic growth and job creation. According to Keynesian theory, savings are direct and stable function of income, but saving has an ambiguous impact on growth due to substitution and income effects (Fischer, 2005). Both these effects drive in opposite directions. Substitution effect predicts that the rise in interest rate gives incentive to people to save more and spend less because of higher opportunity cost of each dollar spent. Substitution effect assumes positive value. Conversely, the rise in income as a result of higher real interest rate motivates people to increase expenditure. Higher expenditure levels ultimately lead to lower level of saving (Narayan and Narayan, 2006).

Blanchard (2013), developed a Two Period Model of current and future consumption. According to the model, the individuals make rational decisions about their current and future consumption, subject to their maximum satisfaction level. If U denotes the utility or the degree of satisfaction, C_0 is the current consumption and C_1 is the future consumption, the maximum utility can be written as:

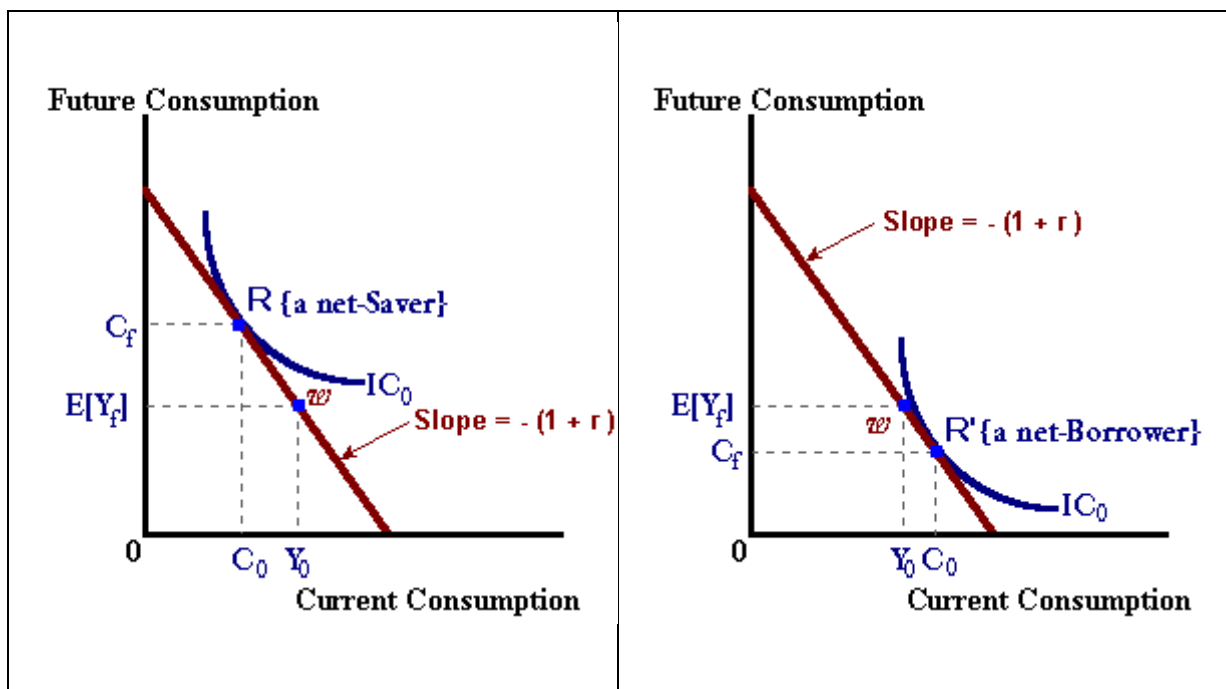
$$U_{Max} = f(C_0, C_1) \quad (\text{Equation 2.13})$$

Given the rate of time preference (determined similarly as the time value of money), the future consumption is discounted at the rate of time preference. This follows Equation 2.14 as given under:

$$U_{Max} = U(C_0) + \sum^L U(C_t)(1 + P)^{-t} \quad (\text{Equation 2.14})$$

Equation (2.14), incorporates the rate of time preference in the maximum utility function. $U(C_0)$ is the utility driven from current consumption. However, consumption in future requires individuals to sacrifice some of the current consumption for future, therefore involves a measure of the time preference. P is the measure of the rate of time preference. This model is explained with indifference curve (IC_0) as follows:

Figure 2.2: Indifferent curve shows the level of satisfaction combination of current and future consumption activity



Sources: http://www.digitaleconomist.org/tpc_4020.html

The functional relationship of saving with income and consumption, as explained by Fischer (2005), is represented as follows:

$$S = Y - C \quad (\text{Equation 2.15})$$

Where 'S' stands for savings, 'Y' is income and 'C' is the amount consumed. Savings are the amount not spent by individuals, households, firms, and the government. In a normal household setting, savings are generally considered to be less than income. Theoretically, there are several factors that affect the level of savings in any economy. These factors are associated with economic, social, socioeconomic, and cultural conditions of the country.

Saving-investment equality, determines the point of equilibrium between saving and investment. According to the conventional notion, all saved amounts are invested in the projects of mutual interest for business and society. This can be attained through an efficient and vibrant financial sector in the country. The equilibrium point in the financial market may be attained through demand and supply of loanable funds. The households and small savers are the suppliers of the loanable funds and the businesses and investors are the buyers of the loanable funds. The vibrancy and efficiency of financial sector is reflected from the optimal allocation of individual savings in the best possible projects of social and economic benefits (Bagehot, 1873). Investment is nothing but the change in the existing capital stocks of the country facilitated by the saved amounts (Burda, 2013).

The theoretical importance of savings for growth has been endorsed as early as 1873 in a well-recognised study by Bagehot (1873). According to the study, the capacity and capability of the financial system to efficiently allocate national resources in the economy leads to the

high growth rates. Schumpeter (1911)¹⁶, has asserted the importance of banks in mobilisation of savings and provision of necessary capital for innovation. It is further argued in Schumpeter's seminal work that in developing economies an innovation results in old companies to be replaced by new companies, "Creative Destruction", here both recessions and booms are inevitable and are not correctable. Hence, new wealth is created through innovation. The study focused on the role of banks in providing the intermediation service for use of surplus funds in appropriate investments. The argument is extended in favor of a financial system where better banks, which are better at identifying firms that can be trusted for business, or able to mobilise maximum public savings, diversifying and pooling risks and facilitate the transactions of investors and business people. The whole cascade of activities leads to the higher levels of economic growth for the nation (Levine, 1998).

2.4.2 Empirical Evidence on Saving Growth Nexus

Since the link between savings and economic growth is not straight forward, related studies are prone to serious controversies. One group of authors claims that the causality is from savings to economic growth due to more capital accumulation. A second group of authors claims causality from economic growth to savings due to higher income levels observed at higher growth levels in the economy. Gavin and Talvi (1997) argued that higher economic growth precedes higher saving rate rather than the reverse on the basis of Latin American experience of low savings despite of higher growth rates. A detail discussion is given by Schmidt-Hebbel et al. (1996) on the relationship between saving-growth or vice versa.

Empirically, Fry (1996) has found positive impact of interest rate on savings (larger substitution effect than income effect). Giovannini (1983) has argued that the relationship

¹⁶ Original document in German and later translated in 1934.

between savings and interest is statistically insignificant. On the other hand, Klaus Schmidt-Hebbel (2006) found inconclusive relationships between interest rates and savings. These controversies on interest-saving and saving growth links give rise to the notion that these variables and the statistical link between them are subject to what of type of data is used and the selection of the research approach. There are studies that have advocated the presence of positive association between savings and growth rates (Modigliani, 1970; Barry, 1993; Nwanne, 2016). Nevertheless, despite of their robustness in the empirical estimations, the results of these studies do not apply causality and direction of causality. In addition to the controversies on the causality and the direction of causality between savings and growth, issues of the stationarity and unit root test of the data used in such studies has been a matter of concern for researchers in the field (Hendry, 1993; Agrawal, 2000; Su and Yao, 2017). The results, therefore, estimated from these studies do seem to be prone to the issue of spurious regressions.

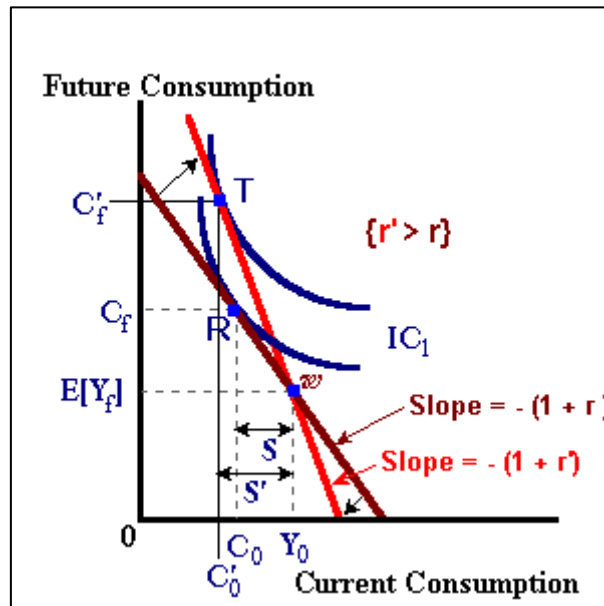
2.4.3 Interest Rates and Saving

The impact of interest rate on savings has remained ambiguous due to opposite direction and magnitudes of the substitution and income effects of interest (Dornbusch, Fischer and Startz, 2004). Conventionally, a low interest rate policy motivates people to consume more and demotivate them towards savings. Further, it is argued that a low interest rate leads to more savings in order to compensate for low return rates. Aizeman et al. (2019) conducted a research of 135 countries from 1995 to 2014 to see the relationship of interest rates and saving across sampled countries. They found that a low interest rate has various effects on private savings under various economic environments, like aging population and volatile output, and well developed markets have negative relationship between the interest rates and savings.

Floyd (2016) explained four effects of a Federal interest rates rise: (1) it makes borrowing more expensive for banks and therefore directly and indirectly influences both the businesses and consumers, (2) deposits of banks gives more yields, (3) it puts the stocks and bonds market in trouble and (4) it makes the dollar dominated assets more attractive.

The Two Period Model explains how substitute and income effect rises when there is an increase of interest rate (Lianchard, 2013). Figure 2.3 explains the shift of budget line and indifference curve outward from the previous position when there is increase in interest rate. An increase in the interest rate makes the current consumption relatively more expensive and individuals move away from current consumption known as the “substitute effect”. If the period consumption is normal goods, increase in interest rate leads to relative high income known as the “income effect”. Here, the net saver has better position with higher indifference curve, while the borrower is in a worse off position. It means the net saver purchase more current consumption and the net borrower buy less consumption. There is a positive income effect for net saver and a negative income effect for net borrower, while substitute effect will be negative for both individuals. For the net saver, the impact of interest rate on saving behavior depends upon the relative size of income and substitute effects. It means that a greater income effect than substitute effect leads to an increase in purchasing power. An increase in interest rate tends to increase current consumption and reduce saving, and vice versa. For the net borrower, these effects are complement for each other meaning that an increasing interest rate tends to reduce the present consumption and borrowing becomes more expensive.

Figure 2.3: Indifference curve shows the level of satisfaction combination of current and future consumption activity when interest rate increases



Sources: http://www.digitaleconomist.org/tpc_4020.html

2.4.4 Saving Mechanism

There are three major theories that concern with consumption and the saving behavior. Modigliani and Brumberg (1954), Modigliani and Ando (1957) and Ando and Modigliani (1963) developed the Life Cycle Hypothesis. Friedman (1957) introduced the permanent Income Hypothesis and the last theory is concerned with the relative hypothesis developed by Dusenberry (1949). These theories are rooted in the microeconomics theory of consumer choice. Life cycle hypothesis and permanent income hypothesis are almost identical, while relative hypothesis is quite different. The main focus for this dissertation thesis is the Life Cycle Hypothesis.

Life Cycle Saving Theory observes that over the life cycle consumption pattern needs and savings are unequal at the different stages of life cycle. It provides the mechanism of how, why and how much should be saved. The needs of the younger consumptions tend to be in excess of their income because of education and housing and consequently they save little.

During the middle age income rises and savings are accumulated. In the retirement stage savings tends to be declined because people consume from their previous savings.

Modigliani (1966, 1970) discussed the relationship between savings and investing, founding that the younger age group saved and then dissaved in their old ages. Therefore, it is this effect along with growth in population and per capita income, which increases the national saving rate. Bodie et al. (2006) discussed the theoretical aspects of life cycle hypothesis in detail.

2.4.5 Economic Models

There are different theories that discuss the relationship between the saving rate and income growth at the aggregate level. These theories predict the positive relationship between income growth and saving rate. Standard growth models argue that the saving rate causes growth rate, but various evidences showed that this relation is in opposite direction. Carroll et al. (2000) found that both level aggregate and microeconomic saving rate respond to income growth. Cristadoro and Marconi (2012) conducted research on Chinese households' savings and concluded that Life Cycle Hypothesis confirms the empirical findings with theory. Meaning that in emerging economies like China the younger generation is richer in their saving stage then the older generation and overall average saving rate of the economy is pushed up.

In this section, there is a brief discussion on the three economic models that relate to savings and economic growth relationship. The first one is the Classical Economic Growth Model, with major contributions from Adam Smith, David Ricardo, and Thomas Robert Malthus. Their main focused was on production methods, division of labour and technological progress. In an early draft of the Wealth of Nations which Adam Smith wrote in the 1760s, he

discusses that division of labour comes from savings and capital accumulation, and from extend of market (Adam Smith, 1776).

The second and third model can be classified as Neoclassical Growth Models. The main contributions for the first Neoclassical Growth Model are from Sir Roy Harrod of England and Professor Evesey Domar from the US, known as the Harrod Domar Model, whereas the second model, known as the Solow Growth Model, has main contributions from Solow (1956).

The Harrod Domar Model suggested that economic growth depends on saving level and capital output ratio. This model works under three conditions: investment is equal to saving, usage of full capital stock, and full employment. This model explains the positive relationship between average propensity to save and the higher the savings or investment in economy, the higher the rate of national income (GDP). Further, it explains the negative relationship between the GDP growth and national capital output ratio. This model suggests that governments of developing countries encourage savings to achieve economic growth by introducing effective policies. The Solow Growth Model, explains that per capita income is positively related to rise in saving rate and productivity betterment. Solow (1956), proposed that in the long-run living standards depend upon rise a in saving rate, population rate and technology progress. According to diminishing return in this model, an economy with a high level of capital stocks will have less increase in productivity than an economy with a low level of capital stock.

The theoretical model proposed by Harrod (1939) and Domar (1946) implies that growth in the economy is the consequence of the optimal investment plans supported by the high rate of

savings from small savers in the country. Savings may be used to adopt advanced technology which will further facilitate the growth in the economy, assuming a surplus labour supply.

Romer (1986) and Lucas (1988) have extended and endorsed Harrod-Domar Model concluding that high saving rates and high capital formation lead to higher growth in income levels. Jagadeesh (2015), using the Harrod-Domar Model, conducted research on the relationship between savings and economic growth of the Botswana economy from 1980 to 2013 with a positive relationship between savings and growth in the economy. Al-Awad and Elhiraika (2003) have identified wide differences in the saving patterns among the UAE expatriates and the local population. The study has further confirmed that the demography, culture and social structure have important impact on the saving behavior of individuals. However, Solow (1956) proposed a model in which the assumption of decreasing returns to scale in capital may halt the process of economic growth as the marginal product of capital eventually becomes zero in the long-run, despite a high saving rate.

The relationship between emergence of the financial sector arrangements for efficient resource allocation and reduction in risk, and the growth in the real economy is based on two obscurities. The first obscurity is related to the change in savings rate when higher returns are expected. The savings rate may respond in an ambiguous way. It may increase or decrease due to the income and the substitution effects of the higher returns. In case of lower risk and efficient resource allocation, instead of the rise in the savings rate the opposite may happen. The saving rates may fall as a result of efficient resource allocation and the reduced risk due to financial reforms.

2.5 Stock Market and Growth Nexus: Theoretical and Empirical Evidence

The theoretical literature on linkage between development of the stock market and economic

growth are a recent phenomenon. The exploration of the previous literature (attributed to the exogenous growth theories) was focused on the steady state level of capital stock per worker or productivity and no direct focus was placed on the rate of growth. However, recent research, attributed to Endogenous Growth Theory, argues that growth is considered as the self-sustaining process and influenced by the initial economic and other conditions of the countries. Such revisit of the thinking pattern has lead authors hypothesising the relationship between financial intermediaries and the growth prospects of the country. This framework, became able to reflect the level effects in the economy (productivity effects), but also the rate effects (of growth). An example of this framework can be found in Levine (1991). The impact of stock market reforms on the growth rates of the economy are discussed in the context of the recent move on reforming stock markets. Henry (2000) studied the impact of stock markets in autarky on growth as well as the impact of stock market development after liberalisation reforms have been framed. The key idea behind the theoretical framework has been the investigation of the impact of liberalisation in stock markets on aggregate valuation and physical investment.

To develop a view of the open market extension of the analysis, research was conducted by Tobin and Brainard (1997). The theoretical relationship presented here was identical to that of Henry (2000), that is, in a closed economy and the economy after liberalisation reforms are implemented. The relationship between present values of the aggregate profit per unit of capital invested in stock exchange V_t as the dependent variable shows a direct positive relationship with the expected aggregate profit per unit of capital $\bar{\Pi}$ invested. In addition, V_t is inversely related with the sum of autarky domestic risk-free real interest rate r_t and the autarky equity premium θ_t . The equation is given as follows:

$$V_t = \frac{\bar{\Pi}}{r_t + \theta_t} \quad (\text{Equation 2.16})$$

Following the above Equation (2.16), the relationship undertakes several important assumptions. These assumptions are as follows. First, the depreciation of capital stock is not a central item in the argument; therefore, it is not included in the relationship. Second, it is assumed the domestic risk-free interest rate r_t is greater than the world risk free interest rate r_t^* . This assumption follows the assumptions of the autarky economy. Third, for the reasons of simplicity of the exposition, the intertemporal changes in interest rates, equity premiums and the profit per unit of capital invested in the stock markets are not changing. Fourth, the existing literature has been evident on the ambiguous impact of reduced risk or increased risk sharing on domestic savings rates; it is assumed that the liberalisation reforms in the stock markets have no impact on domestic savings rates. There is empirical evidence on no impact of increased integration of the markets on the domestic savings (Levine and Zervos, 1998; Agenor and Montiel, 2015). For equilibrium condition to prevail in the financial market, the present value of profit per unit of capital invested in the market should be equal to the unit price of the physical capital. Therefore, if the unit price of physical capital is P_k , the above Equation (2.16) would look like as follows:

$$V_t = \frac{\bar{\Pi}}{r_t + \theta_t} = P_k \quad (\text{Equation 2.17})$$

Referring to the Equation (2.17) above, the prevailing equilibrium condition makes firms in the capital market indifferent to investment options. Further, Equation (2.17) also asserts the notion that the evaluation of investment projects and firms comprises of two integral components: one is the risk-free rate of return and second is the domestic premium.

Given the capital market equilibrium in Equation (2.17), suppose that the liberal reforms are

implemented in financial market. In the first instance, the equity premium of the country θ_t is greater than that of the world equity premium θ_t^* . This is so because initially in autarky the equity premium in the country is equal to the variance of the aggregate domestic cash flows. However, after implementation of the liberalisation reforms, the country's equity premium lowers down to equal the world aggregate covariance of the world cash flows. In other words, the lowering country's aggregate variance in cash flows taken as the local price of risk is higher under autarky than that of the global price of risk. This is the necessary condition that is satisfied during the process of global integration by all countries (Stulz, 1999b). There are several other authors who have gone with the idea that the equity premium in the emerging markets falls as the economy moves to more global integration (Tesar and Werner, 1997; Errunza and Miller, 1998; Bekaert and Harvey, 2000). These studies have confirmed through empirical evidence that the condition of lowering equity premium in the emerging markets as a result of global integration holds in practice (Henry, 2000). The second impact of financial liberalisation reforms, other than the increased amount of risk sharing, is that the liquidity in the domestic stock market in the emerging economies also rises. As a result of increased liquidity in the stock market, the cost of trading in equities falls (Levine and Zervos, 1998). It has been argued that the increased liquidity in the market reduces the equity premium and thus enhances the value of the firm (Ahimud and Mendelson, 1986; Ahimud et al., 1997). The above statement, along with the empirical evidence about the fall in the equity premium and resultant rise in the liquidity in the market and rise in the value of the firm, has two further implications. The first implication of the condition is the shareholders' demand for higher liquidity premium to bear the systematic risk in the market. The second implication of the condition, is higher compensation is demanded for the frictional cost of trading equity. The third impact of financial liberalisation in stock markets may be visible on the risk-free interest rate. When the assumption of closed money market holds and the domestic savings

are treated as constant, the global integration of the domestic market leads to the rise in the available loanable funds. The increase supply of the loanable funds would tend to lead to the fall in the risk-free rate of interest. The profitability per unit of capital $\bar{\Pi}$ remains the same. Given the unchanged numerator, and if the size of denominator falls, the overall size of the fraction rises. Equation (2.17) of the present value given above in the autarky changes to the identity given below.

$$V_t = \frac{\bar{\Pi}}{r_t + \theta_t} > P_k \quad (\text{Equation 2.18})$$

In Equation (2.18), the present value of per unit capital invested in the stock market assumes higher values than the per unit price of physical capital in the emerging market. It can be concluded that the liberalisation reforms in the financial market of the emerging economy presents added incentives to the investors to bring investments, by wedging a gap between the price of the physical capital and the present value of the aggregated profit. The gap may remain for some time until the economy again comes back to the optimal point, where the investors become indifferent towards investment options. Similarly, the studies of Levine (1991) and Bencivenga et al. (1995) in their theoretical models claim that more liquid stock markets are leading towards higher levels of growth in the economy.

In addition, the theoretical perspective on the links between finance and growth has been discussed elaborately in Bencivenga et al. (1995) and Levine (1991). The link between economic growth and the stock market development has been figured out by Harris (1997) in the following way. The derivation of the same model was done by Atje and Jovanovic (1993). They used cross section model of growth and stock market development.

$$G = \alpha_1 + \alpha_2 I_i + \alpha_3 S_i + \alpha_4 N_i \quad (\text{Equation 2.19})$$

Here G_i is growth in per capita GDP or income, I is the investment divided by GDP, S is the product of the level of stock market activity with investment and N is the growth in the labour force. Since investment and stock factors are endogenous elements, instead of their current values lagged values are preferred in the analysis.

The transmission channels through which stock variables of liquidity and size of the market affect the rate of growth of economy are discussed in the existing literature. Investment productivity can be the possible transmission channel of stock market development measured by value traded ratio to economic growth of the country. Caporale et al. (2005) and Levine (1991) have argued that the investment productivity is enhanced as a result of stock development, because it enhances the available resources for the firms and business entities. The literature has suggested and argued that there are three possible channels through which the stock development is affecting economic growth. One, it provides an alternative way of savings mobilisation and better resource allocation (Seetanah et al., 2008). Enhanced savings in the economy lead to the capital accumulation and availability of capital/funding for large projects is available via equity issues. This leads to higher levels of economic growth (Levine and Zervos, 1998; Adjasi and Biekpe, 2006). Mobilisation of savings overcomes the liquidity shocks in the economy. It is evidently argued, that more liquid markets play a key role in the economic growth of the county. In absence of liquidity, many profitable but long term projects involving large sums of costs would not be able to materialise (Bencivenga et al., 1995; Levine, 1991).

The available literature proposes the view that stock markets are a recent and deeper phenomenon in developing countries than in developed world. In developing countries the banking sector is stronger and more effective than the stock market (Seetanah et al., 2008). It

was further argued that there may be bidirectional relationship between stock variables and the real economic growth. However, there are other studies which have been of the opinion that the banking sector has supremacy over the stock market in playing the role for economic growth.

Mayar (1988) has claimed that the development of the stock market development does not impact economic growth. Stiglitz's (1985) research supported the opinion that even the enhanced liquidity in the stock market does not help economic growth, it may even create the problem of a free ride. In addition, it is argued that the reduced risk due to international integration may lead towards an ambiguous impact on the savings.

The stock market is a recent phenomenon in the UAE and has gone through changes over time (Bin Sabit, 2000; Moustafa, 2004). During the years 1975-1982, when the oil prices were rising globally, there were a lot of petro-dollars available for investment in the equity market, modernisation and building economic base. In 1983, the crash of Kuwaiti stock exchange and the crisis of Al Manakh led to uncertainty over the infant financial market in the region. Falling prices of oil in 1986 further aggravated the situation (Bin Sabit, 2000). The government was inexperienced and could not recover from the cascade of events, resulting in the collapse of the stock market (Al-Shamsi, 2001; Moustafa, 2004). There has been less literature available on economic growth and the stock market in the UAE. Some studies have remarked on the UAE stock market as being weak to inefficient (Ebid, 1990; Al-Awad and Hassan, 2011). Moustafa (2004) has also rejected the efficient market hypothesis by listing lack of regularity, manipulation of the market, negative speculative trading, lack of financial disclosure, and the drop in oil prices as the reasons for inefficiencies in stock markets of UAE (Al-Shamsi, 2001).

Several researchers have argued on the role of stock markets in the financial and economic growth of countries. Some key studies have argued that the efficient stock markets tend to substantially reduce the transaction costs of the investment because of high degree of liquidity (Levine and Zervos, 1998; Arestis et al., 2001; Bencivenga et al., 1995). This allows investors of huge projects to sell their equities faster than in the banking sector, involving lower cost. These costs, often restrict investors from undertaking any such productive transactions (Khan and Senhadji, 2000). An economy without a vibrant and dynamic financial sector may be suffering from information asymmetries, lacking motivation to increase savings, inefficient allocation of available resources and high risk associated to different investment options. Merton (1995) has presented a detailed description on the functions of the financial system and has argued that there can be large disparities between countries in performing these functions. From the context of used research technique in pursuing the studies, the present chapter lists several research approaches that the authors have adopted.

2.6 Functions of the Financial Sector

2.6.1 Financial Sector as the Source of Information and Resource Allocation

Investor decisions are based on the evaluations and scrutiny reports on the market, managers and firms. Individual households lack necessary information on market conditions to ensure expected profits out of the proposed investment plans, because of high costs involved in collecting such information. This lack of necessary information creates uncertainty and discourages potential investors from their planned business activities. As a result, the capital will fly away from flowing to its highest value use and prevents the economy from optimal resource allocation. Several studies have proposed that the presence of financial intermediaries in the economies reduces substantially the costs associated with the investment

plans and proposals. Most literature that models finance and growth presupposes that the capital flows to its best possible use, assuming the investors have maximum a priori information on the market conditions. Bagehot (1873) and Boyd and Prescott (1986) have argued that in absence of the financial sector each potential investor would be facing a very huge fixed cost of evaluation of firms, managers etc. To Boyd and Prescott (1986), the financial intermediaries are mostly looking like the banks that accept deposits and extend loans. Financial intermediaries are formed to produce and pool the most demanded information on investment and market environment holistically. This information is passed on to the savers for optimal and efficient decision making. Consequently, each capital holder puts his or her capital in the most-profitable project. Allen (1990), Bhattacharya and Pfleiderer (1985), and others have developed financial models to show how intermediaries produce information needed by savers and sold to them. The size and growth of the financial markets and the degree of liquidity in the financial instruments offers greater incentives to investors by providing large amounts of information (Grossman and Stiglitz, 1980). Moreover, it is also argued that the large size of markets with more liquidity leads to production of very valuable information and has positive implications on the capital allocation (Merton, 1987). Though the existing models have been hinting at the link between efficient markets, information and steady-growth rates, yet these theories don't relate market liquidity, production of information and the growth in economy very often (Aghion, Philippe and Howitt, 1992). By producing and selling the best piece of information to the potential investors, thus creating optimal production technologies, the financial intermediaries may boost ongoing rate of technological innovation by picking the entrepreneurs with capacity of venturing in new goods and novel production processes. King and Levine (1993) are good examples on technological innovation boost through financial reforms as they have linked the risk diversification with the technological change by boosting the innovative project options

in the economy. It is also discussed in detailed by several researchers (Morales, 2003; Blackburn and Hung, 1998; Levine, 2004).

Additionally, there is theoretical work done on the role of stock exchange in producing and disseminating information on the market, firm and managers' conditions. As the size of markets, in terms of the volume of trade and business transactions, increases it allows agents to enjoy bigger incentives from investing in more liquid markets (Grossman and Stiglitz, 1980). Studies have presented theoretical linkage of stock markets with the long run growth pattern of the economic growth (Levine, 1991; Bencivenga et al., 1995a). They have constructed models that take the more liquid stock markets and their role in economic growth. Investments in more liquid markets induce higher return in the long run and low risk, through more internationally integrated stock markets, and create incentives for higher investments. This encourages a shift in the investments from low return investments to high return investments and leads to higher productivity growth (Devereux and Smith, 1994); Obstfeld, 1994). However, the better risk and high return on investments as proposed by the risk and liquidity models may have ambiguous impact on the domestic savings. It may be argued that savings may decline instead of rising if the income effect of the high return-low risk investments motivate savers to spend more and save less.

In case of imperfections in the capital markets, the Arrow-Debreu equilibrium does not hold because the set of prices in terms of the interest rates offered in the market do not clear the market of demand for and supply of the funds (Arrow and Debreu, 1954). The key reasons for the market imperfections, among others, occurring in the capital market include information asymmetries as discussed throughout this section. These information asymmetries tend to impede the investment in the human capital (Galor and Zeira, 1993). The

argument on human capital investment and the capital market imperfections goes as follows:

“In the presence of indivisibilities in human capital investment and imperfect capital markets, the initial distribution of wealth will influence who can gain the resources to undertake human capital augmenting investments. This implies a sub optimal allocation of resources with potential implications on aggregate output both in the short and the long run” (Levine, 2004, p. 9-10).

2.6.2 Corporate Governance, Savings and Investment

Allocation of resources and capital in an optimal way is the prime objective of an efficient and well-functioning financial system. If the capital or the savings of the small potential investors are directed towards their best possible investment option it brings incentives for the savers, in particular, and the whole economy in general. Corporate governance inside the firms and business entities plays an important role in determining the growth path of the capital investment and ultimately the growth of the whole economy. Monitoring of firms regarding use of the capital provided by the small and big savers has positive ramifications on the savings and allocation of resources.

The importance of corporate governance for optimal allocation of resources in the economy has been highlighted in the Agency Theory. It explains the issue of corporate governance in terms of the influence of debt and equity holders on the managers to act towards the best interests of the capital providers. To review a more comprehensive literature on the Agency Theory and corporate governance see Coase (1937), Jensen and Meckling (1976), Fama et al. (1983a), Fama and Jensen (1983b) and Myers and Majluf (1984). It is often believed that the degree of power rendered to debt and equity holders to monitor the firms, pushes managers to

maximise the value of the firm's investments and assets. This will induce the overall efficiency in the resource allocation and will motivate savers to continue their presence in the market by financing the production and innovative activities of the firm.

A study by Stiglitz and Weiss (1981) has thus argued that absence of corporate governance in the financial sector would impede the flow of capital to the most profitable investment options. The practice of corporate governance values and tenets in businesses, offers shareholders greater authority to influence directly the management's policies over critical issues like mergers, liquidation and other crucial long term business strategies by voting rights. Moreover, the firm's management can also be influenced by the shareholders indirectly on crucial policy matters and issues of significant importance for the firm. This is done by electing the board of directors to safeguard the interests of capital providers in the presence of a multitude of managerial decisions. On the other hand, some authors have presented their comments that in case of more liquid financial stock markets, where selling shares is relatively easy, higher levels of liquidity may de-motivate investors from embarking on the costly task of monitoring managers (Bhide, 1993; Shleifer and Vishny, 1986). The phenomenon would tend to weaken the corporate governance and hence may lead to lower productivity growth levels. In addition, it has also been argued in various studies that the diffused shareholders may not be able to put forth the rules of corporate governance on the firms due to the variety of frictions present in the financial markets (Levine, 2004). This may lead to discrepancy in the motivations and aspirations of managers towards investments for their personal benefit and gain, instead of investments for the wider benefit of the firms and society. Given this, managers will exploit wide existing information asymmetries between manager and shareholders, where managers enjoy wider discretion over access to important information.

A comprehensive study dealing with political economy and international relations in finance remarked that the structures of the firms are not solely a product of market forces, as it has been evidenced that they happen to be influenced by the political quarters in the case of United States (Roe, 1994). In addition, there happens to be other restraints keeping the small shareholders from being vigilant and overseeing the managers like lack of expertise and disincentives in terms of high costs involved. This may lead to the problem of the “free rider” with little monitoring. There may be adverse effects on the resource allocation and growth prospects due to the gaps in follow ups on corporate governance rules. One way to respond to the situation may be concentrated ownership, though not free of problems. Among many problems associated with concentrated ownership is that concentrated large shareholders may exert excessive control over the managers and undermine voting rights of the small shareholders. There have been several studies conducted on political and macroeconomic implications of large shareholders, who are often the influential families using pyramid structure and super voting rights to amplify their control over corporations and banks (La Porta et al., 2002; Morck et al., 2000; Caprio et al., 2003). These researchers have argued that these influential families convert their corporate power into political power to shape policies and to save their corporate interests in terms of subsidised ventures. Therefore, concentrated shareholder would not be a response to the corporate governance problem.

Some studies have concluded the interests of the owners (shareholders) and that of the managers may be aligned by linking manager’s incentives with the stock performance (Diamond and Verrechia, 1982; Jensen and Murphy, 1990). If takeovers are easy in the financial markets, then poorly managed firms may be taken over by the better managed firms and the poorly performing managers fired. This threat of takeover may assist in aligning the interests of managers with that of the owners (Scharfstein, 1988; Stein, 1988). Overall, the

allocation of resources in a country can be optimal when the financial sector is well-functioning and efficient. Corporate governance rules give an opportunity to the owners (shareholders) of monitoring the activities of managers to align firm and shareholder's interests for the greater benefit to both society and firms.

2.6.3 Risk in the Financial System

The investors and savers do not like risk. An effectively functioning financial sector offers higher return on the riskier investments than that on the low return projects. In this way, the system helps in a portfolio shift towards higher return investments, to diversify the risk associated to the portfolio of investments. The financial systems' ability to mitigate the risk factors confronting potential investors has long term consequences for the savings, resource allocation and the economic growth. Researchers have concluded that if the system has the ability to diversify the risks associated with the investment options can indeed provoke a portfolio shift from low to high return investments (Gurley and Shaw, 1955; Patrick, 1966; Paul, 1992; Obstfeld, 1994). Levine (2004) discussed three categories of risk diversification. The first, is the traditional cross-sectional risk diversification, second is inter-temporal risk sharing and the third is the liquidity risk. The first risk diversification category has its roots in the traditional finance theory. It reflects the ability of the financial sector to make it easy for people to diversify risk by holding mix portfolio of high and low risk/return projects. Acemoglu and Zilibotti (1997), while modeling cross-sectional risk, diversification and growth, argued that the risky and high return projects are indivisible and large. They also found that people dislike risk, the market offers low return on low risk projects, and capital is scarce. They argue that the ability of the financial arrangements to facilitate the diversified portfolio can alter the savings and growth prospects in long term. King and Levine (1993) have linked the risk diversification with the technological change by boosting the innovative

project options in the economy. Innovation is a risky venture, however, if the financial sector offers cross-sectional diversification between low return low risk and high risk high return investments the overall risk associated with the portfolio falls.

The second category of inter-temporal risk diversification offers an opportunity to diversify risk across generations. The argument goes in the following way. Cross-sectional risk diversification takes into consideration the role of markets, however, inter-temporal risk diversification takes in to consideration intermediaries and their role. The finance theory offers illuminating and advantageous role of intermediaries in simplifying the inter-temporal risk smoothing (Allen and Gale, 2000). Financial intermediaries operating across the generations have the capability to diversify risks across generations, which cannot be diversified at any single point of time like macroeconomic shocks. This can be particularly done by offering high returns during slack economic times and lower returns during economic booms. This can happen when intermediaries are able to lower the contracting costs.

Finally, the third category of risk is the liquidity risk. This type of risk arises when the less liquid assets, like securities, are planned to be converted in to more liquid assets, like medium of exchange (money). Asymmetric information in the financial market may impede liquidity, hence increasing the degree of liquidity risk. Effective and efficient financial markets smoothen the conversion of assets, thus augment the liquidity. Long term commitment from the capital is always required in case of high return projects. However, the small investors do not show much enthusiasm to relinquish their money for longer time periods in the hands of others. Therefore, if the financial market does not maintain the required liquidity level, there would be less investment anticipated in the high return and long-term projects. A model of

liquidity developed by Diamond and Verrechia (1982), in case of inevitable shocks, assumes that the savers decide between two projected investments: illiquid high return investments and liquid low return investments. It is probable that the investors in the illiquid and high return investments would like to have access to their savings before the project starts retaining profits. Savers observing shocks are able to sell their securities for future expected profits of illiquid production technology. Owing to the impersonal stock exchange trade, other participants do not verify whether other traders have received the shock. However, as the cost of transaction in the stock market falls, illiquid and high return investments attract more capital and investment. Given that the illiquid projects enjoy greater positive and large externalities, the higher liquidity in the stock market leads to faster steady-state growth rate. If exchanging ownership claims involves larger costs, the production technologies initiated for longer run does not draw more investment. Hence, it can be easily comprehended, since the liquidity is measured through secondary market trading costs, that it deeply affects the production decisions.

The banking sector can also affect the liquidity and can influence economic growth by offering liquid deposits to their clients. Banks can assume a combination of liquid and low return investments to meet the demand on deposits as well as illiquid high return investments. When banks provide demand deposits and an appropriate combination of liquid and illiquid investments they provide complete insurance against liquidity risk to customers. By doing this, banks also facilitate investment in high return long-run projects. Theoretical literature claims that there is another channel through which financial sector affects growth, it is through accumulating human capital (Jacoby, 1994). Given that diminishing returns on a social level do not apply on the human capital, financial arrangement can ease accumulation and creation of skills to lead to long term economic growth (De Gregorio and Guidotti, 1995;

Galor and Zeira, 1993).

2.6.4 Mobilisation of Savings

Small savers happen to be spread over the country and they are desperate to invest in profit earning ventures. Two types of costs usually make the mobilisation of savings a costly process. The first type of the cost arises from the process of collecting savings from the individuals, known as the transaction costs. Secondly, the costs of handling and overcoming the cost of asymmetric information arises from the fact that savers are convinced to relinquish the control over their savings. A study on history of banking has elaborated distinct costs allied with raising of capital prevailed during 19th and 20th century in United States of America (Carosso, 1970). Financial arrangements, like occurrence of multiple bilateral contracts between holders of surplus resources or funds and productive units to mitigate the financial market frictions in the mobilisation of savings, can facilitate savings pooling. One of the prime examples of a business entity, a firm, where many individuals prefer to invest is known as the joint stock company. Financial intermediaries assist individual savers to economise on the costs associated with transactions and asymmetric information by accepting surplus funds from saving agents. These intermediaries then invest these mobilised savings in hundreds of different firms (Sirri and Tufano, 1995). The savers can only trust intermediaries for their savings when ensured about the profitability of the investment options (Boyd and Smith, 1992). To mobilise savings, the intermediaries need to worry about building a universal reputation for making savers comfortable to entrust them with their savings (DeLong, 1991; Lamoreaux, 1995). It has been argued that better savings mobilisation not only facilitates capital accumulation but leads to better allocation of resources and technological innovation. Sirri and Tufano (1995) argue that in the absence of many investors many production processes may end up as inefficient scales. In addition, many large

investments require putting forward large amounts of capital that may be beyond the capacity of a single saver. The presence of financial intermediaries is of prime importance because they ensure that good investments should be halted due to lack of capital (Baghot, 1873).

2.7 Financial Deepening and its Determinants

Because of several dimensions and broader concept, it is very difficult to measure and examine the impact of financial deepening. However, the World Bank's Global Financial Development developed a simple dimensional 4*2 framework as given in Figure 2.4. This framework has four sets of proxy variables to measure the deepening, access, efficiency and stability of financial institutions as well as financial markets. This helps researchers as well as economists to measure the degree of financial development and its performance within an economy's political, legal and governance environment. The main focus is only to discuss the financial deepening and its set of proxy variables to measure deepening of both financial institutions and markets in general. Financial deepening and its proxy variables are defined under the umbrella of World Bank publications.

Financial deepening captures the size of financial sector in comparison with economy. It is concerned with the larger financial services to all the levels of society. The proxy measures for financial depth are Private Sector Credit, Financial Institutions' asset, M2, Deposits and Gross value added of the financial sector, Vis-à-vis GDP. For finance and growth nexus, proxy variable M2 to GDP is used by King and Levine (1993), Levine (1997), Jung (1986), Demetriades and Hussein (1996), and more recent studies include Gillman et al. (2004) Kemal and Hanif (2004), Odhiambo (2008), Ndebbio (2004), Karahan et al. (2011) and Al-Malkawi et al. (2012). Other studies (Dehesa et al., 2007; Ang, 2008) used private sector to GDP indicator as a financial deepening proxy. Other proxy variables are rarely used because

of non-availability of data over long time periods and less development of financial data.

The commonly used proxies for financial market deepening include market capitalisation to GDP and value traded to GDP (e.g. see Caprale et al., 2004; Levine and Zervos, 1998; Demircuc-Kunt and Levine, 1996). But Seetanah et al. (2008) argued that in developing countries the role of banking sector is more effective for economic growth than the stock market. The financial markets are not well developed in the investors' perspective when compared with the newly industrialised and developed countries.

Figure 2.4: Frame work to Measure the Financial Deepening

	Financial Institutions	Financial Markets
Depth	Private Sector Credit to GDP	Stock market capitalization and outstanding domestic private debt securities to GDP
	Financial Institutions' asset to GDP	Private Debt securities to GDP
	M2 to GDP	Public Debt Securities to GDP
	Deposits to GDP	International Debt Securities to GDP
	Gross value added of the financial sector to GDP	Stock Market Capitalization to GDP
		Stocks traded to GDP
Access	Accounts per thousand adults (commercial banks)	Percent of market capitalization outside of top 10 largest companies
	Branches per 100,000 adults (commercial banks)	Percent of value traded outside of top 10 traded companies
	% of people with a bank account (from user survey)	Government bond yields (3 month and 10 years)
	% of firms with line of credit (all firms)	Ratio of domestic to total debt securities
	% of firms with line of credit (small firms)	Ratio of private to total debt securities (domestic)
		Ratio of new corporate bond issues to GDP
Efficiency	Net interest margin	Turnover ratio for stock market
	Lending-deposits spread	Price synchronicity (co-movement)
	Non-interest income to total income	Private information trading
	Overhead costs (% of total assets)	Price impact
	Profitability (return on assets, return on equity)	Liquidity/transaction costs
	Boone indicator (or Herfindahl or H-statistics)	Quoted bid-ask spread for government bonds
		Turnover of bonds (private, public) on securities exchange
	Settlement efficiency	
Stability	Z-score	Volatility (standard deviation / average) of stock price index, sovereign bond index
	Capital adequacy ratios	Skewness of the index (stock price, sovereign bond)
	Asset quality ratios	Vulnerability to earnings manipulation
	Liquidity ratios	Price/earnings ratio
	Others (net foreign exchange position to capital etc)	Duration
		Ratio of short-term to total bonds (domestic, int'l)
	Correlation with major bond returns (German, US)	
Source: http://www.worldbank.org/en/publication/gfdr/background/financial-development		

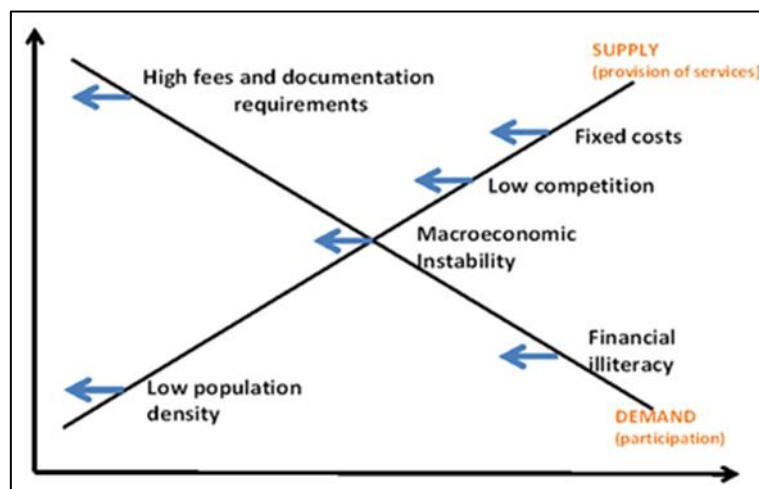
Financial deepening is an interaction process among the markets, their instruments and stakeholders. Markets includes primary, secondary, retail commodity and derivatives,

whereas instruments are loans, deposits, bonds, foreign exchange, debt securities and derivatives like future and forward contracts and options; and stakeholders are banks, companies, contractual institutions, government and individuals.

2.7.1 Determinants of financial Deepening

Beck (2015) discussed the challenges faced by major countries particularly the low income countries to promote financial deepening. Whether the financial deepening may promote or stagnate the economy depends upon structural characteristics such as composition and contribution of financial institutions and financial markets, government policies and exogenous factors like sociopolitical conditions and technology. Figure 2.5 depicts how supply and demand factors may hinder financial deepening. The high fixed costs, low mobilisations of deposits, high fees and documentations requirements of various financial provisions may limit the financial intermediation on the demand side. However on the supply side the factors like high fixed costs, low competition macroeconomic instability and low population density are the major barriers to financial deepening.

Figure 2.5: Supply and Demand Factors Limiting Financial Deepening



Sources: IMF

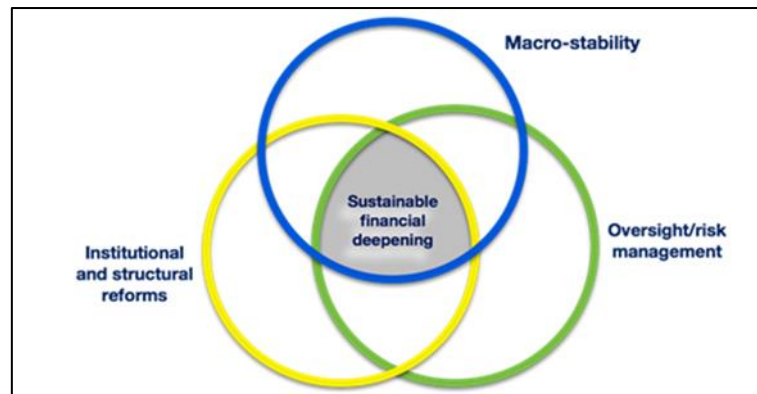
Through empirical studies, the researchers and economists concluded the following main determinants of financial deepening. Openness to trade (proxy of summation of export and import to GDP) is used by various authors like Baltagi et al. (2007), Moboladji (2008) and Ang (2008). In this vein, literature on this explored that the expected sign is positive between them. Low and stable inflation explained the financial depth, along with monetary measures, and it positively affects the long term savings and investment perspectives. While Boyd (2001) and Levine and Smith (2001) empirically tested the negative relationship between monetary stability and financial development. Real Interest rate influences the portfolio choices and it is used to determine the financial and monetary circulated assets. Various studies like Demetriades et al. (2001), Odhiambo (2006), Tanimoune (2007), Ang (2008), Sahay et.al. (2015) and Sharma (2016) used real interest phenomena and found positive sign with financial deepening. High GDP per capita growth rate explains high level of financial deepening and vice versa. The expected sign is positive between GDP per capita and financial deepening as found by Demetriades et al. (2001) and Ang (2008). Savings rate also has impact on financial deepening with expected positive sign. High population density improves the financial depth while scattered population uses more financial services and therefore the expected sign is positive with financial deepening. Real exchange rate may also explain the financial depth in terms of foreign assets. Depreciation of currency may increase the export and causes the cash inflows and its expected sign to be positive. Reserves levels negatively affect the financial deepening level. Ang (2008) found the negative relationship while studying the impact of financial policies on financial deepening.

2.7.2 Governments Policies Do Matter

Beck (2015) explained that government efforts like encouraging competition, improving the market infrastructure, information dissimulation in time, limited public sector interventions

and dominance and macroeconomic stability support to overcome impediments and to increase financial deepening. Figure 2.6 shows the role of macro stability, institutional and structure reforms and oversight/risk management help to maintain the financial deepening.

Figure 2.6: Government Policies and financial deepening



Source: IMF

2.7.3 Control over Banking Sector

Traditionally it is postulated that financial development influences the economic growth (such as Hamilton, 1781; Bagehot, 1873; Schumpeter, 1911). Bagehot (1873) discussed the role of banks as intermediations services to provide the surplus of funds for most appropriate investments. He also argued that there must be a plenty rate on the banks borrowing against its good financial assets to avoid it to run. Schumpeter (1911) argued that there should be corporate governance to monitoring the firms and managers.

McKinnon (1973) and Shaw (1973) postulated proposition that real interest rate influences savings and investment, eventually promoting the economic growth. Further they also postulated proposition that government interventions, like inflation and credited programs, influence real interest rate and ultimately leads to the repression and depression of real interest rate. In their view, it distorts the economy in different ways like discourage

entrepreneurs to invest into high risky projects accompanied with high yields; borrowers invest into only capital intensive projects when they relatively have low cost funds. They are in favour of market which may determine the credit allocation in order to enhance financial deepening (liberalisation of interest rate). Other researchers also supported this argument (e.g. see Kapur, 1976; Mathieson, 1980; and Fry, 1996). World Bank (1989) work explained that low interest rate slows down the economic growth by affecting the productivity of investments. But other studies like Villanueva and Mirakhor (1990) and McKinnon and Pill (1997) argued that interest rate liberalisation causes the moral hazard, like risky lending behavior of banks. Studies of Hellmann et al. (2000) showed that liberalisation of interest rate may increase the competition but make the banking system weaker. Stiglitz (1994) argued that control over the interest rate increase the saving behavior because of better governance of financial system.

Other government restrictions on financial operations like reserve requirements, liquidity threshold and specific credit programs may adversely affect the financial development. Genotte and Pyle (1991) and Kim and Santomero (1988) argued that capital requirements may make banks' portfolio more risky with inefficient allocation of resources. On the contrary, other studies argued that these restrictions may help to overcome the potential problems of liquidity and can trigger the effects of insolvency. Directed credit program may increase the productivity in specific sectors (e.g. see Arestis, 2002; Demetriades, 2002; Fattouh, 2002; Mouratidis, 2002 and Schwarz, 1992).

Endogenous growth models proposed new ways of financial sector policies on economic growth. King and Levine (1993b) proposed a model that addresses the taxes on financial sector. This model shows the negative effect on intermediation role when it is tested by

inducing deposit ceiling rate or high reserve ratio requirements and ultimately affecting economic growth.

In contrast to the studies mentioned above, there are other studies advocating that the elasticities in interest and saving functions do not show a supportive trend but perhaps show a neutral trend. The studies that have been unsupportive to the repressions hypothesis include Fry (1980), Giovannini (1983), Gupta (1987), and Khatkate (1988). Previous empirical research following the financial repressions hypothesis mainly focused on the effects of a financial system on savings, when the real deposit rate of interest calculated as the nominal rate of interest adjusted with the current/existing or expected inflation rate, as a proxy for financial repression.

Demetriades and Luintel (1996) conducted research to examine how the banking sector policies impact on the financial deepening and usage of non interest methods to influence the deposits volume in India. They found that banking sector controls have negative effect on financial development. Further they found that ceiling lending rate positively effected the financial deepening but in small propotions.

Klein and Olivei (1999) argued that open capital accounts increase the fiancial deepening and hence positively impact economic growth. Indeed, financial libralisation and deregulation of banking drive the economic growth upward but can bring risks like financial distress and crisis. The recent financial crisis of 2007 is the consequence of intensive trading of financial instruments (both domestically and internationally) under the more deregulation banking environment.

In nutshell, we can deduct that financial system of any economy is shaped by financial policies of that country. The government intervention or its financial policies address the questions like: what must be reserve ratio; what are credit programs to be directed; how and at what level the interest rate should be controlled; and what is the requirement of capital liquidity etc.?

2.7.4 Evolution of financial Deepening private sector credit in terms of GDP

Classical school of economists argued that capital accumulation is the main driver of economic growth. In their views, the degree of financial deepening may be increased by increasing the saving and investment activities. These activities result in raising income level and economic growth. The financial deepening is measured by capital stock to GDP and M3 to GDP ratios. Proxy variable private credit to GDP is mainly used to measure the financial deepening. De Gregorio and Guidotti (1995) argued that private credit has advantage over other monetary aggregate measures like M1, M2 and M3, because it represents the amounts of funds directed to private sector as percentage of GDP. Therefore, it is more accurate measurement of investment and economic growth than others. An increase in this ratio is a sign of more degree of financial services and hence improvements in financial intermediaries. It excludes credits to government and public sector from the private banks. The banks own financial and risk management policies and practices scrutinise the more profitable private corporate projects and advance credit to finance them. In this way, investment and economic activities rises. This variable is most suitable to measure the role and level of financial intermediaries in economic growth.

Demetriades and Hussain (1996), Beck and Levine (2004) and Levine and Zervos (1998) used this proxy in their empirical studies. The sharp increase in this ratio may indicate the

financial policy reforms like financial liberalisation. The high level of this ratio over GDP may indicate that large government interventions are not more avoidable. Basel Committee on Banking Supervision introduced the BASEL II during June 2006. It is a comprehensive set of reform measure to strength regulations, risk management and supervision of the banking sector. Under this umbrella, countercyclical buffer is introduced. It suggests that if credit in the economy is expanding faster than GDP then local bank regulators can increase capital requirements from 0% to 2.5%, and thus by doing so, national economies may preserve from excess credit. King and Levine (1993) were the first economists who studied the empirical causal link from finance to economic growth by using cross country regression methodology. They used “size of banking system to GDP” as a proxy for financial depth while controlling for other variables. Levine and Zervos (1998) studied stock market deepening and its casual link to growth. After their empirically studies, a series of researches have been conducted by using instrumental variables like private sector credit to GDP.

The terminology GDP was introduced by Kuznets (1937) to report U.S.A Congress on national income over the period 1925-1935. Establishment of International Monetary Fund and World Bank were outcomes from Breton Woods’s conference held in 1944. These institutions took GDP as international standard to measure the economy. Kravis et al. (1978) compiled the GDP per capita for more than hundred countries around the world.

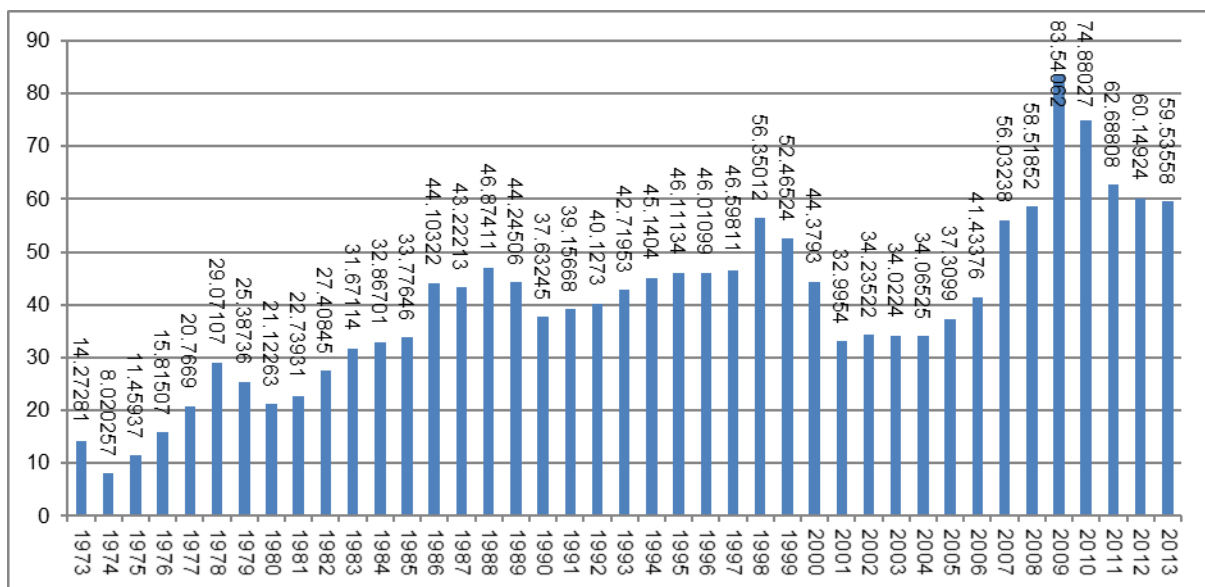
By the combining efforts of United Nations, European Commission, International Monetary Fund, Organisation for Economic Cooperation and Development and World Bank Group, The System of National Accounts was designed in 1999; a statistical framework to provide a set of macroeconomic accounts for purpose of research, analysis and policymaking. Its revisions are made in according to international needs. The private credit to GDP ratio as

calculated by IMF and World Bank is as follows:

$$\{(0.5) * [F_t \setminus P_{et} + F_{t-1} \setminus P_{et-1}]\} \setminus \left[\frac{GDPT}{P_{at}} \right] \quad (\text{Equation 2.20})$$

Where F represents credit to private sector, P_{et} represents CPI at year end, P_{at} represents average CPI of year. World Bank's Global Financial Development Database covers this ratio since 1961. A brief overview of this ratio for UAE is depicted in Figure 2.7. The mean of private sector credit to GDP in terms of percentage is 39.974% over the period of 1973 to 2013 with standard deviation 16.3%. The minimum value is 8.020% during the 1974 and maximum value is 83.54% during the 2009. The trend of private sector credit to GDP shows that the financial deepening in UAE is significantly increased over the sampled period. It means that private sector has been increasing the availing of credit to finance its investment projects in UAE and hence cause to contribute in economic growth activities.

Figure 2.7: Private Sector Credit in terms of GDP (%)



Source: World bank

2.7.5 Financial Deepening and Banks Productivity changes

Productivity or efficiency of banks means how banks improve their services products by minimising input costs. For banker, efficiency means profits and therefore higher efficiency means higher profits. Higher profits increase the chances of endurance in more competitive and deregulated financial markets. It also leads to the higher customer satisfaction and eventually institutions are in better position to offer better quality financial products and new financial services in a competitive financial environment. It is necessary to analyse productivity of banks in dominated region of intermediated finance. Arestis et al. (2006), Rioja and Valev (2004) Levine (2004) and Inoue and Hamori (2016) pointed out that a little literature exist on how exactly finance influences economic growth. They argued that without the better performance of banking sector cannot drive the economic growth in emerging economies since banking sector is the main funds supplier to financial system. Merton and Bodie (1995) argued that it is the financial deepening from which investment projects are financed from savings through banking sector. King and Levine (1993a) and Beck et al (2000) argued that it is financial deepening that finances the investment projects through saving. Further, Levine and Zervos (1998) found a positive relationship from developed banking sector to economic growth. More so, Levine (1998) found that legal and regulated banking environment significantly affect banking behavior and hence economic growth. Schumper (1934) suggested that financial development causes GDP growth through technological advancement and productivity. Goldsmith (1969) argued that financial development increase total factor productivity by incremental change in marginal productivity. McKinnon (1973) and Shaw (1973) argued that it is financial development that improves the capital efficiency through increasing investment as a whole. Fisman and Love (2003) empirically tested the ways by which financial deepening influences the growth in productivity. They found that financially developed countries allocate more resources to such

sectors like depending on external finance and/or focused on research and development and technology. Hence, these sectors have more access to credit and more growth in productivity. Guillaumont et al. (2006) found that financial deepening causes productivity (through efficiency change) in China.

There are two dominant approaches to analyse the efficiency or productivity of banking sector i.e. production and intermediation. Production approach views bank as a producer of deposits and loans by using labor and capital as inputs. In intermediation approach banks act as mediator between demand and supply of funds. They take deposits and convert these deposits into loans and other financial assets. Efficiency may be in the form of technical efficiency, technological efficiency change, pure efficiency and scale efficiency. Abdelaziz et al. (2017) conducted empirical research on banking sector productivity of GCC countries including UAE. They found that three input variables include personal, other operating and interest expenses are playing significant role in GCC banks' relative efficiency. They used the production approach in their study.

Burger and Moormann (2008) conducted research on the European Stock listed banks' productivity by criticising cost income ratio (CIR) and proposed adjustment in total factor production approach. In general high CIR shows the low productivity or efficiency of banks. They conducted research by using the process based analysis of efficiency.

Moreover, Chortareas et al. (2011) conducted research on the relationship between financial deepening and bank productivity in Latin America under microeconomic implications of financial deepening for financial institutions. In their best knowledge, it is explicitly the first study on how financial deepening affects banks productivity and their causal linkages. They

used the private sector credit to GDP as a proxy for financial deepening because Latin American financial system is majorly dominated by banks. They used Malmquist TFP index and their results showed that there is significant and positive relationship from financial deepening to banks productivity. But the relationship from banks productivity to financial deepening remained uncover inspite of applying various channels of analysis.

2.8 Gaps in the Literature and Contribution of the Study

The discussion in the previous sections identified that major studies have utilised cross-sectional data to study the comparative growth phenomena across many countries. The gap in the literature is that these studies did not include the specific attributes of the economies studied. The issues with studies using cross-country data, for analytical purposes have been multifold. First, these studies have been prone to the question of representative country that arises due to the use of average data. Second, the analysis does not allow consideration of the inter-country differences, between their financial sectors. Consideration of the uniqueness of each country's financial sector, its economic and growth indicators strengthens the notion that "one size fits all" approach, does not hold in case of finance-growth nexus. Hence, this study will aim to fill this gap by studying the specific attributes of UAE economy like financial deepening, saving, real interest rate, investment and stock market, and its determinants over the period from 1980 to 2013.

Another gap in the literature appears to be the issue of using different types of data sets. Most of the studies on financial sector development and growth nexus have been using cross-sectional or pooled time series data. One drawback of using cross-sectional data for investigation on the finance-growth association is the inherent unrealistic assumption of homogeneity across countries in their financial sectors. Financial sectors across countries

differ in their depth and maturity so the assumption of homogeneity invalidates the results of some studies. Secondly, the causality between growth and finance has a different nature across countries. Cross-sectional data analysis does not allow these differences to be examined. Therefore, the causality analysis in cross-sectional will not be able to cover unique causal links for each country. Rather it will be valid only for the average representative country. However, to identify which country is representative and which is not makes this notion invalid. Further, the cross-sectional analysis does not control for endogeneity factors for all the repressors. The second gap this study aims to fulfil therefore is to explore the financial sector development and growth nexus using time series data.

2.9 Conclusion

The chapter has presented an in depth review of the existing literature, on the links between saving and growth, financial sectors (banking sector and stock market) the economy and the growth in real economy. Further we discussed the concepts of financial deepening, its determinants, and evaluation of private sector credit in terms of GDP particularly in the context of UAE over the period of 1973 to 2013. This overview shows that private institutions, corporations and individuals have increased the credit demand for expanding their investing activities. We presented the financial development framework developed by international institutions like IMF and World Bank. It suggested the proxy variables in order to measure the financial development. We discussed how the government intervention by its monetary and fiscal policies like inflation rate, interest rate, reserve requirements and directed credit control programs affect the financial deepening together with empirical evidences from various economists and researchers. Further we discussed the link and direction of causality between the productivity of banking sector and financial deepening. We referred it in the context of previous empirical studies. We deduced how the banking sector productivity,

financial deepening and economic growth are interrelated. We also discussed two approaches to measure the productivity of banking sector (i.e. production and intermediation) along with the empirically discussed determinants for testing productivity of banking sector.

The issue of the links and direction of causality, between the variables, is not yet settled among the researchers. Despite the fact that there are substantially strong studies reviewed in the chapter that have advocated the impact of financial development on the growth in the real economy. Nevertheless, some authors (noble laureates), have rejected the possibility of any role of financial deepening in the growth of the country. In case of saving growth nexus, the case of Latin American countries is a strong argument when the countries have enjoyed higher growth rates despite lower saving rate.

Theoretically, the finance-growth nexus has evolved and is well documented and researched over the last one and half centuries with the seminal work of Bagehot (1873) and Schumpeter (1911). Even in the case of savings-growth link, the researchers have gone through serious difference of opinions. Some authors have argued that rising levels of saving lead to higher levels of capital accumulation, ultimately leading to the higher levels of growth through improvement in innovation and productivity growth. On the other hand, some authors have suggested that it is not only the savings that matter for economic growth rather it is the capacity and ability of the financial sector to facilitate efficient allocation of resources. In addition, it was also argued that savings are following the higher growth rates in the economy when the income level is rising and not the vice versa.

The issues with studies using cross-country data, for analytical purposes have been multifold. First, these studies have been prone to the question of representative country that arises due to

the use of average data. Second, the analysis does not allow consideration of the inter-country differences, between their financial sectors. Consideration of the uniqueness of each country's financial sector, its economic and growth indicators strengthens the notion that "one size fits all" approach, does not hold in case of finance-growth nexus.

Theoretically, the functions of the financial sector include the removal of information asymmetries in the system. Availability of the information on the investment options, firms' and managers' conditions and priorities reduce the costs of transactions substantially. Moreover, the financial system integrated with the rest of the world and compliance with the corporate governance lead to increase in the expected returns on long run projects and reduced risk. Researchers have argued that there have been observed large differences, in the execution and the degree of efficiency in the financial sector performance across the globe. Reduced risk, in the financial sector leaves ambiguous impact on the saving level in the country, due to opposite direction of substitution and income effects. There have been very few studies on stock performance of the UAE and all the researchers have empirical findings suggesting that the UAE stock market is immature and lacks depth. Most of the inefficiencies in the market are because of a lack of government regulations, financial infrastructure and government experience in the delicate intricacies of the equity market.

The prevalent theoretical literature on the link between finance and growth has not been free from controversies. There have been several studies, advocating a strong link between finance and growth. Yet, some researchers claim, that the finance-growth link has been overstressed in the context of the growth and development. In addition, the stack of research works claiming strong linkage between finance and growth has been confronting another controversy regarding the direction of causal link. Some studies have advocated that the

causal link flows from finance to growth while others claim the flow of causality from growth to the financial development. Most of the theoretical work has been supported by the empirical evidence. The empirical work mostly is based on the cross-country analysis. The theories linking finance and growth have emphasised the role of financial intermediaries in mobilising capital, from the agents with surplus funds. Further, the key functions of the financial intermediaries as elaborated in the theoretical literature include correction of information asymmetries through diversifying risks, reducing the costs of project and firms and manager's evaluation, corporate control and facilitation of transactions. The literature further explores the distinguishing features of the bank and market based systems. Many researchers have been advocating the supremacy of one over the other by making arguments in favour and against. However, the countervailing arguments suggest that both systems work in the economy as a complementary to each other. The legal structure and conditions in the economy determines the efficiency and well-functioning of the financial system. The ultimate target of the two systems is not diverging, but is converging towards attainment of higher levels of growth and output in the economy.

Chapter 3 – Historical Development of Financial Sectors in UAE and Arab Countries

3.1 Introduction

In 1970, the UAE emerged as an alliance of seven Gulf Emirates countries (i.e. Abu Dhabi, Dubai, Sharjah, Ajman, Umm Al Qaiwain, Ras Al Khaimah and Fujairah). The UAE is a member of Gulf Cooperation Council (GCC) and is rich in natural resources particularly oil and gas. The GCC bloc was established in 1981, with the main objective of stabilising Arabian Gulf States by political, economic, commercial, financial, and monetary policies cooperation among its member states. The total area of the UAE is 84,000 square kilometers. Since each of the UAE states have a stable political and economic system, various reforms have been taken in the financial sector to promote financial institutions and to create an investment culture. Tables 3.1 and 3.2 explain the improvements of credit rating, which was assessed by Moody (2017) and Fitch (2017). Both are essential components in rating capital markets globally. Moody's and Fitch's assessment of capital markets provide transparency and integration to the financial market by using research, tools, and analysis to provide credit ratings or countries.

Table 3.1 shows the rating as assessed by Moody. Sovereign debt for the UAE for long-term rating in terms of foreign currency has been improved from 1996 to 2016 (from lower medium grade “Baa” to high grade “Aa1”, “Aa2”, and “Aa3”). In terms of local currency, the UAE maintained the high grade position between 2007 and 2016. On the other hand, the short-term rating of the local currency was a high grade “P-1”, throughout the period from 2007 to 2016.

Table 3.1: Rating Moody's United Arab Emirates

Long Term Rating				Short Term Rating			
Foreign Currency		Local Currency		Foreign Currency		Local Currency	
Date	Rating (Outlook)	Date	Rating	Date	Rating	Date	Rating
05/14/2016	Aa2 (Negative)	05/14/2016	Aa2			05/14/2016	P-1
03/04/2016	Aa2 (Under Review)	03/04/2016	Aa2			07/11/2007	P-1
07/11/2007	Aa2	07/11/2007					
07/10/2007	Aa2 (Stable)	07/10/2007	Aa2				
10/04/2006	Aa3 (Stable)	10/04/2006	Aa3				
09/07/2006	(Under Review)						
12/21/2004	A1						
11/15/2003	(Stable)						
12/11/1997	A2						
01/29/1996	Baa1						

Sources: <http://countryeconomy.com/rating/ united-arab-emirates>

Table 3.2 shows the UAE rating as assessed by Fitch. In this case the long-term rating, for the sovereign debt for the UAE has remained stable, “high grade” from 2007 to 2017 in terms of foreign currency, as well as in terms of local currency. Whereas, short-term rating in terms of foreign currency is high grade “F1+”, throughout the period from 2007 till 2017.

Table 3.2: Rating Fitch United Arab Emirates

Long Term Rating				Short Term Rating			
Foreign Currency		Local Currency		Foreign Currency		Local Currency	
Date	Rating (Outlook)	Date	Rating	Date	Rating	Date	Rating
01/23/2017	AA (Stable)	01/23/2017	AA	01/23/2017	F1+		
12/12/2016	AA (Stable)	12/12/2016	AA	12/12/2016	F1+		
07/22/2016	AA (Stable)	07/22/2016	AA	07/22/2016	F1+		
05/04/2016	AA (Stable)	05/04/2016	AA	05/04/2016	F1+		
02/02/2016	AA (Stable)	02/02/2016	AA	02/02/2016	F1+		
11/13/2015	AA	11/13/2015		11/13/2015	F1+		
07/10/2015	AA	07/10/2015	AA	07/10/2015	F1+		
05/15/2015	AA	05/15/2015	AA	05/15/2015	F1+		
02/13/2015	AA	02/13/2015	AA	02/13/2015	F1+		
11/21/2014	AA (Stable)	11/21/2014	AA	11/21/2014	F1+		
08/15/2014	AA (Stable)	08/15/2014	AA	08/15/2014	F1+		
02/21/2014	AA (Stable)	02/21/2014	AA	02/21/2014	F1+		
08/22/2013	AA (Stable)	08/22/2013	AA	08/22/2013	F1+		
09/14/2012	AA (Stable)	09/14/2012	AA	09/14/2012	F1+		
09/23/2011	AA (Stable)	09/23/2011	AA	09/23/2011	F1+		
07/02/2007	AA (Stable)	07/02/2007	AA	07/02/2007	F1+		

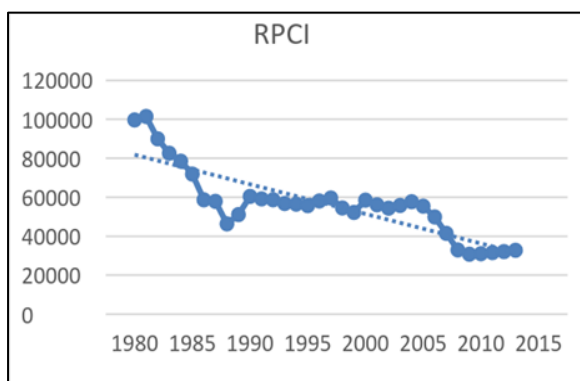
Sources: <http://countryeconomy.com/rating/ united-arab-emirates>

3.2 Development of Financial Sector in the UAE

The second chapter of this manuscript discussed in detail the financial development and economic growth nexus of the UAE. According to Bagehot (1973), financial intermediation played a vital role in the industrialisation of England during the nineteenth century. In the view of Goldsmith (1969), a country's financial superstructure drives the economic growth and improves performance. Financial development can be assessed by linking infrastructure and superstructure. Financial infrastructure is measured from a country's national product and national wealth. Financial superstructure describes the presence, relative size, and nature of financial institutions and their instruments. Hence, economic and financial reforms bring economic growth to a country.

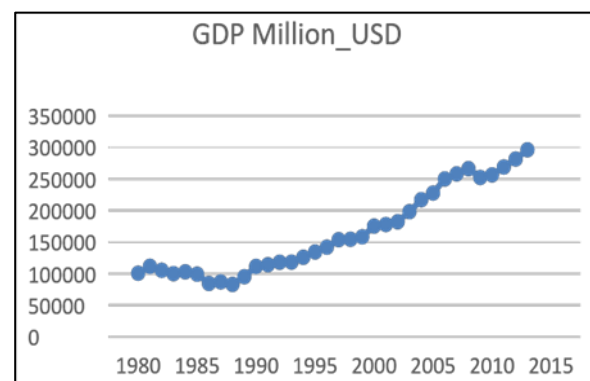
The United Arab Emirates (UAE) is a small rich economy with most of its revenues based on oil exports. The UAE has enjoying one of the world's highest Per Capita Income. According to official data from both the World Bank (Development Indicators Database, 2015) and the International Monetary Fund (World Economic Outlook Database, 2015), UAE is ranked sixth and seventh in the World with a Per Capita Income of US\$ 67,667 and US\$ 63,470 respectively.

Figure 3.1: Real Per Capita Income of UAE in \$ US (1980-2013)



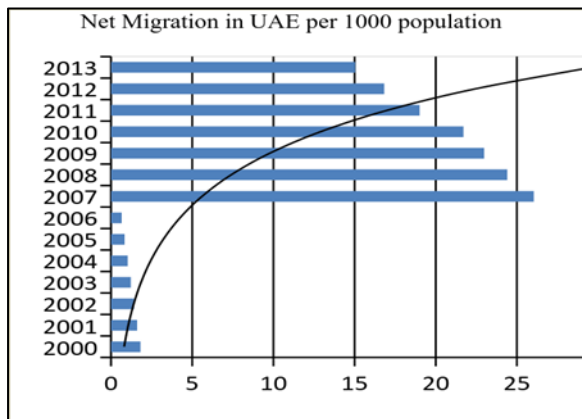
Source: IMF

Figure 3.2: GDP of UAE in Million USD (1980-2013)



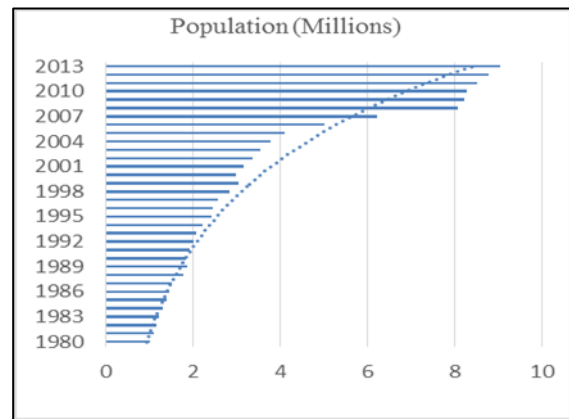
Source: IMF

Figure 3.3: Real Per Capita Income of UAE in \$ US (1980-2013)



Source: CIA World Fact Book

Figure 3.4: GDP of UAE in Million USD (1980-2013)



Source: National Bureau of Statistics (UAE)

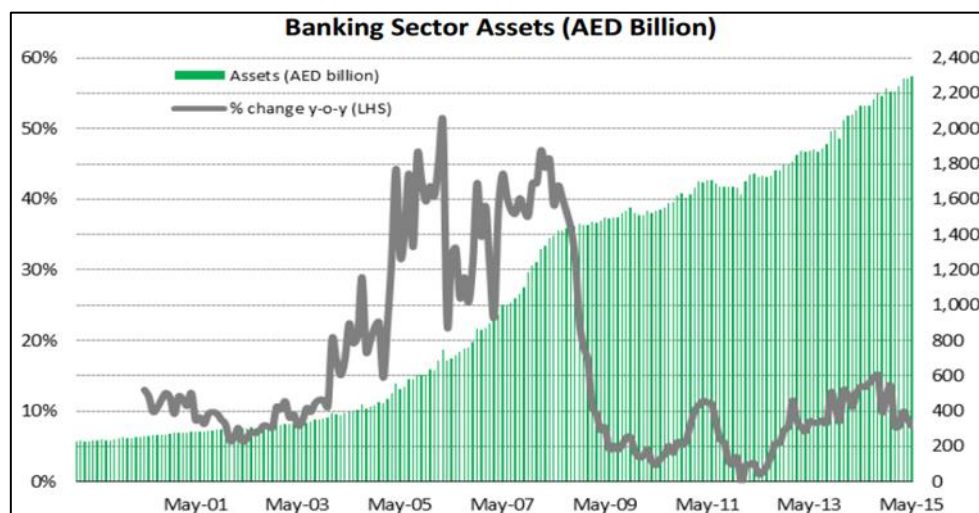
3.3 Savings and Financial Sector Development in UAE

After the creation of the UAE as an independent state in 1971, a currency board was established in 1973. The core idea behind the formation of the currency board was to establish the country's own currency (AED) to replace Bahraini Dinar, Qatari Riyal or Dubai Riyal, which were in use at the time. The rate was fixed at 1 AED = 1 Dubai and 1 Qatari Riyal and 10 AED = 1 Bahraini Dinar. As per the gold standards, the value of AED was calculated at 0.186621 grams/AED. It was pegged with the US Dollar at AED 3.94737 = 1 US Dollar (Central Bank of UAE Website, 2015).

In 1980, the UAE Central Bank was established as an autonomous body with authority over the regulation of the monetary and banking system. Since then, the institution has been performing major regulatory functions such as directing monetary, credit and banking policy and supervising and ensuring implementation of postulates according to the state's general economic and financial policy. The banking sector, as a part of financial sector in UAE, has been in a strong and robust position over the last decade. According to the Central Bank of UAE (2014), the country's banking sector has maintained its capital adequacy ratio at 18%

(2014) and the returns on assets and equity were 1.7% and 13.6%, respectively. The systemic risk of financing is subdued and the liquidity ratio of the banking sector was 15.6% by the end of 2014. In addition, the Central Bank of UAE report has highlighted the fact that the country's banking sector is well integrated with financial markets around the world. UAE banks show the financial stability is limited because of good diversification. The total assets of the banking sector in the country have been growing at a rapid rate from AED 30.9 billion in 1980 to AED 129.7 billion in 1990 (more than 400%, or four-times cumulative rise during the decade) and at AED 277.1 billion by 2000 (approximately more than 200%, or 2.3-times cumulative rise in the decade). By 2010, the value of total bank assets went as high as AED 1,609.3 billion. This is the 5.8 or more than 500% cumulative rise in the value of total assets since 2000. The most recent position of value of assets in banking sector in UAE is shown in the following Figure 3.5.

Figure 3.5: Banking Sector Assets of UAE in Billion AED (2001-2015)



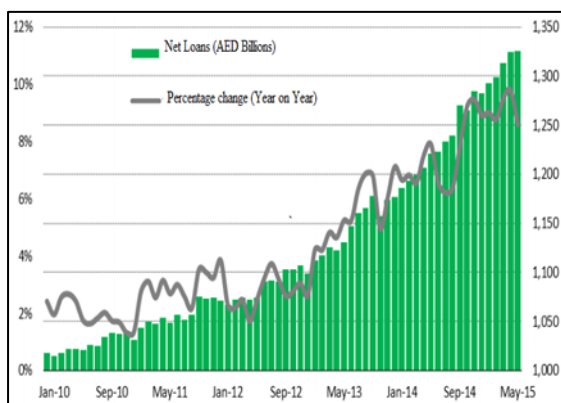
Source: National Bank of Abu Dhabi Report 2015

The suspense account of the banking sector stands at AED 2,391 billion (equal to US\$ 651 billion approximately) with 7% year on year. The year on year percentage change followed a

declining trend after 2007 reflecting the depression in the economy as a result of the 2007 global financial crisis emanating from the US real estate subprime mortgage market. Further banking sector indicators like Loans and Advances, claims on private sector, market share of different banks, assets and loans as percentage of GDP, loan to deposit rate for measuring liquidity, central bank foreign exchange and banking sector profitability are shown in Figures 3.6 to 3.13. Data availability is a serious issue in UAE and access or availability of data to the researcher was not always possible. The following Figures 3.6 to 3.9 reflect the performance of the sector in the most recent years.

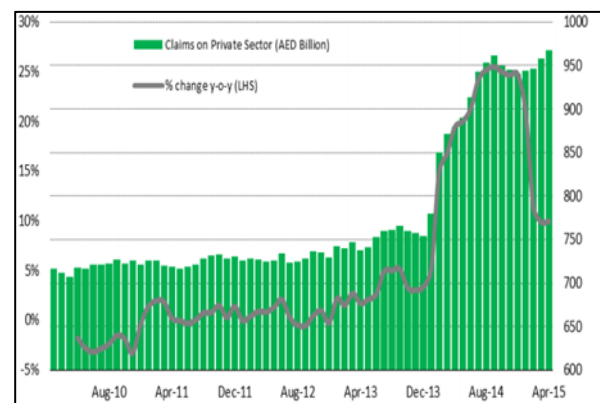
Figure 3.6 shows an increasing trend in the loans (net of provisions) extended to borrowers from 2010 to 2015. The net amount increased from about AED 1,000 Billion in 2010 to approximately AED 1,320 Billion in 2015. This is about 32% rise in five years, with the year on year percentage rises varying from less than 1% in 2010 to 11% in 2015. This shows the degree of activity of the financial sector in UAE regarding investment financing in the country.

Figure 3.6: Net Loans in AED Bil. & year on year percentage change (2010-2015)



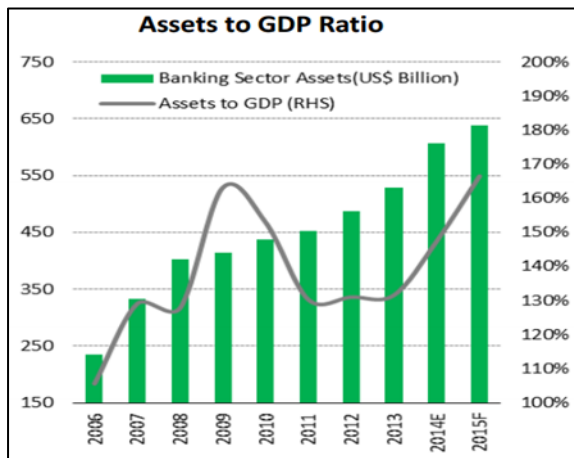
Source: Central Bank of UAE

Figure 3.7: Claims on private sector AED Bil. & year on year change in % (2010-2015)



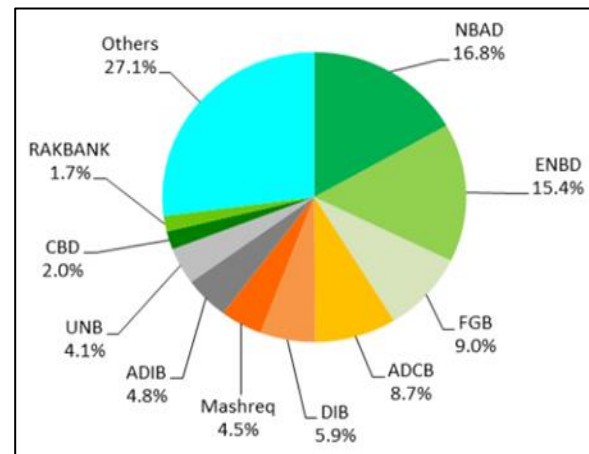
Source: Central Bank of UAE

Figure 3.8: Assets to GDP ratio (\$US Billion) 2006-2015



Source: Central Bank of UAE

Figure 3.9: Market Share of various banks in terms of bank assets in Q1, 2015



Source: Central Bank of UAE

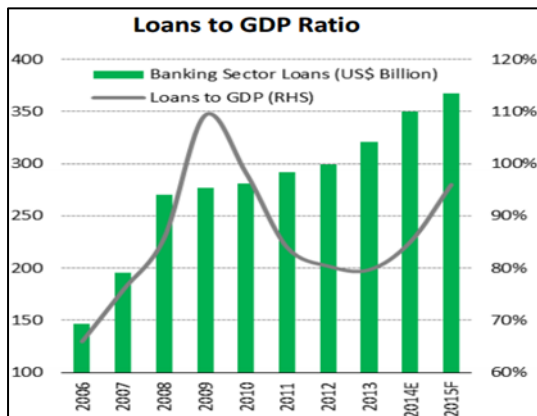
Figure 3.7 shows the trend in the claims on private sector as percentage of broad money. It includes gross credit to individuals and enterprises without nonfinancial and financial institutions.

Figure 3.8 presents the trend in assets to GDP ratio and year on year percentage changes. Assets to GDP ratio in the banking sector peaked in 2008-09, at US\$ 545 Billion (AED 2 trillion approximately), and declined afterwards as a result of aftershock due to the financial crisis. The sustainable recovery did not start until 2013 when assets to GDP ratio started rising again.

Figure 3.9 above shows the degree of competition in retail banking sector by local and foreign banks. It is evident from the figure that the share of the net assets of the two largest banks, National Bank of Abu Dhabi (NBAD) and Emirates National Bank of Dubai (ENBD), are 16.8% and 15.4% respectively of the net assets in the banking sector. The share of five local banks' net assets in UAE, namely, NBAD, ENBD, First Gulf Bank (FGB), Abu Dhabi Commercial Bank (ADCB) and Dubai Islamic Bank (DIB), is over more than 55% of the

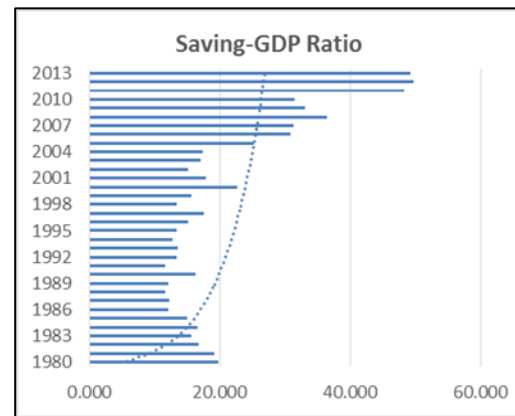
total net assets. Their shares are 16.8%, 15.4%, 9%, 8.7% and 5.9% for NBAD, ENBD, FGB, ADCB and DIB respectively.

Figure 3.10: Loan to GDP ratio (\$US Billion) 2006-2015



Source: Central Bank of UAE

Figure 3.11: Saving to GDP ratio in UAE (1980 -2013)



Source: Central Bank of UAE

On the other hand, the loan to GDP ratio is plotted in Figure 3.10. Loan to GDP ratio measures the degree of credit base in the economy relative to the total output. The figure indicates that initially (2006), it was slightly less than AED 150 Billion and reached AED 322 Billion in 2013.

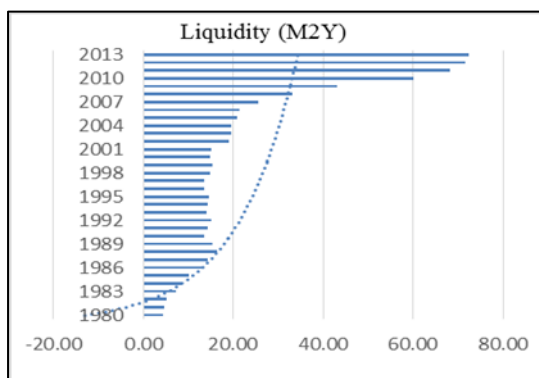
Figure 3.11 reflects the trend in the saving-GDP ratio from 1980 to 2013. The average value of saving to GDP ratio during the selected time period was around 21.331%, with minimum and maximum values of 11.532% in 1991 and 49.721% in 2012 respectively. The literature suggests that the saving behavior among local and the expatriate population is significantly different. Al-Awad and Elhiraika (2003) following the analogy of Agrawal et al. (2009) have added a cultural dimension to the determinants of savings.

The possible determinants of savings behavior in selected south Asian countries have been

identified by Agrawal et al. (2009) as per capita income, economic growth rates, dependency ratio, foreign investment real interest rate, inflation, share of agriculture to GDP (to account for the possibility of a different saving pattern), and financial sector development (real interest rates, inflation, ratio of broad money to GDP). Figures 3.12 and 3.13 and the following paragraphs present discussion on the selected variables and indicators and their trends.

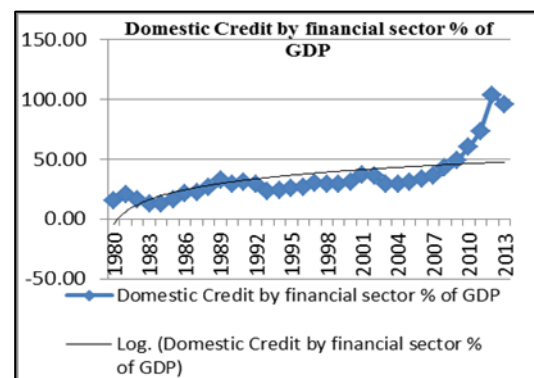
Figure 3.12 and 3.13 shows the degree of financial deepening during the study period in the UAE. There are studies by King and Levine (1993), Levine (1997), Jung (1986), Demetriades, and Hussein (1996), who have used M2Y (money stock ratio to GDP) as the indicator of financial deepening. On the other hand, a few studies have been using domestic credit to private sector as percentage of GDP as an indicator of the financial deepening (King and Levine, 1993); Levine, 1997; and Kemal and Hanif, 2004).

Figure 3.12: Ratio of supply money stock to GDP in sector UAE



Source: Central Bank of UAE

Figure 3.13: Domestic Credit by financial sector to percent of GDP in UAE (1980-2012)



Source: Central Bank of UAE

3.3.1 Development of Banking Sector in the UAE

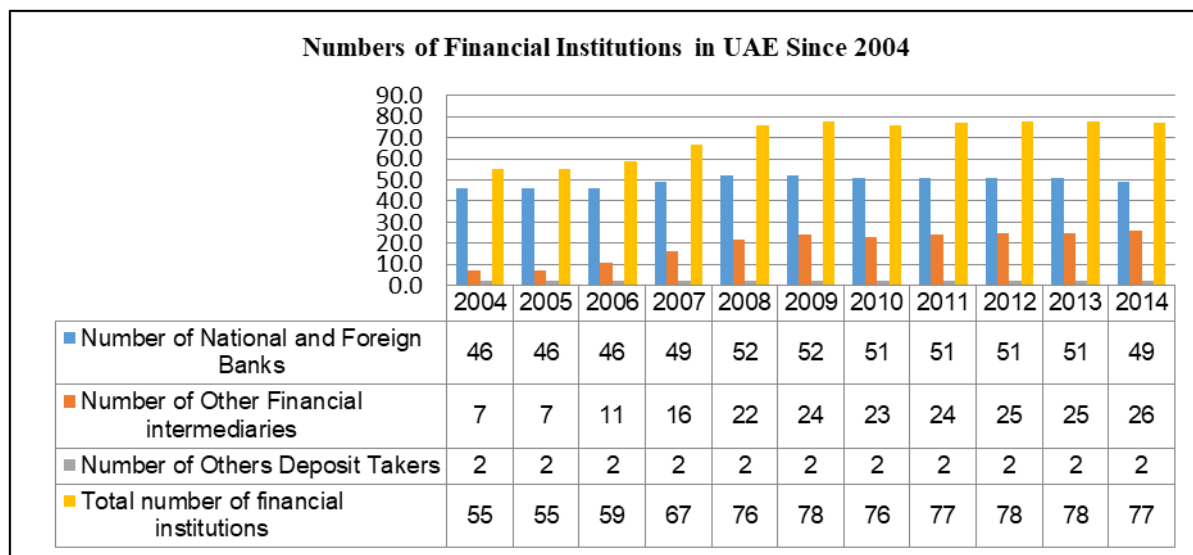
In the 1940's, the British Bank was the first bank in the UAE region. Its second branch was opened in Abu Dhabi after the discovery of oil reserves. Later in 1961 and 1962, the Eastern

Bank and the Ottoman Bank opened branches in Abu Dhabi. The first National Bank of Dubai was established in 1963 followed by the Abu Dhabi National Bank in 1968. At that time Dubai was the hub of trade activities and Abu Dhabi was well known for oil exports. The UAE Central Bank Note (2001a) highlighted that on the formation of the UAE during 1972 a large number of national and foreign branches were opened throughout the UAE. The Currency Board was incorporated during 1972. Its main objectives were to issue national currency “Dirham (AED)” to supervise and to regulate the banking sector of the UAE. In 1972 domestic commercial banks increased to six and foreign banks to 15. The banks were mainly concentrated in the Abu Dhabi, Dubai, and Sharjah states. During 1975 domestic banks increased to 13 and foreign banks reached 28 in number. Moreover, during 1977 national banks increased to 20 and foreign banks reached 34 because of new licenses by Currency Board with the intention of enhancing economic activities in the UAE. The Central Bank of the UAE was established in 1980 with the enforcement of UAE federal law.

Annexure 4.1 shows the list of 23 national banks across the UAE and their branches as of December 31, 2013. Emirates NDB bank had 119 branches followed by the National Bank of Abu Dhabi with 88 branches and Dubai Islamic Bank PJSC with 85 branches. In terms of states in the UAE, Dubai has 346 branches compared to Abu Dhabi’s 223 branches and Sharjah’s 123 branches. As Annexure 4.2 shows, there were 28 foreign banks branches across the UAE as of December 31, 2013. The Standard Chartered Bank holds four branches followed by Arabic Bank PLC, HSBC Middle East Limited, Habib Bank Limited and Habib Bank A.G. Zurich, each having eight branches. In the UAE, Dubai stands first with 48 branches as compared to Abu Dhabi’s 30 branches, and Sharjah’s 15 branches. Annexures 4.3 and 4.4 presents representative offices in Abu Dhabi and Dubai. Annexure 4.5 gives the list of finance companies and annexure 4.6 lists financial investment companies as of

December 31, 2013.

Figure 3.14: Number of Financial Institutions in UAE Since 2004

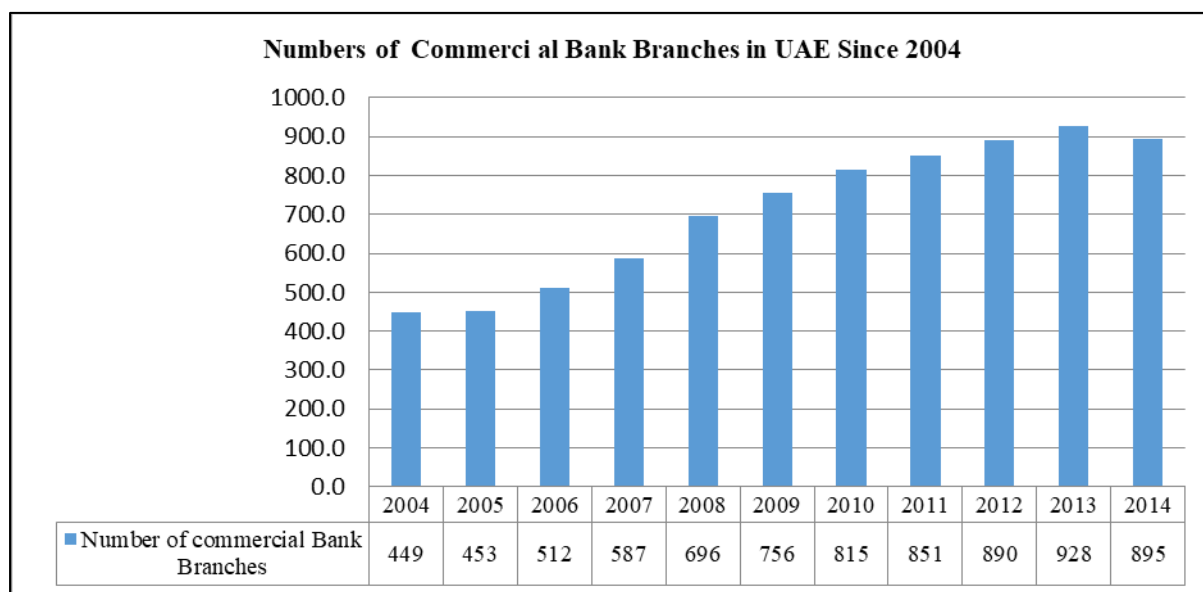


Source: IMF (imf.org)

Figure 3.14 above briefly explains the development of banks in the UAE. As can be seen, the number of financial institutions increased from 55 in 2004 to 77 in 2014. Particularly, commercial banks grew by 13% from 2004 to 2009, but declined to 49 in 2014. Net growth of banks in the UAE was 6.52%, from 2004 to 2014. In 2009 the global economic crisis resulted in liquidity problems for banks in the UAE. In reaction, the federal government injected AED 16 billion to the banks based in Abu Dhabi. Figure 3.15 shows that from 2004 to 2014 the growth of bank branches in the UAE was approximately 50%.

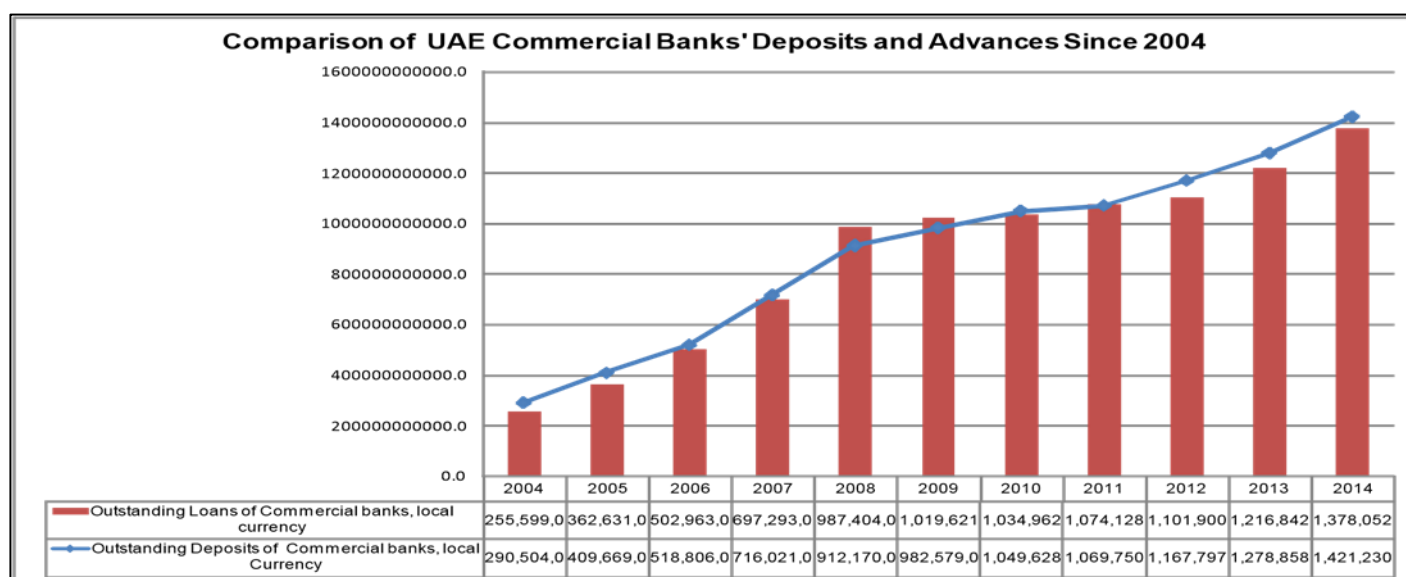
Figure 3.16 presents the gap between the commercial banks' deposits and advances since 2004. During the 2008 and 2009 global economic crisis's commercial banks faced shortages of outstanding deposits to finance outstanding loans. The deposit growth from 2004 to 2014 was 389.23%, as compared to the outstanding loans growth of 439.15% over the same period.

Figure 3.15: Number of Commercial Bank Branches in UAE Since 2004



Source: IMF (imf.org)

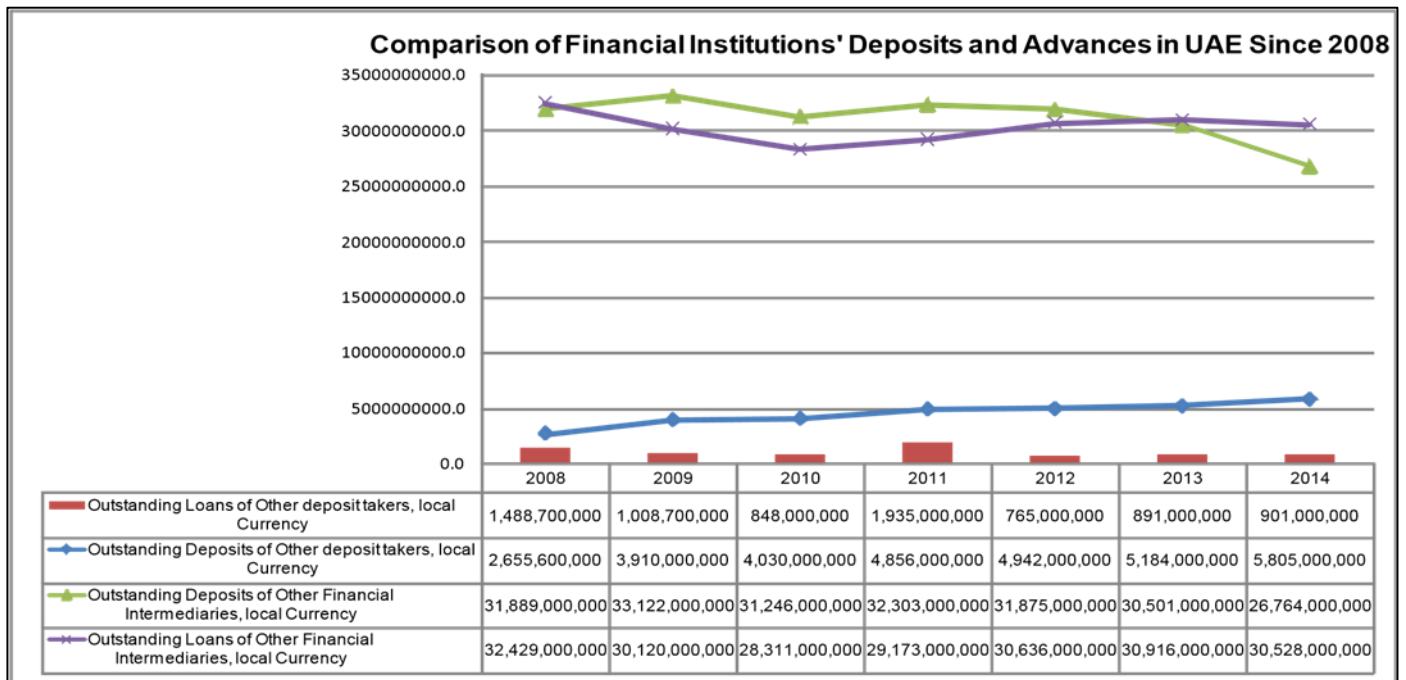
Figure 3.16: Comparison of UAE Commercial Banks since 2004



Source: IMF (imf.org)

Figure 3.17 depicts the comparatively position of deposit takers' deposits and loans and financial intermediaries' deposits and loans. The growth of deposits and loans of deposit takers from 2008 to 2014 was 118.60% and -39.48% respectively. While the growth of other financial intermediaries' deposits and loans from 2008 to 2014 was -16.07% and -5.86%, respectively.

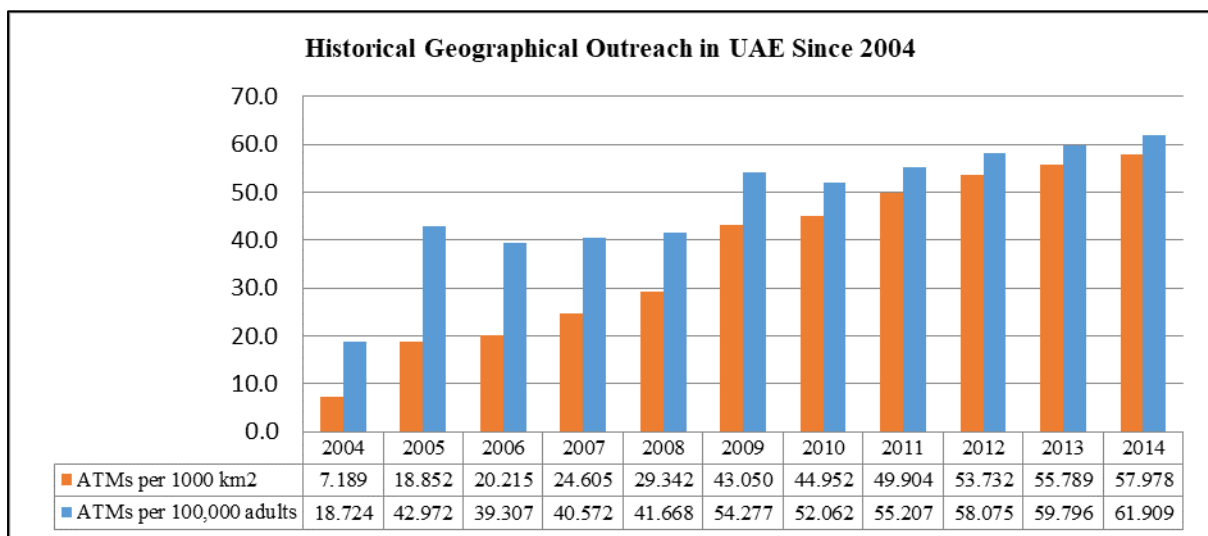
Figure 3.17: Comparison of Financial Institution's Deposits and Advances in UAE Since 2004



Source: IMF (imf.org)

Figure 3.18 describes the geographical outreach in the UAE from 2004 to 2014. The number of automatic teller machines (ATMs) per 100,000 adults increased from 18.724 to 61.509. The number of ATMs per 1,000 km² increased from 7.189 to 57.978.

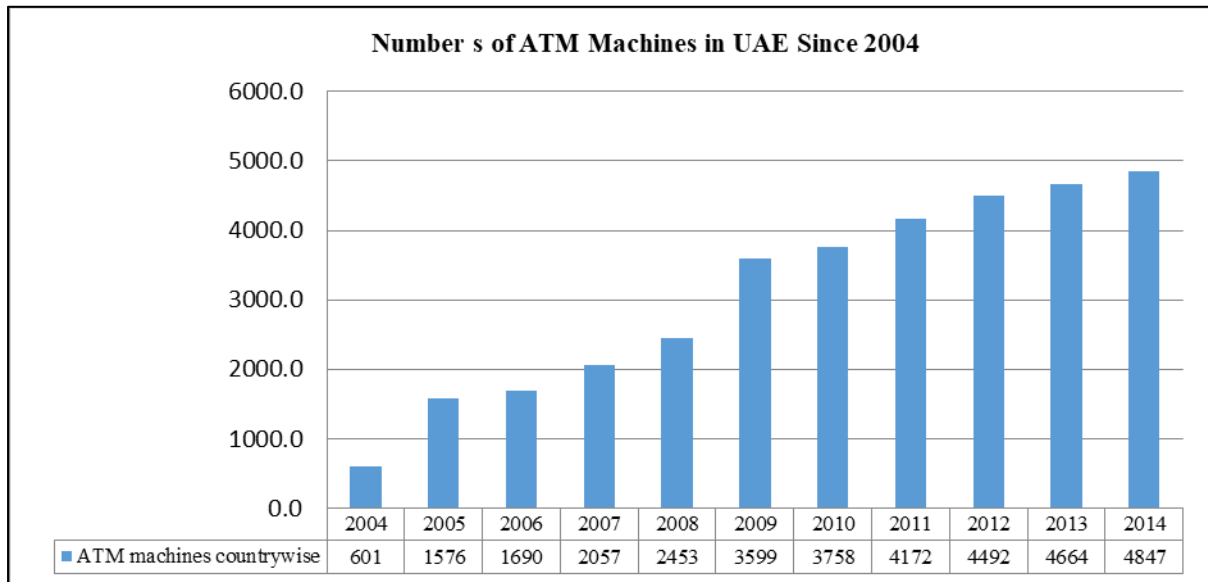
Figure 3.18: Historical Geographical Outreach in UAE Since 2004



Source: IMF (imf.org)

Figure 3.19 presents the evaluation of the growth of ATMs in the UAE. The numbers increased from 601 to 4,847 from 2004 to 2014, a growth of 424.6%.

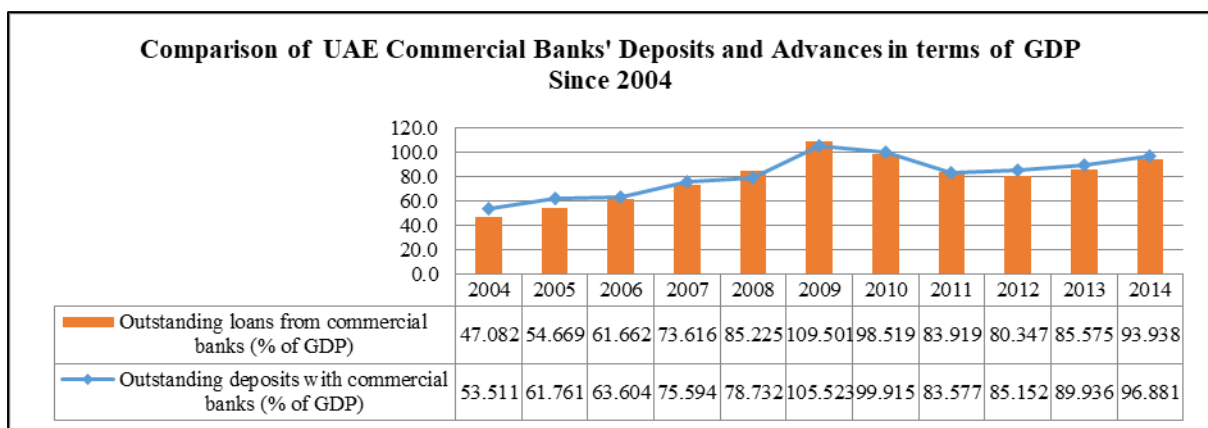
Figure 3.19: Number of ATM Machines in UAE Since 2004



Source: IMF (imf.org)

Figure 3.20 explains the growth commercial bank’s deposits and advances in terms of GDP. From 2004 to 2014 loans grew from 47.08% to 93.94% and deposits grew from 53.511% to 96.88%.

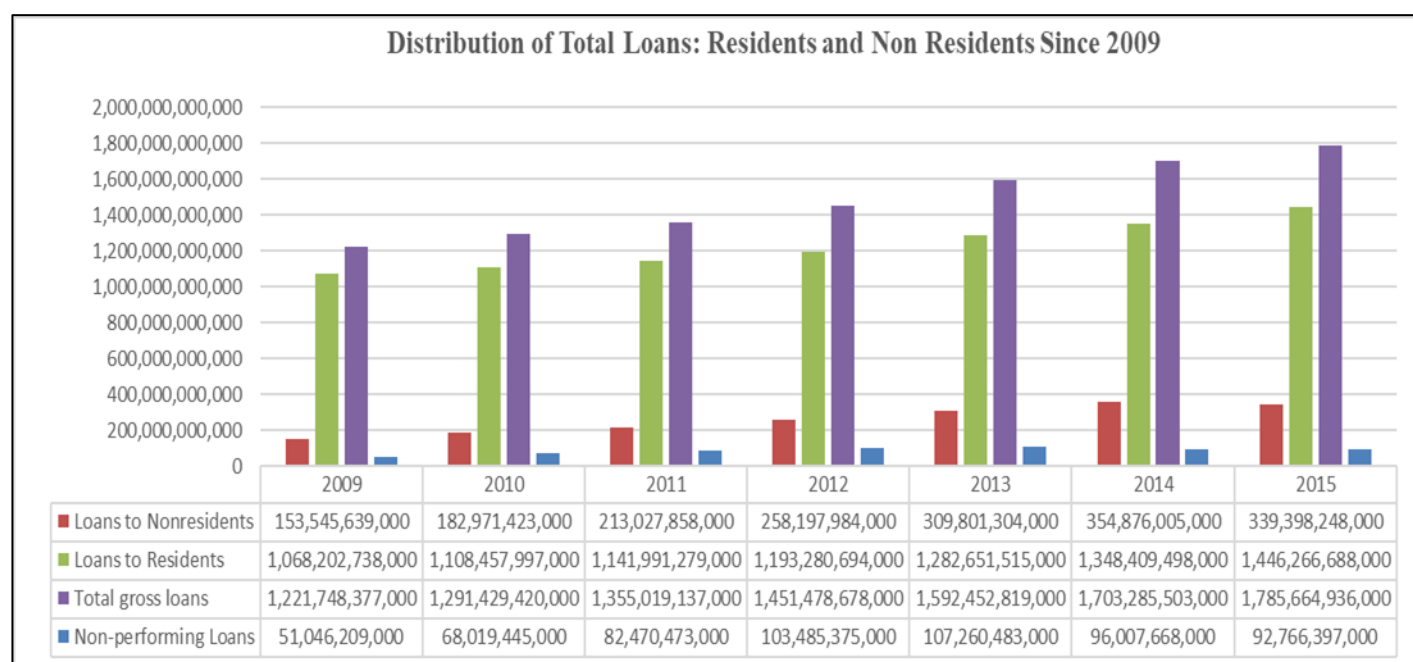
Figure 3.20: Comparison of the UAE Commercial Banks’ Deposits and Advances in terms of GDP Since 2004



Source: IMF (imf.org)

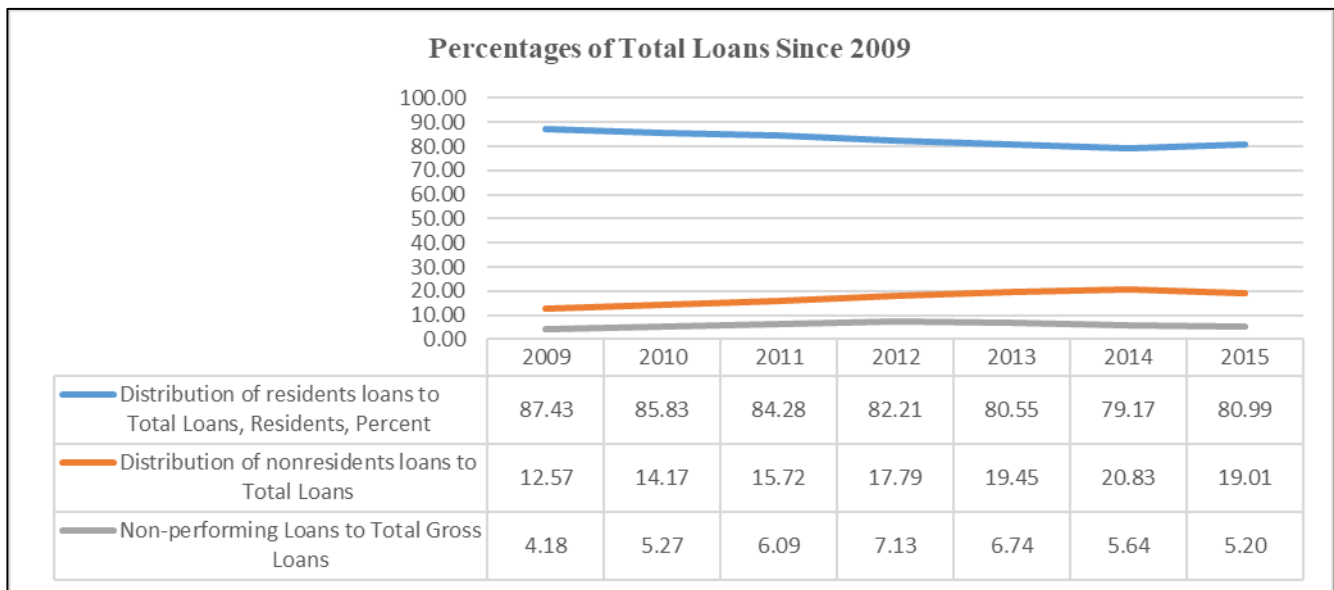
Figures 3.21 and 3.22 describe the distributions of loans to residents and nonresidents and nonperforming loans from 2009 to 2014. The minimum percentage of residents' loans to nonresident loans was 79.14% in 2014 and the maximum was 87.43% in 2009. Whereas nonresident loans to total loan ranges from 12.57% in 2009 to 20.83% in 2014. As shown in figure 4.11, nonperforming loans changed from 2009 to 2014, as percentage to total gross loans was at its' lowest level of 4.18% in 2009 and at its' highest level of 7.13% in 2012. Overall, nonperforming loans showed rising trends from 2009 to 2012, whereas from 2012 to 2014 the trend started to decrease.

Figure 3.21: Distribution of Total Loans between Resident and Nonresident Since 2009



Source: IMF (imf.org)

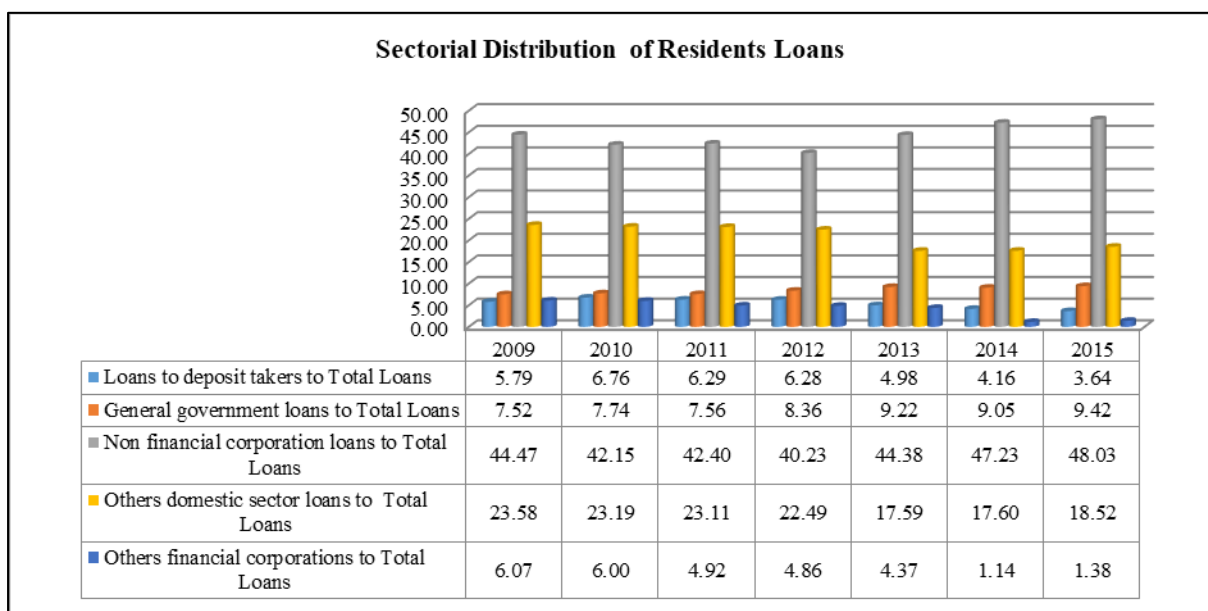
Figure 3.22: Percentage of Total Loans Since 2009



Source: IMF (imf.org)

Figure 3.23 explains the composition of residents' loans among the various institutions and sectors from 2009 to 2015. Throughout this period the highest number of loans was granted to nonfinancial corporations followed by other domestic sectors and other financial corporations.

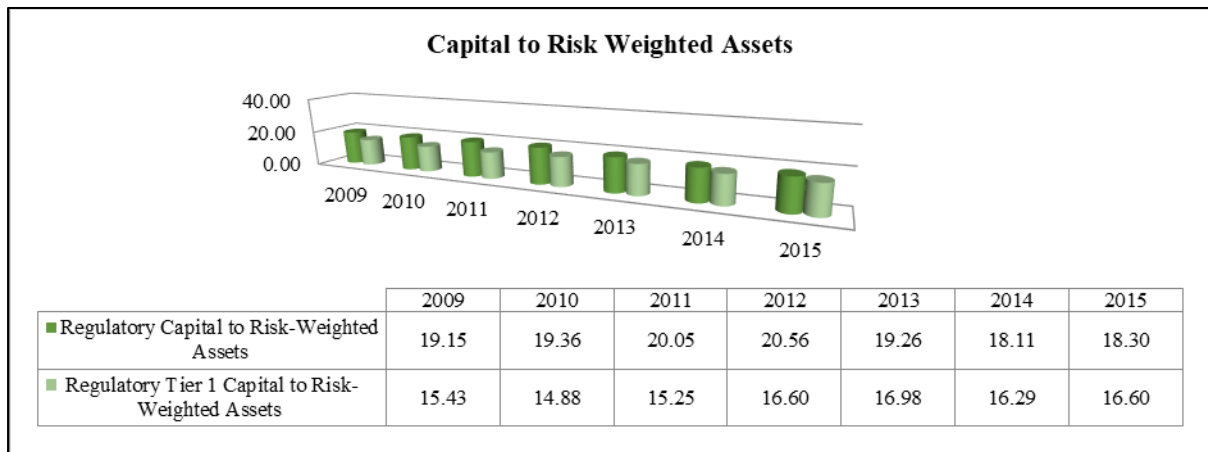
Figure 3.23: Sectoral Distribution of Residents Loan



Source: IMF (imf.org)

Figure 3.24 shows the risks exposure of commercial banks. It is clear that from 2009 to 2015 the regulatory capital to risk weighted assets was above the regulatory tier 1 capital to risk weighted assets.

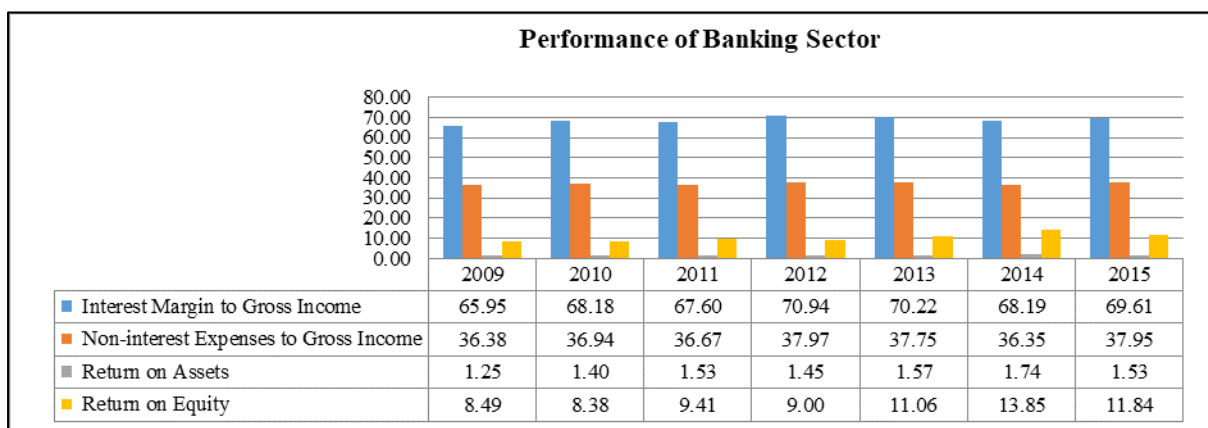
Figure 3.24: Capital to Risk Weighted Assets



Source: IMF (imf.org)

Figure 3.25 explains the performance of commercial banks from 2009 to 2015. The highest return on assets was 1.74% in 2014 and the lowest return was 1.25% in 2009. The highest equity return was 13.85% in 2014 and the lowest was 8.38% in 2010. During these periods, the banking sector showed positive growth and consequently contributed towards the UAE's economic growth.

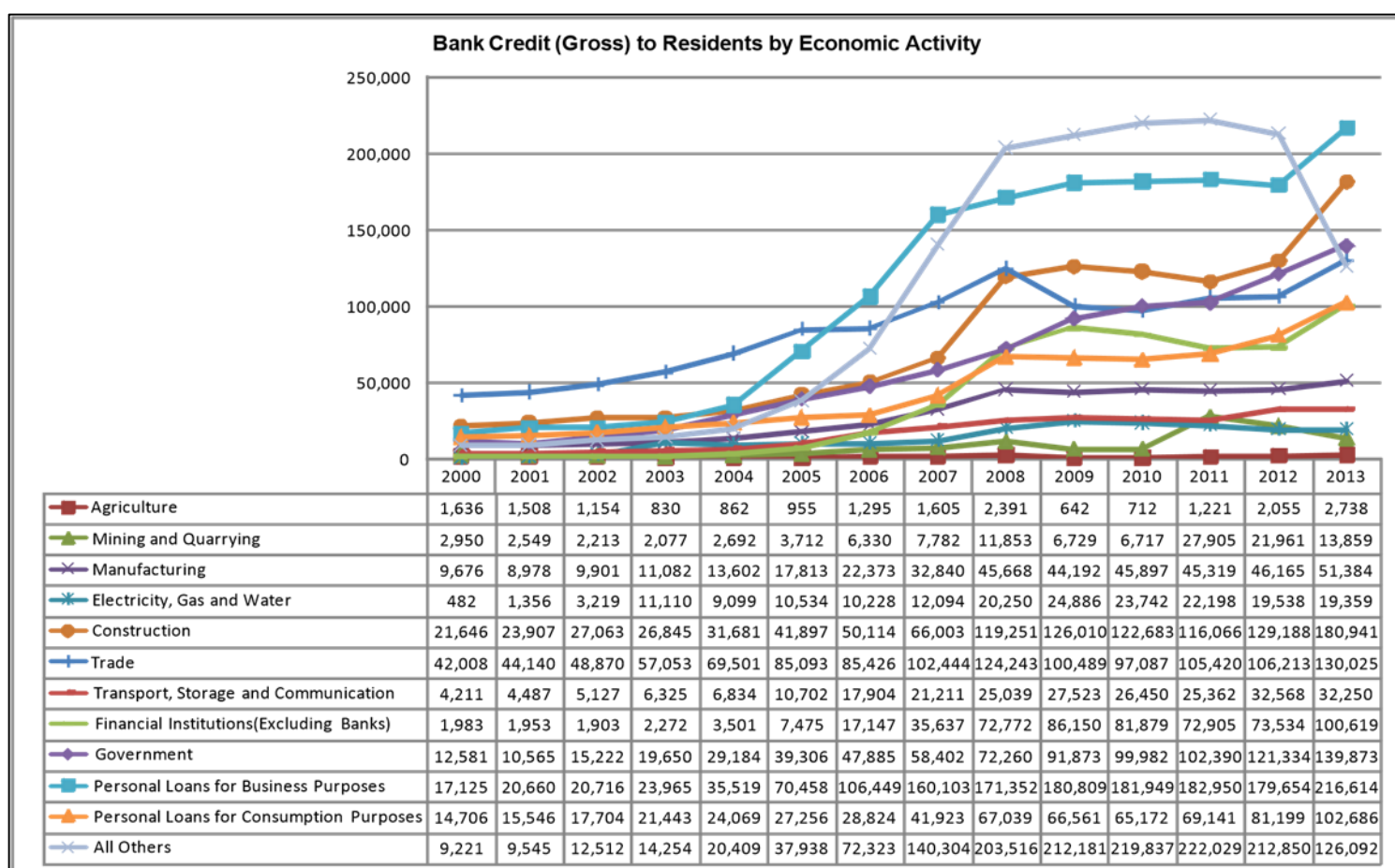
Figure 3.25: Performance of Banking Sector



Source: IMF (imf.org)

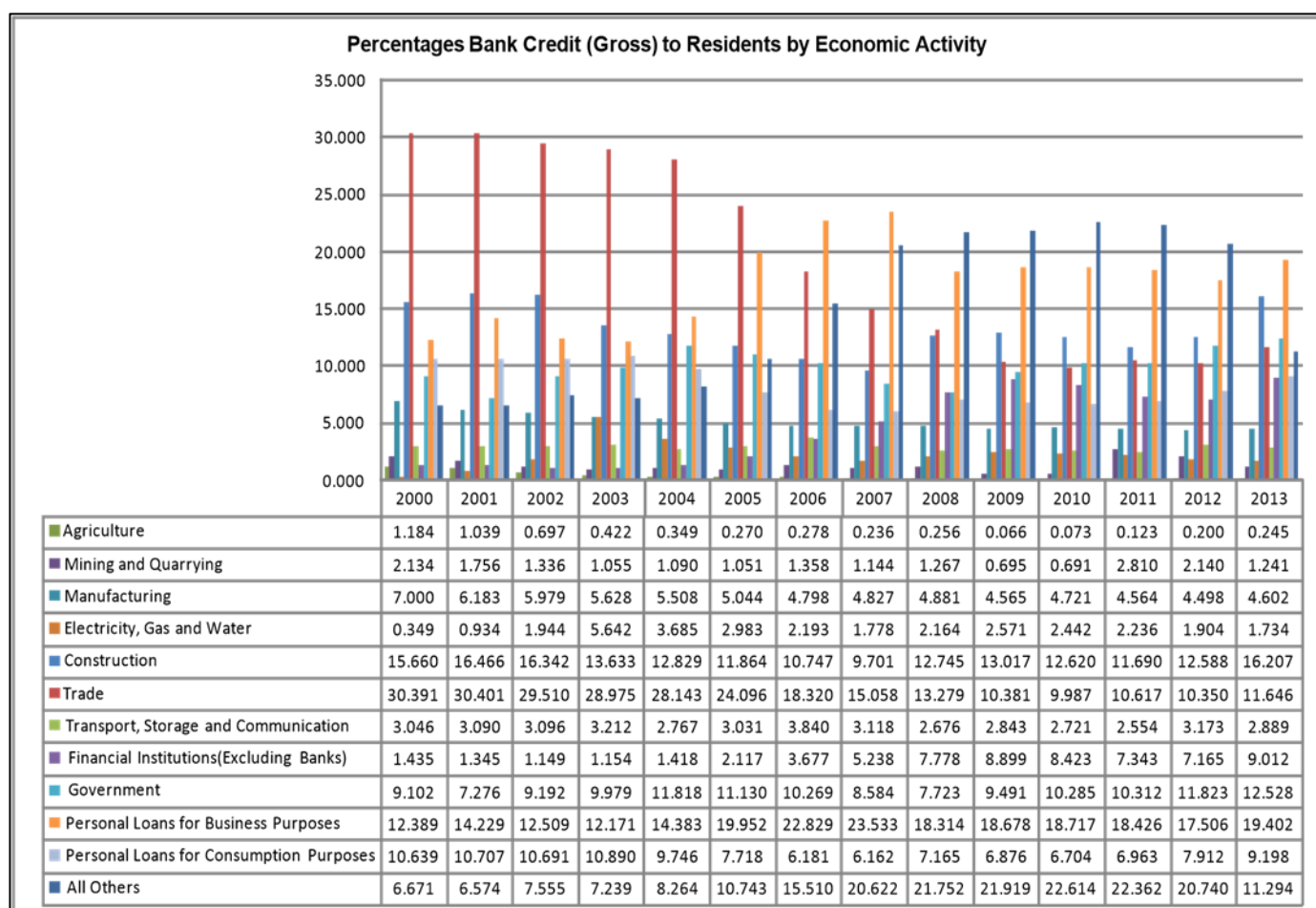
Figures 3.26 and 3.27 present the distribution of residents' credit among the various sectors in the UAE economy. The agriculture, electricity, and mining sectors availed the lowest credit from 2000 to 2013 of total resident's credit. Meanwhile trade, construction, loans for business purposes, personal consumption, and all others presented the high percentage of credit. It is quite apparent that during the 2007 economic crisis the credit facility was substantially increased for financial institutions, governments, and all other sectors. However, this facility decreased for trade, manufacturing, and personal loans for businesses. Other sectors maintained this credit facility from 2000 to 2013. More so, the UAE resident's use of credit for personal consumption items ranging from 6.16% to 10.89% over the same period. However, for sectors like agriculture, mining, electricity, transport storage and communication the percentages were 1.18%, 2.81%, 5.64%, and 3.64%, respectively.

Figure 3.26: Bank Credit to Resident by Economic Activity



Source: IMF (imf.org)

Figure 3.27: Percentage Bank Credit to Resident by Economic Activity

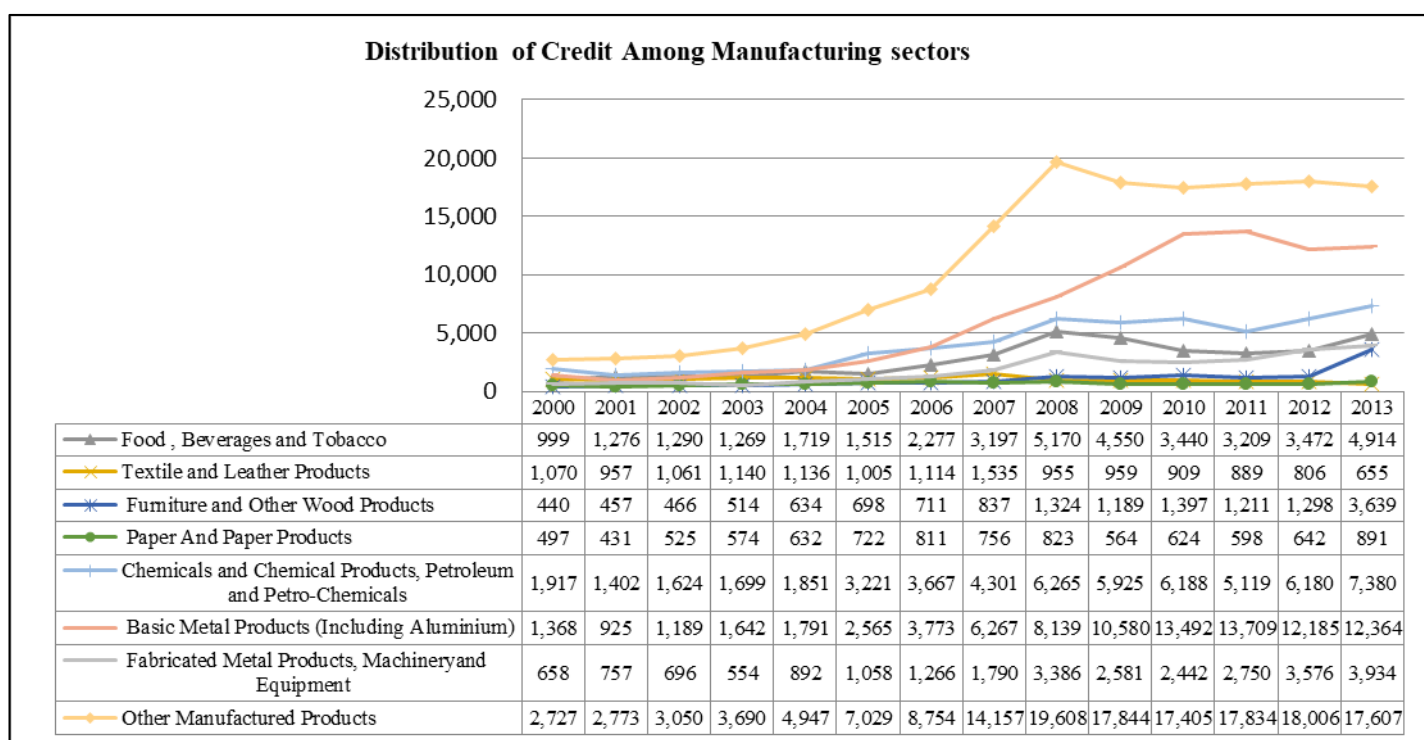


Source: IMF (imf.org)

It can be concluded that residents' credit facility was unevenly distributed among sectors. Residents in the UAE consumed this facility for their personal expenditures rather than for productive purposes. The highest credit is availed for trade purposes and construction objectives. Hence, in the UAE real estate business contribute more towards economic activities and different lines of trade. The increasing trend in loans for personal businesses was also an indication of encouragement of entrepreneurial culture and small to medium-sized enterprises (SME's). The manufacturing sector has been availing less credit facility of residents' total credit since 2000. It may imply that local manufacturing commodities are less preferred by the nationals.

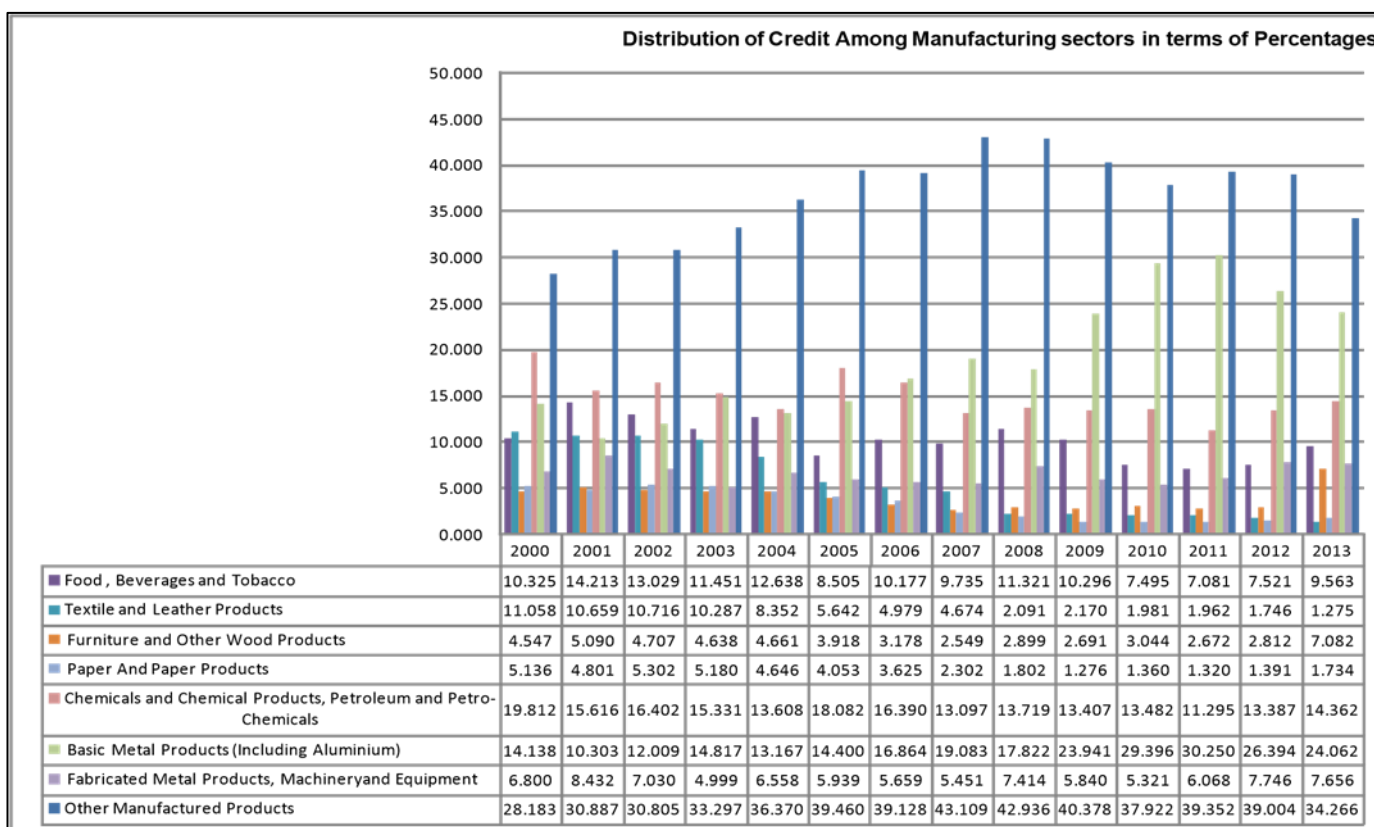
Figures 3.28 and 3.29 demonstrate the pattern of manufacturing subsector, where the credit facility was redistributed. The credit facility was largely availed in chemicals and chemical products, petroleum and petro chemical, in basic metals, and other manufactured products. The food, textile, paper products, furniture, and wood subsectors have shown decreasing trend in availing credit. However, chemical, basic metals, and fabricated metals product maintained almost the same percentage in availing credit facility.

Figure 3.28: Distribution of Credit among Manufacturing Sectors



Source: IMF (imf.org)

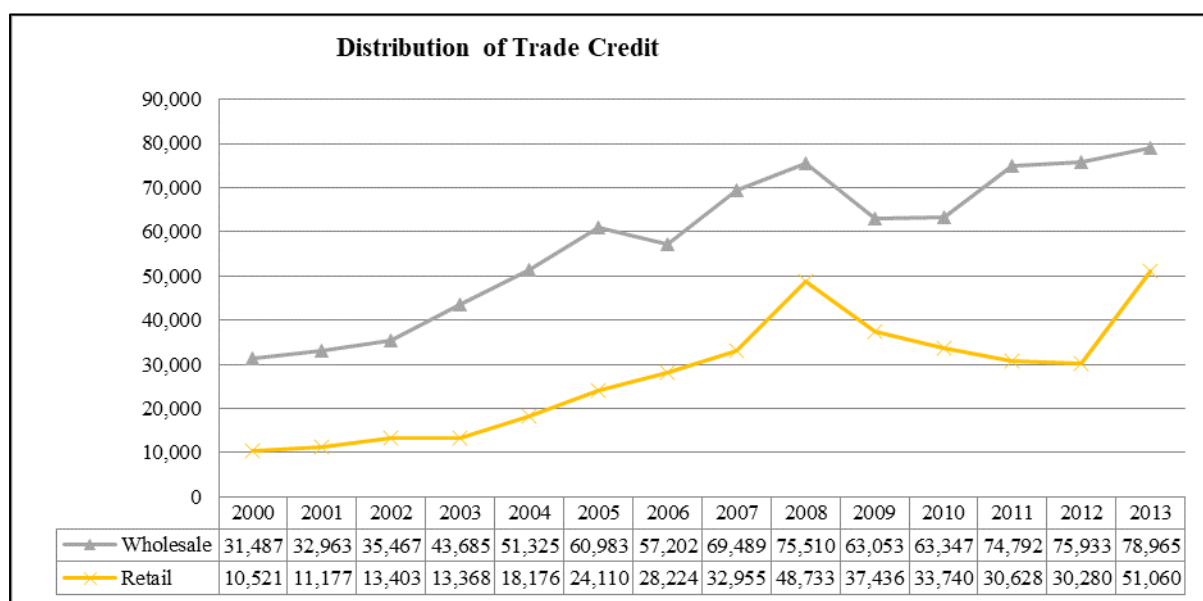
Figure 3.29: Distribution of Credit among Manufacturing Sectors in Terms of Percentage



Source: IMF (imf.org)

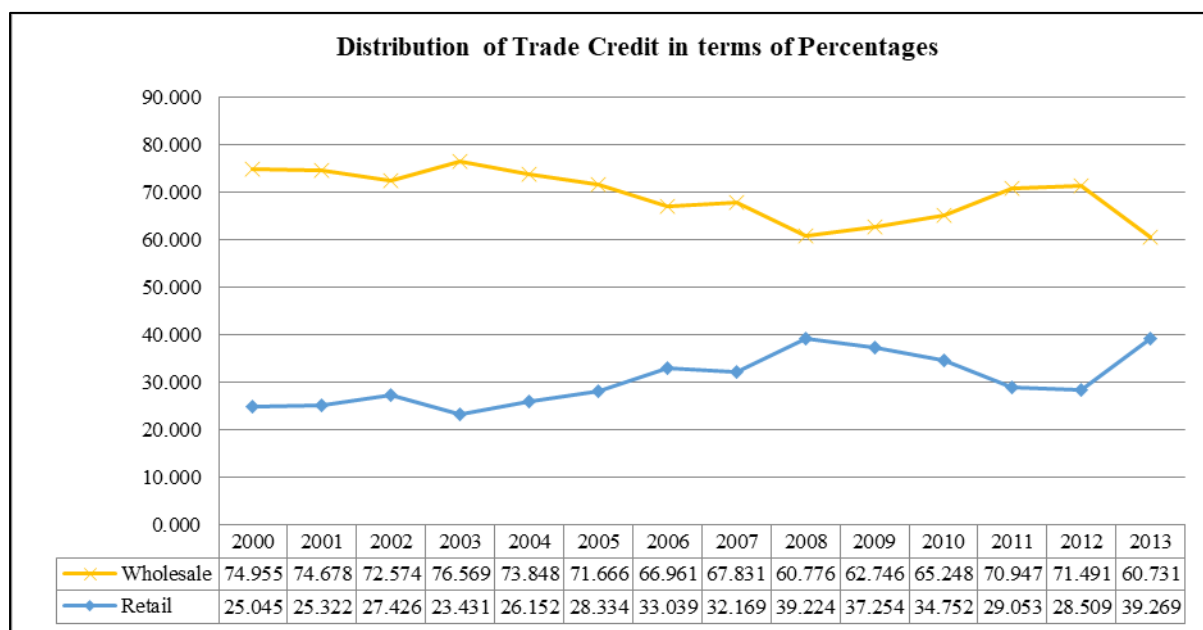
Figure 3.30 and 3.31 display the pattern of credit within trade. It is found that wholesale and retail subsectors of trade maintained proportional credit from 2000 to 2013.

Figure 3.30: Distribution of Trade Credit



Source: IMF (imf.org)

Figure 3.31: Distribution of Trade Credit in Terms of Percentage



Source: IMF (imf.org)

3.3.2 Banking Products/Instruments Traded in the UAE Banking Sectors

The primary functions of banks are to collect deposits as major liabilities and advance loans as major assets to investors, industrialists, and governments. The interest spread between deposits and advances is the bank's interest margin. The major forms of deposits are current account, time deposit accounts, savings accounts, and fixed accounts. The advances are offered to finance long-term business projects, as well as, to finance short-term business operations. The major banks in the UAE offer different products for business, private, corporate, securities, and personal accounts. Major financial products and services offered in the UAE are: a line of debit cards, credit cards, prepaid cards, personal loans, mortgage loans, car loans, Islamic banking or Islamic banking windows, structured products, life, car, travel, property, and home content insurance, foreign exchange, transfer and remittance, safe deposit boxes, and letter of credit facilities.

3.3.3 Development of Financial Market in the UAE

Al-Awad (2001) argued that the lending to domestic firms and financing to trade in Dubai was the main source of income for the domestic banking system. The UAE government is not engaged in issuing treasury bills and bonds. During April 1999 the UAE Central Bank launched a certificates of deposit program. These certificates have maturity period ranging from one to 18 months and are slightly underpriced as compare to US dollar interbank rates.

Before the establishment of financial markets shares were traded in informal markets, both in Abu Dhabi and Dubai. They were traded through brokers via telephone. There were no proper regulations regarding trading of shares, authorisation for dealership, their qualifications, and direct controls. The unofficial index of the National Bank of Abu Dhabi monitored the shares prices and was published in newspapers. In 1989 this index was built on 1,000 points. In June of 1999 a Stock Exchange Law was incorporated by the UAE. In 2000 following the implementation of this law, two financial markets were launched in the UAE, the Dubai Financial Market (DFM) and the Abu Dhabi Securities Market (ADSM). The Securities and Commodities Commission in Abu Dhabi introduced electronic trading on Abu Dhabi and Dubai trading floors.

At the end of 1998, 40 shares were traded and 10 brokerage companies were licensed from the UAE Central Bank. During 1995 the UAE Central Bank issued new regulations regarding brokerage firms, like minimum capital adequacy AED one million for dealing domestic shares and AED two million for dealing internationally (US \$272,000 for domestic and US \$545,000 for internationally engaged brokerage firms). All the brokerage firms are under direct control and must be licensed before engaging in brokerage services. These firms were bound to hire qualified staff and transparent reporting and audit requirements. Because of

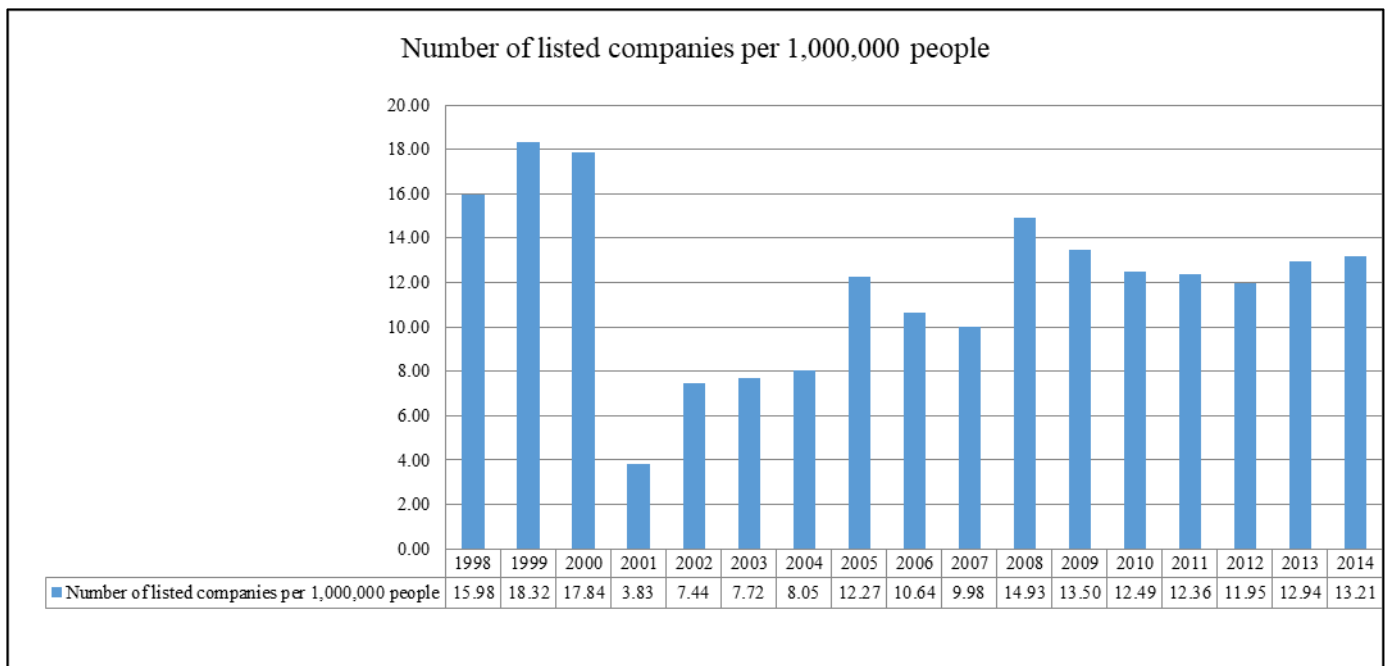
this, many unauthorised and unqualified brokers left the industry, which generated a lot of confusion and asymmetries. Al-Amri (2000) argued that there were a lack of rules and regulations regarding listed companies in terms of publishing semiannual financial results and not opening for international investors. The pricing methodologies were not transparent and very little information was available on the listed firms. In 1999 the government had a heavy concentration of share ownership in Emirates Telecommunications Corporation (Etisalat) with market capitalisation of AED 17.8 billion (Al-Mannai, 2001). At the end of 1999 the UAE stock market became the second largest market among countries in the GCC with capitalisation of listed firms at AED 5.6 billion.

In their 2004 Annual Report the Central Bank of the UAE reported that since 2000 DFM and ADSM had grown 1,238% and 343% respectively. During May of 2007 the Emirate's Securities and Commodities Authority (ESCA) issued a new Code of Corporate Governance. The main objective of this code was to improve disclosure and governance practices of the listing firms. In January 2007 the initial public offerings (IPOs) supervision was transferred from the Ministry of Economy to ESCA; hence, shifting the pricing of IPOs to the private sector.

As far as the UAE capital market structure is concerned, various exchanges of different size and focus are engaged. Equities and bonds exchanges consist of the DFM, the ADSM, and the Dubai International Financial Exchange (DIFX). In November of 2005 the Dubai Gold and Commodities Exchange (DGCX) was established for the trading of financial derivatives as a first mover in derivatives exchange in the Middle East Region. It is regulated by the Securities and Commodities Authority (SCA).

Since 2008 the DFM has been a public joint stock company and its shares were traded for first time in March of 2007. Until November of 2006 the DFM was fully owned by the government of Dubai. It became a joint stock company by offering 20% of its shares to the general public with 80% of shares held by Borse Dubai. On average the UAE stock markets faced losses from 2007 till 2011. In 2011 its recorded loss was AED 6.45 million. As of December of 2014 there were 67 firms listed on the DFM of which the majorities were local firms. The third stock exchange is the Nasdaq Dubai. It deals in regional as well as international shares in Middle East. Its major shareholder is the DFM with approximately 67% of shares from May of 2010 till today. The NASDAQ is under the supervision of the Dubai Financial Services Authority and situated in the DIFC.

Figure 3.32: Number of Listed Companies per 1,000,000 People in UAE Since 1998



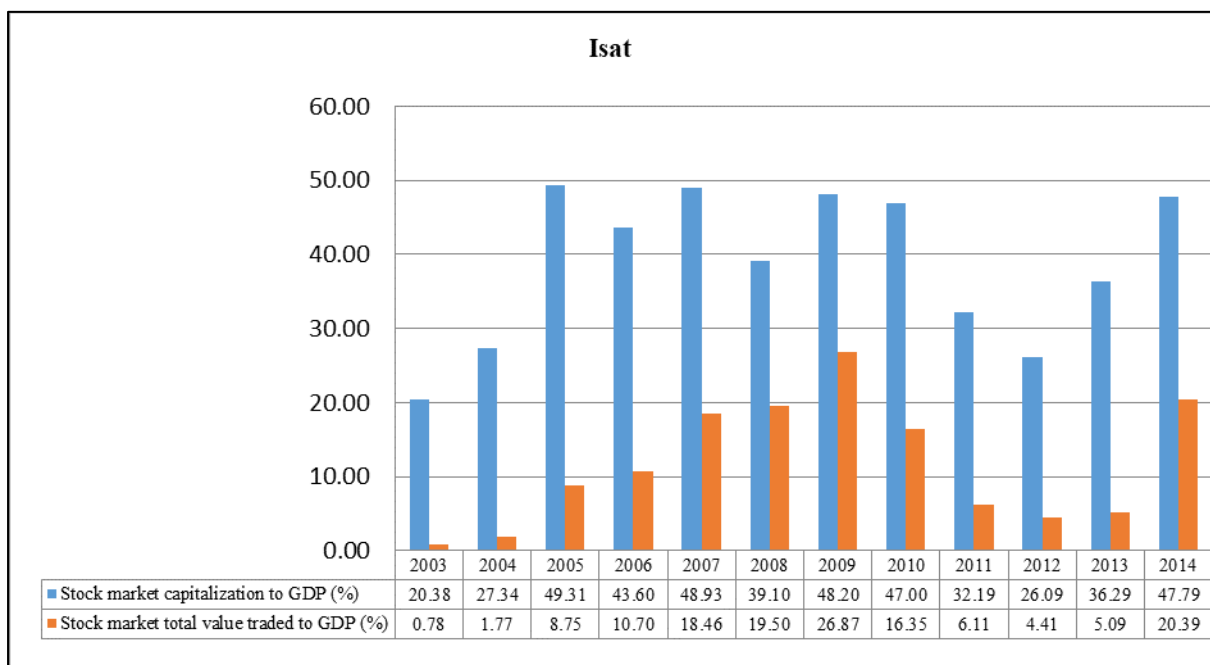
Source: IMF (imf.org)

Under the UAE Company Law and Securities Regulations foreign ownership in firms is restricted to 49% and the majority of board members, along with the chairman of the board,

must be Emirate. Squalli (2005), by analyzing the sectorial data of the UAE financial markets, found they were in a weak form of market efficiency. Figure 3.32 above demonstrates the listed companies in the UAE stock exchanges per one million people from 1998 to 2014. It does not include the investment and mutual funds companies. The largest number of listed companies was in 1999 when the DFM was launched and proper supervision measures were taken.

Figure 3.33 explains the trends of market capitalisation (values of all listed shares in stock market in terms of GDP) and market value traded in terms of GDP (value of all traded shares in stock market in terms of GDP) since 2003. The highest market capitalisation was 49.31% in 2005 and the value traded in 2009 was 26.87%.

Figure 3.33: Stock Market Capitalisation and Total Value Traded to GDP % in UAE Since 2003

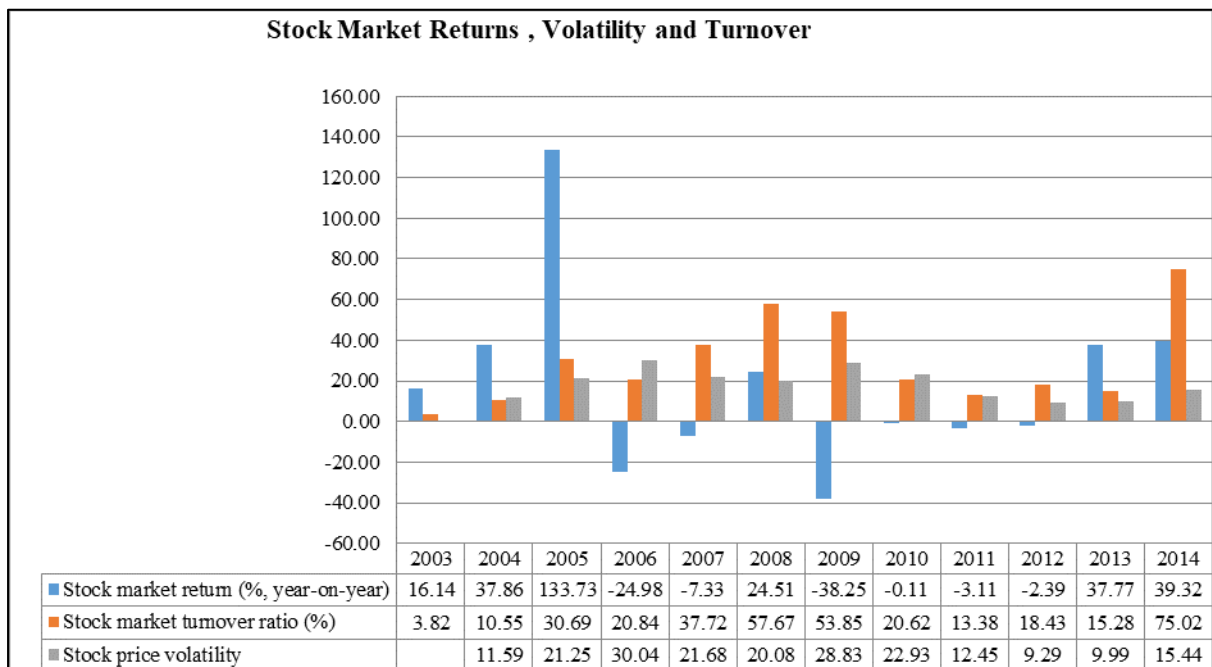


Source: IMF (imf.org)

Figure 3.34 presents the trends of stock market returns, turnover, and volatility since 2003.

The stock market suffered losses from 2006 to 2012. Its highest turnover was 75.02% during 2014, where volatility was around 9% throughout the entire period. The highest level of volatility can be seen at 30.04% during 2006. It shows that the share prices exhibited very high and low changes during that period. Brenner (2007) argued that the UAE equity markets have less depth and diversification and therefore shows high volatility. There are no sovereign financial securities and hence market for debt instruments is very thin.

Figure 3.34: Stock Market return, Stock market turnover and stock price volatility in UAE Since 2003



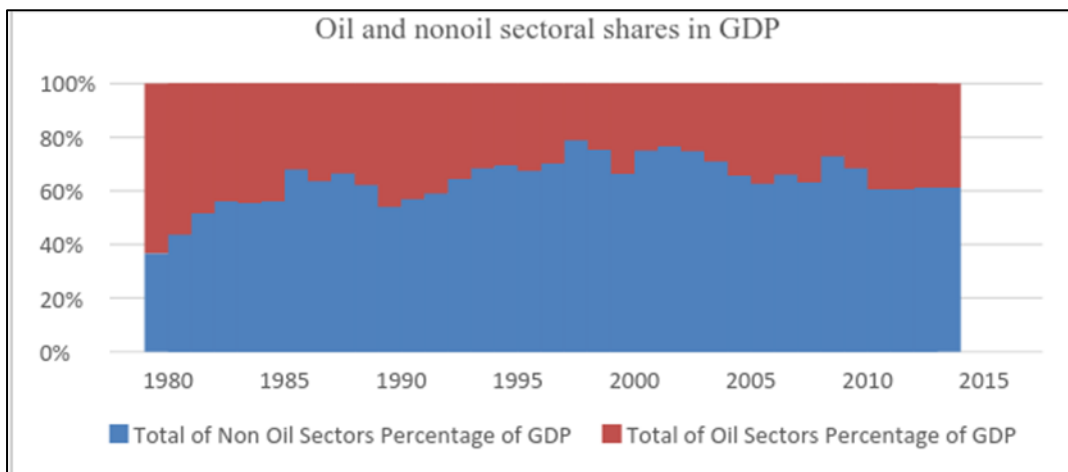
Source: IMF (imf.org)

3.4 Restructuring and Diversification of the UAE Economy

As a move towards a more diversified economic base for the country, the UAE government is working on restructuring the economy away from oil dependence towards more nonoil sectors like construction, tourism and financial sectors. Official figures suggest that the share of nonoil sectors in GDP of the UAE has been rising from 36.75% in 1980 to 61.45% in 2013 recording a substantial decline in oil dependence during last two decades (National Bureau of

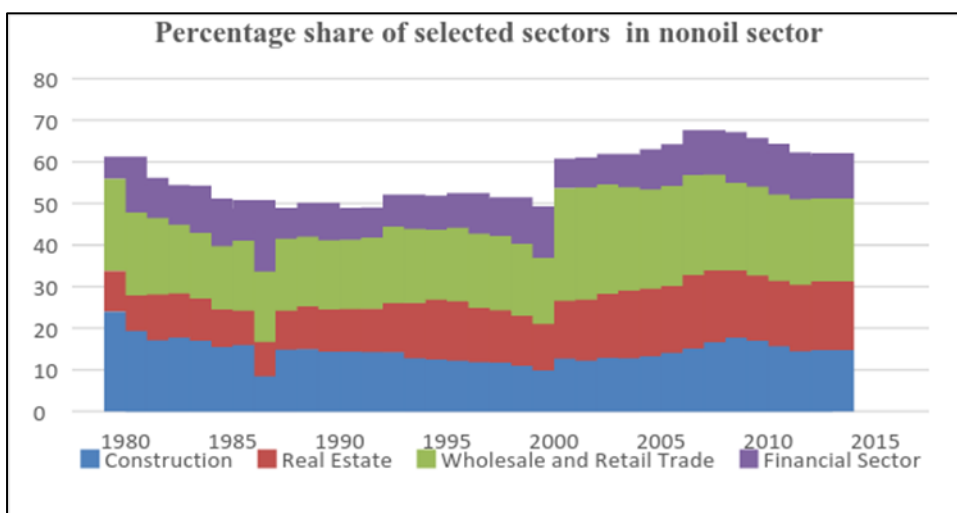
Statistics, 2016). Furthermore, the classification of the nonoil sectors and the growth patterns in these sectors records high growth patterns in construction and real estate sectors, with financial sector development during 1980-2013 (Central Bank of UAE, 2014). Figures 3.35 and 3.36 show the oil and nonoil sectors' share in the annual GDP of the country from 1980 to 2013 and the share of other nonoil sectors in GDP respectively.

Figure 3.35: Percentage shares of oil and nonoil sectors in UAE GDP (1980-2013)



Source: National Bureau of Statistics, UAE

Figure 3.36: Percentage Share of selected sectors in nonoil sector in UAE (1980-2013)



Source: National Bureau of Statistics, UAE

Figure 3.35, shows the percentage share of nonoil sector (blue bar) in the UAE's GDP. Despite yearly fluctuations in the share of GDP, it shows a rising trend between 1980 and 2013. The highest value observed by the nonoil sector as percentage share of GDP was in 1998 at 78.912%. The average value, of nonoil and oil sector shares in GDP during the time period has been around 63.83%, sufficiently large for an oil dependent economy in the Middle East. The economy is being diversified away from oil dependence towards construction, real estate, tourism and financial sector.

In Figure 3.36, percentage shares of selected sectors of construction, real estate, wholesale and retail trade and financial sector in the total nonoil sector is presented. Figure 3.36 confirms the statistics presented in Figure 3.35, where it shows that the economy is moving away from oil dependence, towards more diversified economy. The major sectors where the economic resources are being allocated are the wholesale and retail sector, real estate, construction and the financial sector development. The highest value observed by the whole sale and retail sector during the time period is 27.10% in 2001, and the minimum value of 15.21% was observed in 1985. The minimum value in wholesale and retail sector was due to the decline in global oil prices. Similarly, the construction sector reached a maximum value of 24.02% in 2004 and minimum value of 8.45% in 1987. The boom in construction sector in 1980 was due to the oil price boom in the late 1980s. As a part of diversification plan the petrodollars earned from the oil exports were spent on mega projects of construction to attract tourists and services sector. Minimum share of construction in GDP in 1987 was the result of violent fluctuation and the lowest value in the global oil market. In general, it was not only the construction or wholesale and retail trade sector but also the real estate sector suffered from losses (minimum of 8.13% in 1986) during the same time period of 1980-86, due erratic oil price fluctuations in the global market. However, the 1980s was the decade when financial

sector development started taking place in the United Arab Emirates. Reforms in the financial sector through devising prudential monetary policy led to process of financial deepening. However, the country's monetary authority had to go a long way in order to make the financial sector deep enough to have the capacity of playing a role in the efficient allocation of resources. The focus of the monetary authorities has been to develop a strong and competitive banking sector in the country. As a result, the numbers of local banks are fewer than the number of foreign banks. The National Bank of Abu Dhabi records the number of local banks at around 23 and foreign banks at around 26, with a strong network of 957 branches in total (NBAD, 2015). The existence of more foreign banks than local banks has been leading the banking sector towards more competition in terms of smooth and modern financial services, along with improved access for investors and small savers.

3.5 UAE Government Interventions and Development of Financial Sector

Established in 1972, the Currency Board was not powerful in issuing currency, supervising, and regulating the banking system. Therefore, the Central Bank of the UAE was established by the inducement and enforcement of UAE federal law in 1980. Under this law the UAE Central Bank took over the responsibilities of Currency Board. The Central Bank became in charge of issuing and controlling the money supply and maintaining the reserves. In 1981 the Central Bank of the UAE lifted the ban to open new domestic banks and forced the licensing of new foreign banks. Hence, from 1980 to 2003 the Central Bank limited the foreign banks to have maximum of eight branches throughout the UAE. Starting in 2003 this provision was amended and foreign banks were allowed to have more than eight branches but subjected to first obtaining special permission from the Central Bank. These actions encouraged domestic banks to play active role in the UAE economy and at the same time limited the scope of foreign banks.

During the 1980s and 1990s the UAE Central Bank took various steps to strengthen the UAE banking system such as set the minimum capital requirements, set the reporting and auditing requirements, increased the degree of inspection, set a separate section to supervise bank loan risks, and introduced new regulations to limit director loans. Under these new rules, from 1993 onward all UAE banks were required to maintain a 10% capital to total assets ratio. Banks were also bound to accumulate reserves by the allocating of 10% annual net profits to a reserve account until it becomes equal to 50% of their paid up capital.

In 1994 banks urged to adopt International Accounting Standards (IAS) and capitalised the UAE banking system. However, in 1998 the UAE Central Bank made it mandatory for all the banks to adopt the IAS. Therefore, from 1999 onward all banks were required to adopt corporate structures. By law it became mandatory that majority of ownerships of banks must belong to UAE nationals. Moreover, in 1999 all commercial banks were required to maintain at least a 10% capital to risk-weighted assets ratio. All commercial banks must be registered as a shareholding company under UAE company law and also registered under the Federal Ministry of Economy and Trade (Central Bank of the UAE, 2005). As per the recommendations of Basel 1988 the average capital to risk-weighted assets for all banks was 21% in 1997. However, in 2005 the UAE Central Bank imposed a reserve ratio of 14% on the banking system.

In 1986 international oil prices declined to \$10 per barrel and resulted in high loan losses to the banking sector. In response to this issue a wave of restructuring of banks arose across the UAE. As a result, three banks in both Dubai and Abu Dhabi were merged. Hence, the numbers of banks decreased to 19 national and 29 foreign banks. In 1990, due to Iraq's attacked on Kuwait, 15% to 30% of deposits flew out and created a liquidity issue. In

response, the Central Bank of the UAE injected funds into at least two banks to strength their liquidity and restored confidence in the banking system.

In 1985 federal law was incorporated to legalise Islamic Banking in the UAE as a separate entity from conventional banking. The interest rate is not fixed under Islamic banking, being based on profit/loss sharing models. So far, it is a small component of the overall UAE banking system.

In 1996, after getting membership of World Trade Organisation (WTO), the UAE government became an active participant of global financial market. Like an offshore model the most advancement in the UAE banking system was the incorporation of the Dubai International Financial Corporation (DIFC) in June of 2004. Also established in June of 2004 the Dubai Financial Services Authority (DFSA) regulates and supervises the entities engage in banking, securities, and reinsurance activities in DIFC. Under this model foreign banks may have 100% of the banks ownership with no restrictions on capital repatriation and may enjoy zero tax rates. The DIFC was the first step to banking liberalisation. Until 2006 the DIFC licensed 13 wholesale investment banks (DIFC, 2006).

In 2006 to 2007, in order to enhance the performance of banking sector, the Central Bank of the UAE decided to launch Basel II. By adaptation of Basel II UAE banks would be able to create powerful risk management sections and transparency of financial data. For anti-money laundering and combating the financing of terrorism (AML/CFT), Federal Law 4 of 2002 and Federal Law 1 and 8 of 2004 were approved. The payment system is now fully automated and computerised. The Real Time Gross Settlement (RTGS) has been functioning since 2002. As of December of 2005 institutions owned by the state are purely commercial and listed on

domestic stock markets and have 63% of total bank assets. Among the top five banks four are government owned. In 1978 the UAE government established the credit line with no interest for farmers' loans. These loans are for water, fishing boat engines and green houses. For the purpose of price protection the UAE government purchases small-scale farmer's production at a favorable price.

Several rules were established by the UAE government to promote favorable business and investment environment in the UAE. Among the laws enacted were UAE Federal Law No. 22 of 1995 relating to Organisation of the Auditing Profession; UAE Federal Law No. 4 of 2000 relating to the Emirates Securities and Commodities Authority and Market (ESCA Law); UAE Federal Law No. 8 of 1984 relating to Commercial Companies; and UAE Federal Law No. 4 of 2000 relating to the Emirates Securities.

3.6 Relationship and Transaction Banking

Relationship and transaction banking are two banking strategies to improve profitability.

Relationship banking deals with the cross selling of financial commodities (products and services) to strength customers' oriented relationship and their loyalty. Relationship banking involves a broad spectrum of financial services like savings accounts, certificates of deposits, safe deposit boxes, investment, debit/credit cards, business services, and loan services.

Transaction banking focuses on "arm's length" transactions. On the other hand, relationship banking requires that customer specific information and banks are considered as the actors of screening, monitoring, and liquidation providers. Therefore, banks are mainly focused on relationship banking. More so, participants of capital market like investment banks and underwriters are mainly concerned about transaction or considered as "providers of finance at arm length". Banks are engaged in both types of banking with different degree of

engagements dependent upon their strategy. Borrowers receive relationship loans with the banks expertise on specialised sector, while transaction loans are considered as a pure funding transaction and bank role is just like a broker. Boot and Thakor (2000) argued when interbank competition is low transaction lending will be high. An increase in competition increases the amount of relationship lending.

3.7 Cross Comparison of the UAE with Other GCC

Table 3.3 compares the UAE GDP per capita (2005 constant US\$) and population with the other five GCC countries since 2004. The Qatar GDP per capita is higher than the other countries in the GCC. Till 2006 the UAE GDP per capita is second highest and from 2007 Kuwait has the second highest GDP per capital when compared to other countries in the GCC. Saudi Arabia is the most populated country in the GCC with the UAE being the second most populated country.

Table 3.3: Cross Comparison of UAE with GCC in terms of GDP and Population Since 2004

Indicator	Country	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
GDP per capita (Constant 2005 USD)	Bahrain	18,511	18,418	18,071	17,935	17,532	16,760	16,592	16,361	16,597	17,290
	Kuwait	33,883	35,694	36,357	36,272	34,881	30,433	27,982	28,974	29,264	28,167
	Oman	12,387	12,399	12,827		13,956	14,220	13,984	12,684	12,298	11,596
	Qatar	56,586	53,207	56,841		56,156	54,881	59,152	62,139	61,608	61,804
	Saudi Arabia	12,731	13,274	13,642		14,902	14,806	15,135	16,239	16,703	16,748
	UAE	43,324	40,299	38,363		30,613	25,977	24,424	24,503	25,555	26,402
Population (Total)	Bahrain	807,989	867,014	940,808	1,000,000	1,100,000	1,200,000	1,300,000	1,300,000	1,300,000	1,300,000
	Kuwait	2,200,000	2,300,000	2,400,000	2,500,000	2,700,000	2,900,000	3,100,000	3,200,000	3,400,000	3,600,000
	Oman	2,400,000	2,500,000	2,600,000	2,600,000	2,700,000	2,800,000	2,900,000	3,200,000	3,500,000	3,900,000
	Qatar	732,096	836,924	988,448	1,200,000	1,400,000	1,600,000	1,800,000	1,900,000	2,000,000	2,100,000
	Saudi Arabia	24,000,000	25,000,000	25,000,000	26,000,000	27,000,000	27,000,000	28,000,000	29,000,000	29,000,000	30,000,000
	UAE	4,000,000	4,500,000	5,200,000	6,000,000	6,900,000	7,700,000	8,300,000	8,700,000	9,000,000	9,000,000

Source: IMF (imf.org)

3.7.1 Banking Sector Comparison with GCC

Table 3.4: Cross Comparison of UAE with GCC Since 2004

Indicator Name	Country Name	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
Bank branches per 100,000 adults	Bahrain	-	-	-	-	-	-	-	-	-	-
	Kuwait	12.72	13.50	14.38	15.28	15.47	16.02	16.13	16.61	15.73	16.65
	Oman	21.78	20.90	21.01	21.91	23.04	23.66	22.66	21.27	19.70	18.31
	Qatar	23.59	21.88	20.27	19.32	19.02	18.64	18.35	13.29	13.22	12.49
	Saudi Arabia	7.94	7.63	7.74	7.86	7.97	8.37	8.54	8.61	8.64	8.75
	United Arab Emirates	17.33	15.04	13.96	13.09	12.93	12.19	11.91	11.75	11.94	12.37
ATMs per 100,000 adults	Bahrain	-	-	-	-	-	-	-	-	-	-
	Kuwait	30.02	34.55	39.69	46.40	50.89	52.43	51.49	52.87	58.50	
	Oman	-	-	-	-	-	-	-	-	-	-
	Qatar	55.99	58.28	56.49	53.93	47.43	49.25	52.53	51.82	59.67	61.82
	Saudi Arabia	26.52	28.28	36.05	43.29	49.63	54.09	57.64	60.70	63.91	67.86
	United Arab Emirates	21.04	47.51	42.27	42.34	42.39	54.30	51.68	54.35	57.01	58.91
Private credit by deposit money banks to GDP (%)	Bahrain	43.22	39.94	41.65	46.67	54.43	71.48	65.93	64.04	68.47	67.25
	Kuwait	51.97	46.23	45.41	53.08	55.86	78.35	73.39	59.24	54.62	57.13
	Oman	33.21	29.01	28.06	31.05	30.07	45.01	40.31	38.88	39.36	42.15
	Qatar	25.71	26.97	30.17	34.64	35.46	48.63	42.47	36.23	35.72	36.76
	Saudi Arabia	27.92	30.31	32.21	33.48	33.95	45.56	38.31	32.86	33.71	38.13
	United Arab Emirates	34.07	37.31	41.43	56.03	58.52	83.54	74.88	62.69	60.15	59.54
Private credit by deposit money banks and other financial institutions to GDP (%)	Bahrain	52.60	48.34	56.65	71.89	85.95	114.08	103.68	95.26	97.60	95.14
	Kuwait	58.82	52.60	52.09	59.64	61.71	85.42	78.47	62.85	57.71	59.78
	Oman	33.21	29.01	28.06	31.05	30.07	45.01	40.31	38.88	39.36	42.15
	Qatar	25.71	26.97	30.17	34.64	35.46	48.63	42.47	36.23	35.72	36.76
	Saudi Arabia	49.97	46.54	45.50	45.82	45.36	61.64	52.88	45.70	46.52	51.49
	United Arab Emirates	34.07	37.31	41.43	56.03	58.52	83.54	74.88	62.69	60.15	59.54
Domestic credit to private sector (% of GDP)	Bahrain	43.94	43.68	44.88	53.12	64.21	71.44	67.70	68.91	69.13	68.87
	Kuwait	56.36	50.93	49.95	59.58	57.26	79.12	74.64	60.81	55.74	59.75
	Oman	34.23	30.65	30.73	35.55	35.12	46.70	42.35	41.18	42.16	43.49
	Qatar	28.98	33.72	36.00	41.58	40.80	51.74	44.70	39.28	36.45	39.38
	Saudi Arabia	32.35	35.42	33.72	37.07	37.68	45.63	39.27	34.19	36.44	40.34
	United Arab Emirates	37.72	43.77	47.30	56.04	67.08	84.47	75.40	64.00	60.71	60.58

Source: IMF (imf.org)

Table 3.4 above gives the main highlights of the countries in the GCC region. The UAE is third among the GCC region in terms of bank branches per 100,000 adults and ATMs per

100,000 adults. The UAE's GDP grew rapidly from 2007 to 2010 in terms of private credit by deposit money. In the UAE private credit by deposit banks and others financial institutions in terms of GDP increases, but less than in Bahrain and Kuwait. In the UAE domestic credit to the private sector in terms of GDP is higher than Saudi Arabia, Oman, and Qatar but less than that in both Bahrain and Kuwait.

3.7.2 1. THE STATE OF KUWAIT

According to the MSCI Market Classification, Kuwait is classified as a Frontier Market and its economy relies mainly on oil revenues. Oil accounts for nearly half of its GDP and almost 95% of government income. Due to Kuwait's almost complete dependence on petroleum sales, Kuwait's economy has fluctuated according to the volatility of the oil market (from GDP 28.64 billion USD in 1980 to 174.2 billion USD in 2013).

Kuwait's official currency was the Gulf Rupee until it was replaced by the Kuwaiti Dinar in 1960. The Kuwaiti dinar is the highest-valued unit of currency in the world. Between 1975 and 2002 the Central Bank of Kuwait (CKB) adopted an exchange rate policy pegging the KD to a weighted basket of major currencies of the countries that have significant trade and financial relations with Kuwait. This policy proved to be effective in achieving a high degree of relative stability of the KD exchange rate against major world currencies. Between 5 January 2003 and 19 May 2007 the KD was pegged to the US Dollar. The exchange rate was set at 3.33 USD per KD. On 20 May 2007 however, the KD exchange rate was repegged to an undisclosed weighted basket of international currencies of Kuwait's major trade and financial partner countries. According to the CKB, the last move aimed at protecting the purchasing power of the national currency after having exhausted all attempts to absorb the adverse effects of US Dollar depreciation against major currencies.

In 1960, the banking network expanded in Kuwait when the Gulf Bank and Commercial Bank of Kuwait were established. This prompted the Kuwaiti government to establish a supervisory body that oversee the banking business in the country as well as issuing a national currency. Hence, the Kuwait Monetary Council was established which formed then the basis of the Central Bank of Kuwait in 1968.

The Central Bank of Kuwait was established in 1968 to replace the Kuwait Monetary Council in a bid to cope with the economic development and monetary policies. To achieve these objectives, CBK was given greater powers than the Monetary Council used to have, which was mainly limited to issuing the Kuwaiti Dinar. As well as the previous task, CBK's responsibilities include the working on the stability of the Kuwaiti Dinar and securing the freedom of converting it to other currencies; supervising the credit policy so as to help economic progress and increase national income; control of the Kuwaiti banking system; and working as the government Bank.

In Kuwait there are 23 licenced banks, 11 of which are local and 12 foreign. The oldest bank in Kuwait is Al Ahli Bank of Kuwait which was established in 1941 under the name of "Imperial Bank of Persia." in February 2014, CBK announced that its Board of Directors has approved the structure of the Basel III capital adequacy standard and the transitional phase of its implementation. the Board of Directors had also approved a minimum capital adequacy ratio of 13.00% to be implemented by the Kuwaiti banks by the end of 2016.

Kuwait Stock Exchange (KSE) was established in 1983. The stock market in Kuwait is regulated by four bodies: the KSE, the Ministry of Commerce and Industry, the Ministry of Finance and the Central Bank of Kuwait. Boursa Kuwait is responsible for introducing new

trading rules, risk management practices, price discovery mechanisms and new technology to ensure that stock exchange is as robust and secure as possible. Boursa Kuwait has 175 listed trading companies.

3.7.3 2. LEBANON

Lebanon's Market is classified as a Frontier one by the international financial institution. The Lebanese economy is mostly service-oriented. The main growth sectors include banking and tourism. Lebanon is the third-highest indebted country in the world in terms of the ratio of debt-to-GDP after Japan and Greece (152%. GDP 4,018 billion USD in 1980 to 46.01 billion USD in 2013).

Under the Ottoman Empire, the Turkish pound was the legal tender. During the French mandate, a French franc-based currency was issued by the Banque de Syrie et du Liban until its independence in 1943. In 1949, Council of Money and Credit was established to issue the Lebanese Pound (LBP). The exchange rate of the Lebanese pound since its issuance until 1981 was ranging between 3.2 and 3.9 for each one US dollar. Decline however started with the Israeli invasion in 1982 as the Lebanese pound started to depreciate until reaching its lowest level in August 1992 with 2880 LBP for each dollar. The exchange rate improved by the end of the civil war and in June 1999 a decision to have a fix rate was taken by Lebanon's Central Bank at 1507.5 LPB to the dollar.

In 1949, a council known as the Council of Money and Credit was formed with the sole aim to draw up the Money and Credit Code and the by-laws of Lebanon's future central bank, the Banque du Liban (BDL).

The Banque du Liban (the Central Bank of Lebanon) was established under the Currency and Credit Law of August 1, 1963 by Decree No. 13513, but it officially operated on April 1, 1964. Banks and financial institutions in Lebanon operate under the supervision of the Central Bank of Lebanon, which is the monetary authority governing the work of banks in the country. The Central Bank gives the license to establish new banks, defines the banks' area of works, identifies the profession and imposes the precautionary rules that should be adopted by the sector. With the end of the civil war, a new phase began in the history of the Banque du Liban where the bank raised foreign currency reserves from 1.4 billion dollars in 1992 to more than 42 billion dollars in 2018. Bank deposits also rose from 6.6 billion dollars to 187 billion dollars for the same period. Gold reserves mounted to around \$12 billion for the same period.

The Lebanese banking sector ranks fifth among the Arab banking sectors in terms of the asset size and second among non-oil Arab countries, holding 7% of the total assets of the Arab banking and 8% of its deposits. There are approximately 65 local and foreign banks operating in Lebanon, including commercial, investment, credit and Islamic Banks. Lebanon's oldest bank is Fransabank, which was founded in 1921. All Lebanese banks comply with Basel II and III Accords for the calculation of credit risks, operational risks and market risks. In addition to identification and monitoring of other risks including interest rate risks in the bank's portfolio, credit concentration risks, liquidity risks and reputational risks. Rules are in conformity with Basel Committee guidelines for banking supervision, and with International Financial Reporting Standards (IFRS).

Beirut Stock Exchange was established in 1920 during the French mandate for Lebanon. The golden era for Lebanese economy was in the 50s and 60s of the last century when many

industrial, banking and service companies listed their stocks on the BSE. The setback started by mid-1975 with the beginning of the civil war until all trading had to be halted completely in 1983. Following regaining stability and security and in collaboration with the Bourse de Paris, BSE was re-launched in 1996.

Since then, BSE has undergone many modifications and introduced the latest regulations including: the using of electronic trading system, NSC UNIX V3 PLUS, in 2009, for a continuous trading as well as adopting a new Financial Markets Law by which a special court was established to settle disputes and financial crimes. In September 2017, the Lebanese government approved the formation of the Beirut Stock Exchange (BSE) SAL, to replace the old BSE with a share capital of LBP 100 million divided into 100 thousand shares with a nominal value LBP 1,000 per share.

3.7.4 3. KINGDOM OF BAHRAIN

Bahrain equity market is classified by MSCI and S&P Dow Jones as a Frontier Market. GDP 3.07 billion USD (1980) – 32.54 billion USD (2013), The Gulf rupee was the official Bahraini currency between 1959 and 1965 under the British. In 1965, this was replaced by the Bahraini Dinar which issued by the Bahrain Currency Board before introducing the Bahrain Monetary Agency in 1973. since December 1980 until now, the Bahraini Dinar has a fixed exchange rate of 2.65 USD for each Dinar.

Shortly after gaining independence in 1971, Bahrain Monetary Agency was established in 1973. BMA was responsible since then for regulating Bahrain's banking sector, insurance sector and capital markets as well as issuing the national currency. BMA was replaced by Bahrain Central Bank in 2006.

It was established in September 2006. CBB's main responsibilities include the issuance of the national currency, implementing Bahrain's monetary and foreign exchange rate policies, managing the Kingdom's gold and foreign currency reserves as well as regulating the Kingdom's financial sector, covering the full range of banking, insurance, investment business and capital markets activities.

For a small country like Bahrain, financial sector is considered the most important contributor to the economy, accounting for more than 17.2% of the Kingdom's GDP with banking assets stood at over 192 billion USD (2016) as well as being the largest single employer in Bahrain. Without this sector, Bahrain would not have enjoyed being a leading financial centre in the region. As of 2014, Bahrain's banking system consisted of 28 banks of both conventional and Islamic types. 13 local and 15 foreign, the oldest of which is Bahrain is a world leader in Islamic banking as it witnessed a remarkable growth since 2000 with total assets jumped from 1.9 billion USD to 25.7 billion USD in 2016, an increase of over 12 times.

In order to bring changes to the regulatory environment, Bahrain was the second Gulf State, after Saudi Arabia, to accept the Basel III regulations in 2013 when its Central Bank released its high-level strategy for 2013-2019.

Previously known as the Bahrain Stock Exchange (BSE) which was established in 1987 and became fully operational in 1989. In 2010, BSE was dissolved and replaced by a shareholding company with the new name of Bahrain Bourse.

BHB is a shareholding company that operates autonomously but chaired by the governor of the CBB. As of April 2019, there are 50 equities, 19 bonds and 35 mutual funds currently

listed. BHB is a member of several international and regional bodies such as the Union of Arab Stock Exchanges, the Federation of Euro-Asian Stock Exchanges, the World Federation of Exchanges, the Africa & Middle East Depositories Association, and the Association of National Numbering Agencies.

3.7.5 4. KINGDOM OF MOROCCO

Frontier Market: Until November 2014, Morocco's equities market was classified as an emerging market. However, S&P Dow Jones has downgraded it from its index of emerging markets to its frontier market index. S&P Dow Jones justified this decision because of the lack of liquidity in Moroccan equity markets, following a review of feedback from investors, which does not align with other emerging markets and making it more appropriate to be classified as a frontier market. GDP: 21.73 billion USD (1980) - 106.8 billion USD (2013).

Between its independence in 1956 and 1959, Moroccan franc, used under the French rule, was the circulated currency in Morocco. This was abolished when the dirham was adopted as the national currency in October 1959. French franc remained in use as a fraction of Dirham until 1974 when it was replaced by the Centime. Moroccan Franc has no fixed exchange rate. In 1980 1 USD used to equal 3.80 MAD to drop to 8.21 MAD in 2013 and 9.67 MAD in 2019.

Prior to the establishment of the Moroccan Central Bank, Banque d'Etat du Maroc acted like one, which was found following the Conference of Algeciras in 1906 under the French rule with an ultimate purpose of monitoring the Kingdom's income as well as issuing the Moroccan franc. In 1959, following negotiations between Morocco and France, the Moroccan government recovered its privilege over the bank and launched the Moroccan dirham.

It was founded in June 1959. Its main duties include issuing the Moroccan currency; implementing monetary policy instruments to ensure stability in price and currency; managing official foreign exchange reserves; regulating private banks supplying commercial banking services; monitoring systems and means of payment and ensure their security and the relevance of applicable standards and many other. The most important decisions Bank Al-Maghrib has taken since its establishment were the adopt of the regulations of the IMF structural adjustment programme in 1980 and 1983; devaluating the dirham in the 80s and early 90s following a period of high inflation; reforming the banking law to give Bank Al-Maghrib more powers in terms of regulation and oversight of the activities of credit institutions in 1993.

Up to 2017, there were 19 banks operating in Morocco, as well as other seven offshore institutions and 34 non-bank financial institutions. In 2017, Morocco's central bank approved requests to open five Islamic financial institutions. It is worth mentioning that Morocco has long rejected Islamic Banking for its fear of Islamist movements, however, its financial markets' lack of liquidity and foreign investments prompted it to take that decision. The oldest bank in Morocco is Wafabank (founded in 1904) which merged with Banque Commerciale du Maroc in 2004 to form Attijariwafa bank, the largest bank in Morocco and the 6th in Africa by total assets. Attijariwafa is the only bank to announce its compliance with Basel III rules regarding liquidity in its strategic plan of 2015-2019. As for the country's regulations, IMF reports have noted that work is underway to introduce several Basel III regulatory tools for the banking sector in Morocco and stressed that near-term implementation of the Basel III countercyclical capital buffer (CCB) should be a priority. Basel II rules are already in place by most of Moroccan banks since 2007.

Casablanca Stock Exchange has been established as the Office for Clearing of Transferable Securities in 1929. More recent, in 2007, it redesigned its visual identity in a bid to meet the economic developments. In terms of market organisation, CSE had adopted several measures as early as 1997 regarding the electronic-based trading system; establishing central market and block-trade market (1998); shortening trade settlement period from T+5 to T+3 (2001); launching Masi and Madex indices, sector indices, total return indices and currency indices (2002) and the floating-weighted capitalisation method for calculating indices was adopted in December 2004. It currently has 19 members and 81 listed securities with a total market capitalisation of \$71.1 billion (2018).

3.7.6 5. THE SULTANATE OF OMAN

Oman is classified by MSCI and S&P Dow Jones as a Frontier Market. It depends mainly on oil. It ranks 23rd in the world oil reserves (April 2019) and 28th in the gas reserve (January 2010). The Sultanate ranks 64th among the world's largest economies. In 2010, Oman ranked first by the United Nations Development Program (UNDP) as the world's most improved country in the Human Development Index between 1970 and 2010. GDP 5.98 billion USD (1980) - 78.94 billion USD (2013).

Like many other Gulf States, the Gulf rupee was the most circulated currency in Oman as well as Maria Theresa thaler and other neighbouring countries' currencies, or those issued by successive local governments. In 1970, the rial saidi was issued as the unified currency of the country by Muscat Currency Authority which was then replaced by the Omani rial in 1973 after changing the name of the country from the Sultanate of Oman and Muscat to Oman. The last adjustment for the Omani rial exchange rate was in 1986, and so far, the dollar peg has remained unchanged at USD equals to 2.60 rial. The average rate before that was 2.90 USD

for each rial, The Muscat Currency Authority was created in 1970 as a result of the need to establish a body to issue the new national currency. Later in 1972, when the country was renamed to Oman and the Omani rial was introduced, the Muscat Currency Authority was replaced by the Omani Currency Board, with the issuance of a unified national currency and the significant expansion in banking and economic activities in Oman, there was a strong need to have a comprehensive legislation to govern the activities of the banking system, and accordingly, the Central Bank of Oman was established through the Banking Law of 1974 and replaced the Currency Board as the principal currency authority in Oman.

Under the patron of CBO and other banks and financial Institutions in Oman, a College of Banking and Financial Studies was established in 1983 with a declared role of Omanising the Banking sector where more than 92 % of its jobs are held by the nationals.

The Banking Sector Dominate the Financial Landscape in Oman. As of April 2019, CBO has a list of 20 licenced banks in Oman, including 7 local commercial banks, 9 foreign banks, 2 Islamic banks and 2 specialised banks. There is another 6 finance and leasing companies and 16 money exchange establishments. In August 2017, banks in Oman reported combined assets of \$83 billion, the smallest in the Gulf Cooperation Council. The oldest bank in Oman is HSBC Oman which was founded in 1948. According to the Financial Stability Report of 2018 published by the CBO, both domestic and foreign banks in Oman maintained adequate capital buffers exceeding both the Basel III norms and CBO requirements. according to the report, between 2014 and 2017, the Capital to Risk Assets of foreign banks were 19.6% and 16.51% for domestic banks, way beyond Basel III requirements.

The Muscat Securities Market (MSM) was established in June 1988 to regulate and control

the Omani securities market and to work, along with other organisations, for setting up the infrastructure of the country's financial sector. 10 years on, a new improvement was required. Hence, the MSM has been replaced by two separate entities, the Capital Market and the Muscat Securities Market. With this change, the current MSM has become a legal entity on its own with legal personality. As of December 2017, 112 companies were listed, with 28% of foreign participation and 17.95 RO Billion of Market Capitalisation.

3.7.7 6. KINGDOM OF SAUDI ARABIA

Emerging Market. Morgan Stanley Capital International (MSCI) has classified Saudi Arabia as an emerging market on June 2018 and is scheduled to be added to the group through a two-step process starting in June this year. The first inclusion step will coincide with the May 2019 Semi-Annual Index Review while the second step will take place as part of the August 2019 Quarterly Index Review. GDP 164.5 billion USD (1980) – 746.6 billion USD (2013).

The riyal has been the currency of Saudi Arabia since its establishment in 1932 and the currency of Hijaz before that since 1928 under King Abdulaziz Al Saud. The new currency was issued by The Saudi Hollandi Bank, the first operating bank in Saudi Arabia, which was then changed its name to al-Awwal Bank. Since 1986, the riyal was officially pegged to the IMF's Special Drawing Rights (SDRs) of a fix rate at 1 USD equals to 3.75 riyals.

The Saudi Arabian Monetary Authority is the central bank of Saudi Arabia. It was established in 1952 and has been entrusted with several tasks under various regulations. The most prominent of these is to work as the government bank, print and issue the national currency, manage the Kingdom's foreign exchange reserves, maintain the stability of prices and exchange rates, monitor commercial banks and those engaged in currency exchange

transactions, control the cooperative insurance companies, control the financing companies and monitor credit information bureaus. In 2017, SAMA was awarded the ISO 9001:2015 certificate in quality management system for agent protection from the British Standards Institute (BSI). There are 28 licenced banks in Saudi Arabia. 11 locals and 17 foreign. The Saudi Hollandi Bank (Al-awwal Bank) was the first bank to operate in the Kingdom, founded in 1926, as a branch of the Netherlands Trading Society.

In terms of Saudi Arabia's implementation of the Basel Accords, the assessment of the Basel Committee on Banking Supervision in 2015 has come highly positive and even noted that several aspects of the domestic rules in the Kingdom are more rigorous than required under the Basel framework! It can be said that the practical start of the stock market arrangement in Saudi Arabia was as early as 1983 when trading in shares was limited to local banks. Over the years, many companies including these in the petroleum and building sectors entered the market. In 2007, following the Royal Decree No. M/30 of June 2003, Tadawul was established and supervised by the Saudi Capital Market Authority with a share capital of 1.2 Billion Saudi riyal divided into 120 million shares. The company main responsibilities include handling securities listing and trading operations. It also provides post trade services, including depository services, Sukuk and bonds, securities pledging and more. By the end of 2018, the total number of the publicly traded companies listed in Tadawul was 190. However, despite being considered the largest capital market in the Middle East (with a trading stock value of more than 870 billion Saudi riyal), Forbes analysts believe that Tadawul is facing a significant problem in terms of its inability to attract more international investment, something vital for economic reform with just over 5% of the foreign investors' proportion by March 2019.

3.7.8 7. THE HASHEMITE KINGDOM OF JORDAN

Jordan's economy is among the smallest economies in the Middle East which is classified as a Frontier market by the relevant international institutions. Due to the limited natural resources, external environment surrounding Jordan plays a major role in determining its economic horizons, especially the crises in Syria and Iraq, the unprecedented influx of refugees, the disruption of trade routes, the decline in investment and the inflow of tourism (especially as a result of the economic slowdown in the GCC) as well as the decline in foreign aids. GDP: 3.91 billion USD (1980) - 33.59 billion USD (2013). The Palestinian Pound was the official currency used in both Palestine and the Trans-Jordan Emirate under British rule. When Jordan gained independence in 1946, the Jordanian Monetary Act of 1949 was put in force with the aim of issuing a special currency for Jordan. On July 1st, 1950, the dinar was introduced as the official currency in Jordan. The Palestinian Pound was discontinued later in September of the same year. Since 1995, Jordanian financial authorities fixed the exchange rate of the dinar at 1 JOD equals to 1.41 USD. It is worth mentioning that in 1980, 1985 and 1990, the Jordanian dinar used to equal on average 3.37, 2.41 and 1.49 USD respectively. The Jordanian Monetary Law No. 35 was issued in 1949. Under this act, Jordan Currency Board was formed to be the only body authorised to issue currency. The headquarters of the Board was based in London.

The Central Bank of Jordan Law was promulgated in February 1959. By Article 50 of this Law, the Central Bank of Jordan was appointed to assume the duties and liabilities previously vested in the Jordan Currency Board from a date to be agreed upon between the government and the Board. Thereafter the Currency Board should be dissolved. This date was October 1, 1964. The Central Bank of Jordan is vested with the responsibilities of issuance of Currency, monetary stability and as well as the government banker. In the pursuit of these

responsibilities, the Bank aims to: Regulate the amounts and types of credit rates of interest; Make recommendations to the government on economic and financial problems and policies; Supervise banks and Control the national gold and foreign exchange reserves. The banking sector in Jordan is the most important contributor to the country's economy, where the banking system accounts for 19% of the total Jordanian GDP. The beginning was with the Arab Bank, which moved its headquarters from Jerusalem to Amman in 1948. In Jordan, there are 24 licenced banks. 16 locals, including 3 Islamic and 8 foreign including 1 Islamic bank. The oldest bank in Jordan is the Arab Bank, established in Jerusalem in 1936. Basel III capital regulations have been implemented in Jordan since 2012 with progressive implementation till 2018. With regard to regulatory liquidity requirements, Jordan is in the process of finalising the Basel III liquidity framework. As for the leverage ratio, it has been implemented in Jordan.

The Amman Stock Exchange has been founded in 1999 as an authorised institution to regulate market for trading securities in Jordan. The Stock re-branded in February 2017, when it has been registered as a public shareholding company completely owned by the Jordanian government under the name "The Amman Stock Exchange Company." Jordanian authority justified this decision by claiming that transforming the ASE into a company would enhance the role that the ASE plays in serving the national economy, and will enable it to offer better services, attract new companies and new clients, as well as enter into regional and international agreements with various parties to increase its market share regionally and internationally. The ASE Company lists over 240 companies with a market capability of JOD 18.1 billion (2014).

3.7.9 8. STATE OF QATAR

On September 2015, FTSE Russell (FTSE) has announced that it will upgrade Qatar from frontier to secondary emerging-market status within the FTSE Global Equity Index Series. This move was preceded by another upgrade on June 2014 from frontier to emerging-market status by MSCI and S&P Dow Jones. Analysts believed that such upgrade will boost capital inflows to the Qatar Stock Exchange. Petroleum and natural gas are the two pillars of the Qatari economy. Qatar has the world's third largest proven natural gas reserve and it is the second-largest exporter of natural gas. GDP 7.83 billion USD (1980) - 198.7 billion USD (2013).

The Gulf rupee and other currencies linked to the Pound Sterling were in circulation in Qatar prior to 1966. When India devalued the Rupee (including the Gulf Rupee) by approximately 35%, Qatar and Dubai decided to replace the Gulf Rupee with the Saudi Riyal as an interim measure until the issuance of a new currency. In September 1966, Qatar and Dubai Currency Board was established, which was assigned the task of issuing a new currency called "Qatar-Dubai riyal". Qatar and Dubai continued to trade in this currency until Dubai merged with the United Arab Emirates in 1971. This resulted in dissolving that Currency Board with Dubai in 1973 and turning it into the Qatar Monetary Agency (QMA) which acted as a central bank for Qatar and issued the Qatari currency for the first time. Since 1980, QMA maintained a fixed exchange rate of the Qatari riyal at 3.64 QAR to each US dollar.

As we mentioned above, Qatar Monetary Agency was established in 1973 following the dissolve of the Qatar and Dubai Currency Board with the sole task of issuing the Qatari Riyal.

Established in August 1993, the Qatar Central Bank has inherited the QMA monetary strategy of targeting the exchange rate. QCB kept adopting the policy of fixed exchange rate against the USD at the same rate of QR 3.64 per USD.

Qatar has relatively a small banking system. There are 18 registered banks, 11 locals and 7 foreign. HSBC Bank Middle East is the largest and most recognised foreign banks in Qatar and it is also the oldest bank in that country since 1954. Qatar has started implementing the Basel III standards since 2014 and has completed these requirements in its final phase, which runs from 2017 to 2018. Known firstly as Doha Securities Market (DSM). It was established in 1995 and becomes fully operational in 1997. In 2009, Qatar signed a partnership agreement with the European exchange group NYSE Euronext to develop its Exchange and since then its name has become Qatar Stock Exchange. Qatar claims that the partnership with NYSE Euronext has boosted its Exchange to a world class level and turned Qatar into a regional financial centre.

Qatar Stock Exchange aims at supporting Qatar's economy by providing investors a platform to trade in a transparent and efficient manner. The Exchange also provides the public with access to market information. The Qatar Stock Exchange is regulated by the Qatar Financial Markets Authority (QFMA) which is an independent regulatory and supervisory authority for the capital markets in Qatar. In 2005, a law was issued to regulate the foreign investment where non-Qataris were allowed to invest in all companies listed at the QSE at a rate not exceeding 25% of the traded shares. QSE's listed companies stands at 46 as of 2019.

3.7.10 9. ARAB REPUBLIC OF EGYPT

According to FTSI, Egypt classification is Secondary Emerging Market while Morgan

Stanley and Dow Jones classify Egypt as an Emerging Market. GDP: 22.91 billion USD (1980) –288.6 billion USD (2013).

The Egyptian Pound is being in use since 1834. Between 1980 and 1989, the value of the Egyptian pound was almost stable and achieved between 1.2 and 1.6 USD for each pound. By the year 1990, the value of the Egyptian pound fell dramatically to a dollar equivalent to 3 to 4 Egyptian pounds. A new decline in the Egyptian currency took place between 2001 and 2004 when each US Dollar was equivalent to more than 6 pounds. The Egyptian pound then improved to reach 5.2 per dollar in mid-2008. With the Arab Spring's events broke out, the value of the Egyptian pound fell to 7 pounds per Dollar to maintain that value until the end of 2013.

The Central Bank of Egypt was established in 1961. It assumes its powers by Law No. 88 of 2003, and the Presidential Decree No. 65 of 2004. Its main duties include regulating banking system; implementing banking, monetary and credit policies; issuing banknotes and determining their categories and terms; managing foreign exchange reserves as well as public and private external debts; supervises national payments system and regulating and managing Egypt's presence in the foreign exchange market.

Central Bank of Egypt is responsible for different roles that contribute directly to the enhancement of the Egyptian economy, mainly; insuring a strong, safe and sound Banking System through its regulatory and supervisory role, managing the monetary policy of the Egyptian economic system, the country foreign exchange reserves, and the issuance of banknote.

The Egyptian Banking sector is currently composed of 39 banks, of which 15 local and 24 foreign. The oldest bank in Egypt is the National Bank of Egypt established in 1898 which was nationalised in 1960. In 2009, Central Bank of Egypt announce a reform program in a bid to upgrade its banking supervision technical abilities and apply Basel II in the Egyptian banking sector. However, negative macroeconomic performance and poor business environment, following the popular revolution in 2011 has substantially deterred the readiness of Egyptian banks to meet the Basel III requirements. Nonetheless, in 2015, the central Bank of Egypt obligated all banks to implement the Basel III regulations.

The Egyptian Stock Exchange is one of the oldest stock markets established in the Middle East, which resulted from the merger of two stock exchanges in Egypt namely, Alexandria Stock Exchange which was established in 1883 and Cairo Stock Exchange established in 1903, now known as Egyptian Stock Exchange which was formerly known as Cairo and Alexandria Stock Exchange (CASE). There are 266 companies listed in EGX with a Market cap of 953 billion EGP.

3.8 Conclusion

The UAE is one of the emerging economies and its government took various steps to improve the financial development in terms of banking and capital markets since the establishment of the Currency Board in 1972. The Currency Board's responsibilities were switched to the Central Bank in the UAE as established in 1980 under Federal Law 10. The UAE Central Bank took various measures to enhance the depth, access, efficiency, and stability of financial sector in the UAE. A brief summary of those steps are the lifting of the bans against opening new domestic banks, imposing restrictions not to open more than eight branches for foreign banks (except with special approval from the Central Bank), and in 1998 banks were required

to adopt International Accounting Standards. Also, in 1999 to develop the banking sector the adaptation of corporate structures was made mandatory and banks were required to adapt BASEL II by 2006-2007. In June of 2004 the most advanced form of the financial sector, the Dubai International Financial Corporation (DIFC), was incorporated and to regulate it the Dubai Financial Services Authority (DFSA) was established. For anti-money laundering and to combat the financing of terrorism (AML/CFT) the 2002 Federal Law 4 and 2004 Federal Laws 1 and 8 were approved. The payment system is now fully automated and computerised. The Real Time Gross Settlement (RTGS) has been functioning since 2002.

As of December 2013 there are 28 foreign banks and 23 national banks in the UAE. The total number of financial institutions was 78, the total branches of national and foreign banks were 928 and total numbers of ATMs were 4,664. For commercial banks the deposit growth between 2004 and 2014 was 389.23% and outstanding loans growth was 439.15%. The distribution of loans between UAE residents and non-residents were 79.17% and 20.83% respectively and risk weighted assets for regulatory capital was 19.26%. In 2013 the returns on assets and equity were 1.57% and 11.06% respectively. The Dubai Financial Market and the Abu Dhabi Securities Market were incorporated in 2000. The Dubai Gold and Commodities Exchange (DGCX) were established in 2005 for the trading of financial derivatives and regulated by Securities and Commodities Authority (SCA). The third exchange was the NASDAQ Dubai, which deals both in regional and international shares in Middle East under the supervision of Dubai Financial Services Authority and situated in DIFC.

The UAE equity markets have less depth and diversification, therefore it is highly volatile. There are no sovereign financial securities and as a result the market for debt instruments is

very thin. Financial products traded on the UAE financial markets are equity instruments, debt instruments, exchange traded funds, securities lending and borrowing funds, and financial derivatives.

The UAE is in a better position when compared with other GCC countries. Its five banks concentration is lowest and its ratio bank capital to total assets is highest in the GCC. It has low positions, like listed companies in the UAE per one million people, which is higher than Saudi Arabia but less than other countries in the GCC region. Also, stock market returns in the UAE are lower than other countries in the GCC.

Chapter 4 – General Methodology and Development of Research Hypotheses

4.1 Introduction

The degree to which an empirical research adds to supporting or rejecting theoretical advances is considered to be highly conditional on both a scientifically sound methodology to test the fundamental hypotheses and the reliability and precision of the data information used in empirical testing. In particular, economic theories are very susceptible to both since an economic model is usually employed for testing and making inferences and implications about an economic theory. So, in order to not lead to statistical underestimation or overestimation, the methodological strategy used to test these models should be theoretically sound.

Section two discusses the general approach followed in this study. It presents the research questions and the approach followed to provide answers to these questions. Section three develops the research hypotheses whereas section four discusses the importance of accurate dataset and describes the dataset used in this study.

4.2 General Research Approach

This section identifies the questions the present research aims to answer, discusses a number of methodological research approaches from a philosophical standpoint, and justifies the approach followed in this research.

4.2.1 Research Question

The gaps in the literature that the current study aims to fill were identified in Section 2.8. In particular, these related to the use of cross-sectional data and pooled time series data to study the determinants for financial deepening, the relationships between savings and growth, as well as the relationship between financial deepening and growth, ignoring therefore issues related to the uniqueness of a country, the sample representative country, and homogeneity of financial markets across countries. This study therefore aims to fill the gap and examine the determinants for financial deepening and the relationships of growth with savings and financial development.

With respect to financial deepening and finance-growth nexus the study aims to answer the following questions:

1. What are the factors affecting financial development, financial deepening and economic growth in UAE (1980-2013)?
2. What is the appropriate financial deepening equation along with its determinants using annual time series data for UAE (1980-2013)?
3. Which type of relationship is between financial deepening and its selected determinants (1980-2013) in terms of long run or short run or both?
4. What is the relationship and causality between financial development and economic growth? Does causality go from financial development to economic growth or from economic growth to financial development over the sample period (1980-2013)?

With respect to the dynamic relationship between savings and growth the study aims to answer the next three questions:

1. What are the determinants of saving in UAE economy (1980-2013)?

2. Which type of relationship is between savings and its selected determinants (1980-2013) in terms of long run or short run or both?
3. Which type of relationship is between saving and growth in UAE economy (1980-2013)?

Finally, with respect to the relationship between stock market development and economic growth the study will aim to answer the following questions:

1. What is the appropriate stock market development equation along with its determinants using time series data for UAE (2002-2013)?
2. Which type of relationship is between economic growth and stock market development in terms of long run or short run or both (2002-2013)?

4.2.2 Research Approach

For centuries philosophers all over the world have been involved with the topic of science understanding. Over time, various philosophical arguments have been placed forward in relation to science methods. The subject of social sciences, which includes subjects such as sociology geography, economics and psychology, is to study the behaviour of human beings and societies. This is in contrast to natural sciences which its main purpose is to study the phenomena of the natural world. Consequently, the area of economics is subject to the same issues and disputes encountered by most social sciences.

4.2.2.1 Traditional View

One of the most important views of scientific method is the traditional view which tries to explain natural phenomena by observation and experimentation. This view is the focal premise to logical positivism (also known as empiricism), which claims that the only real

knowledge is the scientific knowledge. Its origins are based on the description by Francis Bacon of how researchers must pursue research to study natural phenomena. The components of the scientific method include observation and collection of information, experimentation, generalisation, hypotheses formulation and empirical hypotheses testing.

The technique used to obtain general statements by collectin or acquiring observations is called induction. Induction is the rule according to the traditional view that sperates science from non-science. Certain knowledge can be provided by such scientific statements which are obtained through observation and experimentation. Science can then be seen as an ongoing method by which such certainties are added to existing ones. A right experimental design and peer review should be in place to minimise future biases that derive from the preference of the scientist performing the experiment.

If it can be empirical confirmed a generalised statement is both significant and academic and as soon as enough statements are in place a number of hypotheses are then formulated that fit all known facts. Data are then collected in order to verify these statements and only if the hypotheses are verified there is enough support for the generalised stateements. A collection of hypotheses that have been verified can be used to form a theory, which implies that a theory is a collection of generalised observations that have been empirically verified.

Hume (1777) initially questioned the inductive method of science understanding. He argued that even a large number of statements cannot logically imply generalised statements. The famous examples that "all the swans are white" follows from his argument. If something is repeated can be simply because of chance and it should not be generalised. Therefore, the assumption that all future will be like the past is one that cannot be verified. This does not

mean though that scientific laws have no grounds. Hume's problem simply implies that only empiricism is not enough for scientific knowledge.

4.2.2.2 Popper

An alternative approach to the problem of induction was provided by Karl Popper (1959). He recognised that the issue resides in the asymmetry between verification and falsification.

Popper (1959) asserted that a large number of positive experiments is not enough for scientific theory and one single experiment can refute a theory. Falsification does not mean that something is wrong, it simply means that something may be disproved under certain hypotheses. According to Popper a theory is falsifiable if there is at least one such statement that contradicts the theory. Popper also proposed that we design a methodology in a clear cut way and not to protect the theory, and to formulate our theories in a way that they are subject to refutation. Only the theories that have survived multiple attempts to refutation are good theories.

4.2.2.3 Kuhn

On the other hand, Kuhn (1962) asserted that scientific knowledge develops through periodic revolutions called paradigm shifts. A paradigm shift can be defined as what a scientific community share. The development of scientific knowledge goes through three stages. The initial phase lacks of a paradigm and is comprised by incomplete theories. At some point scientists will draw from existing statements and formulate a theoretical framework. The second phase then follows where scientists explore the newly formed paradigm. When anomalous results arise the paradigm is not disregarded but failures are attributed to mistakes of the researchers. At some point, the third phase called “revolutionary science”, accumulated anomalous results causes the paradigm to reach a point of crisis and a new

paradigm emerges through the old one.

Kuhn (1962) argues that alternative paradigms are not compatible, which presents a problem since there is no possible comparison between paradigms/theories in order to identify which one is better.

4.2.2.4 *Lakatos*

Lakatos (1978), developed a model by mixing Kuhn's and Popper's ideas in order to resolve the issue of Kuhn's incompatibility (incommensurable) of paradigms. Lakatos argued that a theory is a collection of similar but slightly different theories and techniques, called programmes, developed over time. These theories share a common ideas called the hard core, and the hard core of a programme is well protected behind auxiliary hypotheses. Lakatos argued that we shouldn't reject a theory in light of anomalous results as Popper claims and that we should retain the programme as in Kuhn's model. However, instead of ignoring these anomalous results as in Kuhn's model we should adjust the auxiliary hypotheses to protect the hard core. Lakatos (1978) however confuses Popper's falsificationism at the level of logic for methodological recommendations.

4.2.2.5 *Approach in Business Research*

The issue in economics and finance research relates to the problem as to which methodological approach is better. Most of social theorists argue that social laws are as rigorous as natural laws and therefore statistical analysis can be used to predict social behaviour in the same way as is used to predict natural phenomena.

Hines (1988) asserted that the standard of rigour in and experimental or empirical design are

sufficient to properly approach sample testing and that Popper's falsificationism should not be perceived by researchers as ideal. She argued that "failure to reject the null does not imply acceptance of the null, or falsification of the theory- it merely implies a failure to obtain confirmationist support for a theory" (Hines, 1988; p. 658). Her criticism of Popper's falsificationism is at the logical level however whereas Popper's proposition is normative in nature and it is a proposition on how to investigate the world.

Popper's critical testing and the methodology of falsificationism is used in the empirical sections of this study. The hypotheses are formulated so they subject to refutation. The findings will hopefully lead to problem situations and further develop the knowledge base of the subject.

4.3 Development of Research Hypotheses

It was reviewed in Chapter two that studies can be classified into four views. One group of researchers argue for a positive relationship between financial Deepening and economic growth. They argued that it is the financial development that drives the economic growth (Robinson, 1952; Gurley, J., and Shaw, 1967; Goldsmith, 1969; Jung, 1986; Ireland, P., 1994; Sahay et.al., 2015). The second group of researchers argue that economic growth stresses to financial development (Jorgenson, 1995; Jorgenson, 2005; Sharma, 2016). However, a third group of researchers argue that a bidirectional relationship exists between economic growth and financial development (Majid, 2007; Patrick, 1966; Demetriades, P., and Hussein, 1996; Luintel, K. B., and Khan, 1999; Al-Yousif, 2002; Calderon and Liu, 2003; Inoue and Hamori, 2016). A fourth strand of the literature supports the Independent Hypothesis. They argue that the relationship between these two is unimportant (Lucas, 1998; Stern, 1989; Meier, G. M., and Seers, 1984; Ram, 1999). There are also studies in this strand

of the literature showing nonlinear relationship between financial development and economic growth (Deidda and Fattouh, 2002; Acemoglu and Zilibotti, 1997; Greenwood and Jovanovic, 1990; Khan, 2001). Their findings show that in low income countries there is no significant relationship between finance and growth while strong positive relationship in richer countries.

Based on the previous literature and data generating processing in UAE, we argue that the relationship in UAE should conform to the first group of authors. Given that the financial market in UAE is at its infant stage, the development and expansion of the financial markets should be perceived positively and welcomed by both private investors and companies. This therefore will have as an effect the rapid expansion initially of the local firms and consequently the expansion of the local economy. The financial development therefore should drive the economic growth and hence we argue for the following research hypothesis:

H₁: The development in financial sector of UAE causes changes in the economic growth patterns in UAE in long run.

There are two growth models based on the relationship between the savings, investment and economic growth. The classical model proposed by Bagehot (1873) followed by a chain of breaks classified as neoclassical model and endogenous growth theory. The contributions are from Schumpeter (1911), Harrod (1939), Domar (1946), Lewis, Arther (1954), Solow (1956) and Modigliani (1970). The contributions in endogenous growth theory are from the foundational work by Arrow (1971), Uzawa (1965), Barro, R. J.Sala-i-Martin (2004) and Sidrauski (1967).

Bagehot (1873) argued that interest rates and lending policy of banking sector can avert economic panics. Schumpeter (1911) suggested that financial intermediaries have an important role to promote investment and economic growth. Harrod (1939) and Domar (1946) models implied that efficient investment policies backed by higher savings and adoption of advanced technology boost the economic growth. The basic assumption is the presence of surplus of labor in economy. Lewis and Arther (1954) reduces the two factors (Capital and Labor) model to only one factor (Capital) model as the key determinant of the growth in the developing country setting. Solow (1956) proposed that long run higher level of per capita income ensures higher saving rates giving a chance to economy to grow at higher steady state income. The basic assumption is decreasing returns to scale of one factor of production. Furthermore, Lucas (1988), Romer (1986) and Sergio (1991) modified the model by omitting the technological change and concluded that the growth is due to indefinite investment in the human capital to have spillover effects on economy and reduces the diminishing returns to the capital accumulation. Comparing the neoclassical models with that of the endogenous growth models it makes it obvious that the growth rate in an economy in the long run is determined by external factors such as savings (Harrod-Domar model) or the technical progress as advocated in Solow model. Krugman (1993) said that a paradox exists in endogenous growth models in relation to international capital flows.

Therefore, based on the existing literature review there are three schools of thoughts. The first group statistically justifies causal relationship from saving to economic growth. The second group argued that casual association is from economic growth to savings and third group empirically tested bidirectional link between these two. That is, the belief that rises in national savings leads to higher levels of economic growth through increased capital formation and investment. This view is backed by the Harrod (1939) Domar (1946) and

Solow (1956) models of growth. The empirical works that provides evidence in support of saving-growth positive association include Maite Alguaci (2004), Fry (1998), Giovannini (1983, 1985), Lahiri (1988), Nwanne (2016) and Su and Yao (2017). Maite Alguaci (2004) investigated the causal link between higher savings rates with the higher levels of economic growth. Agrawal (2000) argued that the key implication of the causality moving from higher savings to higher growth levels for developing economies would be to formulate policies and initiatives to raise savings rates. This will boost investments and foster the capital formation ultimately leading towards higher levels of growth rates. Further, the work of Singh (2010) supports the hypothesis that savings growth promotes economic growth. He found significant long run effects of saving on incomes. There are other studies which advocate the link from economic growth to savings and it is supported by the empirical findings of Sinha and Sinha (1998), Agrawal (2000), Anoruo, E. and Ahmad (2001) Narayan, P.K. and Narayan (2006), Sabra and Eltalla (2016) among others.

Moreover Aghion et al. (2006) have attempted to develop a theory of endogenous local saving with foreign investors. He argued that the domestic saving may not play a pivotal role with international capital markets. This allows domestic economies of developing countries to grow with foreign savings. Further, this study predicts that the savings affect growth positively in countries with large distance to the frontier technology and does not affect when the countries are too close to the frontier technology.

Existing literature has also raised conflicts regarding impact of savings on economic growth where it is assumed that the savings may be automatically translated into investments and capital formation. Examples of those studies, among others, include Harrod (1939), Domar (1946), Romer (1986) and Lucas (1988). However, the consumption theorists Modigliani

(1970, 1983) and Deaton and Paxson (1994, 2000) have developed a contrasting point of view and argued that income and growth leads towards variations in consumption, hence savings. Rising interest rates generate positive substitution with shifting of current consumption to future leading to higher current savings and negative income effects on higher returns on savings. Fry (1996) also found positive impact of interest rate on savings (larger substitution effect than income effect) and Giovannini (1983) has argued that there is statistically insignificant relationship between interest and savings. On the other hand, Klaus Schmidt-Hebbel (2006) found inconclusive relationship between interest rate and savings. Modigliani (1970, 1986), Deaton and Paxson (1994, 2000) and Carroll and Weil (1994) have concluded with the argument that income and its growth in an economy have a first lead in determining consumption and hence savings and not vice versa.

Although the existing literature is rich with empirical evidence from emerging and developed countries there is not much evidence on the relationship between savings, investment and growth for frontier and developing countries and in particular UAE. Given the evidence in the literature, there is no clear justification as to which direction the relationship should have (whether savings affects growth or growth affects savings) in the UAE. Although an argument could be made that savings in UAE should have a positive effect on growth in the long run this is not so clear cut. Given the small size of the market, increased savings should provide sufficient funds to private companies for development, which ultimately will lead to economic growth. On the other hand, UAE is a rich resourced country, heavily relying on oil exports, with an already increased economic growth. An increase in savings therefore, may be argued, is the outcome of the increased wealth the country and people experience because of the growth in the economy which relies on oil resources. Hence, the study will aim to explore the relationship between savings and growth in UAE by testing the following two

hypotheses:

H_{2a}: The UAE saving causes Economic growth patterns in UAE in long run.

H_{2b}: The UAE economic growth causes saving patterns in UAE in long run.

Gurley and Shaw (1955) argued that the history of stock market in developing countries is a recent phenomenon and an important part of financial development. It needs a long time to be more deepened and mature in order to play an important role for economic growth. One school of thought argued that banking sector development has more importance than the stock market for economic growth in the long run (Stiglitz and Weiss, 1981; Arestis and Demetriades, 2002). Boyd and Prescott (1986) and Stiglitz (1985) have also shared views that the matter of efficient allocation of scarce resources can better be watched out by the banking sector than the equity market.

The other school of thoughts argued that stock markets are facilitating the risk-averse investors and savers to carry on their safer investment options at lower costs by diversifying their portfolio. That is done because of the provision of more liquid means of sharing risk ensures that the capital flows towards more promising investment projects (Dailami and Atkin, 1990; Demirguc-Kunt and Levine, 1996; Levine and Zervos 1998; Levine and Zervos 1993; Levine and Zervos 1999). Levine (1991) conducted the study on the impact of stock market reforms on the growth rates of the economy are also discussed in the context of the recent move on reforming the stock markets. Henry (2000) studying the impact of stock markets on growth and the impact of stock market development after liberalisation reforms has been framed. The key idea behind the theoretical framework has been the investigation of the impact of liberalisation in stock markets on aggregate valuation and physical investment.

In endogenous growth theory, growth is considered as the self-sustaining process and influenced by the initial economic and other conditions of the countries. Such revisit of the thinking pattern has lead authors to hypothesising the relationship between financial intermediaries and the growth prospects of the country. Levine (1991) and Bencivenga et al. (1995) argued that more liquid stock markets lead higher levels of growth in the economy. Others (Harris, 1997; Seetanah et al., 2008; Levine and Zervos, 1998; and Adjasi and Biekpe, 2006; Komal, and Abbas, 2015; Rafindadi and Ozturk, 2016) argued that the link between stock market development and economic growth is the inducement of savings mobilisation.

Several studies have been the prominent to draw attention of researchers to evaluate the stock development and economic growth in emerging and, as well as, in developing countries (Bekaert and Harvey, 1995; Neaime, 2012; Azeem and Mohammad, 2015). Mayer (1988) has argued that the size of the stock markets has no significant impact on the growth of the economy. Levine and Zervos (1998) found a positive relationship of equity markets and economic growth and argued that this relationship is relatively strong in case of developing countries. Demirguc-Kunt and Levine (1996) further argued that the relatively larger equity markets have less volatility.

The financial market in UAE and other Arab countries are still at their infant stages and they are all classified as frontier markets. Using a similar argument as in the case of financial deepening it can be argued that the expansion of the financial markets in frontier markets should be perceived positively and welcomed by both private investors and companies. A small equity market should have a minimal effect on economic growth, however, as the market expands its effect should be evident on economic growth. We argue therefore that the size of the financial market should be one of the determinants and drive the economic growth.

This is of particular importance for frontier and emerging markets. Based on the previous literature and given the scant literature on frontier markets our last research hypothesis is as follow:

H₃: The size of equity markets is positively associated with economic growth in Arab countries.

4.4 Dataset

As discussed previously, the second most important aspect to be addressed in a research study is the reliability of the dataset to be used to empirically test the research hypotheses. Erroneous and incorrect implications may be drawn about the underlying economic relationships in question if inaccurate or unreliable data are used.

4.4.1 The Significance of Accurate Data

A number of biases have been identified over the years with respect to datasets used in empirical studies in economics and finance. Two of the most important biases are the survivorship bias (or ex-post selection bias) and the look-ahead bias.

The survivorship bias arises when empirical studies use data for companies that are available at the time of the research. These studies therefore exclude companies that are not alive at the time of the research but were alive sometime during the period the research examines. For instance, when companies that were merged or acquired are excluded from the research.

Look-ahead bias refers to the issue when a research uses information relevant to a particular time period that was available at the time of the research but it was not available during the period it refers to. In other words, this bias assumes that a particular information was publicly available at some point in time where in reality it was not available until some later point in

time (Banz and Breen, 1986).

These two biases therefore have implications for research in economics and finance since the biases might affect the results produced and the subsequent inferences made. Both the survivorship and look-ahead biases have been extensively investigated in the US and therefore the datasets developed ensure they are free from these biases. These issues however have not been extensively explored outside the US and as such databases outside the US cannot be guaranteed that are free of biases.

4.4.2 Dataset Used in the Study

Data availability is a big issue in UAE and in Arab countries in general since there are no financial databases that specialise in these markets. A big part of this research was to develop the data required for this research. A substantial time of the research was devoted to compile the information and produce the database used in this study.

The online sources where the data were retrieved from include IMF, World Development Indicators (World Bank Website), International Financial Statistics (IFS), the World Bank's World Development Indicators Database, the Dubai Financial Market, the Dubai International Financial Exchange, the Central Bank of the UAE Annual Reports, Datastream and archived hard copies of Financial Times.

4.5 Conclusion

The accuracy of inferences and implications about economic theories, models and statistical relationships lie largely with, firstly, the extent with which the methodology followed to test the related hypotheses is scientifically correct and, secondly, with the degree with which the

dataset used in testing these hypotheses is free of any potential biases. The literature suggests that any potential biases either in the methodology employed or the dataset used has profound implications for false inferences on theoretical hypotheses and can produce spurious results for statistical economic relationships.

A new dataset compiled from scratch was used in the study to test the research questions identified in this section. This dataset has been compiled carefully in order to minimise any potential look-ahead and survivorship bias.

Chapter 5 – The Determinants of Financial Development

5.1 Introduction

As was discussed in detail in Chapter 1 Section 1.5, the UAE economy has been under restructuring that is moving away from an oil dependency economy to one base on nonoil sectors. Figures 1.14 and 1.15 demonstrate that the share of nonoil sector was 36.75% during 1980 and in 2013 rose to 61.45% of the UAE GDP (National Bureau of Statistics, 2013). The highest share of nonoil sector of the UAE GDP was 78.91% in 1998. The main nonoil sectors are construction, real estate, wholesale and retail trade, and financial. These sectors contributed more or less to the UAE economy over the period from 1980 to 2013. Section 1.6 entailed that major studies have utilised cross-sectional data to study the comparative growth phenomena across many countries. These studies however did not include the specific attributes of the economies studied. Hence, the motivation to study the specific attributes of UAE economy like financial deepening, saving, real interest rate, investment and stock market, and its determinants over the period from 1980 to 2013.

This study also takes into consideration the UAE policies and practices developed to promote the banking and nonbanking sectors and stock exchange market. Section 1.4 highlights that this study differs from other studies in terms of time series data of UAE over the period from 1980 to 2013. After a comprehensive review of the literature this study appears to be the first to investigate the UAE financial development, economic growth, and financial performance over the sample period using time series data and econometric techniques.

As discussed in detail in Chapter 3 Section 3.3.1 since 1980 due to enforcement of a 1980

federal law creating the Central Bank of the UAE there have been major developments in the UAE financial sector's economic activities. The Central Bank of the UAE took various steps to grow the banking sectors like easing the ban on opening new branches for domestic banks, amended the law for foreign banks and their branches, minimum capital requirements, and reporting and auditing requirements among other activities. In 1998 the Central Bank in the UAE made it compulsory for all banks to adopt IAS. During 1999 all banks adopted the corporate structures and during 2006-2007 banks were instructed to adopt BASEL II. Other developments were Emirates Securities and Commodities Authority and Market Law (2000), Law for Commercial Companies (1984), law for Organisation of Auditing Profession (1995), Law for Commercial Code (1993), and Law for Civil Code (1985). In 2004 the creation of the Dubai International Financial Corporation (DIFC) was the biggest advancement in the banking sector. Using an offshore model the DIFC is regulated by the Dubai Financial Services Authority (discussed in detail in Section 3.3.3 relating to financial market development). During 1999 Stock Exchange Law was incorporated and formation of SCA in 2000 was a strong and bold step, which established the Dubai Financial Market (DFM) and the Abu Dhabi Securities Market (ADSM). By summarising, it is concluded that the time period from 1980 to 2013 is significantly important to the study of the UAE economy as it relates to financial development and the stock market.

In Chapters 2 and 3 it was logically discussed how the UAE's financial sector, stock market, and economy has achieved reasonable performance over the years. The UAE, has been enjoying a high performance over the last decade as compare to other regional countries. Therefore, the UAE attracts serious attention to investigate the financial development as well as deepening, investment and saving patterns, and factors affecting financial development.

In the literature, one of the roles of the financial sector is to help smooth the process of pooling surplus capital. The small amounts of savings from a large number of savers in the economy is passed on to those who are in the best position to make the efficient and most productive use of scarce resources. In so doing the financial sector, particularly banks, facilitate the process of growth and development. For developing, emerging and transition economies the issue of financial development and growth features centrally in the policy agenda of decision makers. Without growth and development it is unlikely a country's economy will be able to generate the desired national income to bring about economic progress, and with it, prosperity, and investment in education, healthcare, and infrastructure investment. In any economic setting financial growth may be gauged in terms of the readily available access that citizens have to finance and the mechanisms by which reduction in transaction and information costs can be accomplished without imposing heavy cost on the financial sector. Merton (1992; 1995) highlights five broad functions of the financial sector that contributes to the flow of information, enforcement and transaction costs, and thereby result in increased investments and capital allocation. These are the ability to monitor investments and the exertion of corporate governance following the loan advance, trading, diversification and management of risk, the pooling and mobilisation of savings, and the exchange of goods and services. The efficiency of a country's financial system measures how well these financial functions are performed. According to Arrow-Debreu (1954), when there are no information or transaction costs there is no need for a financial sector, but in the real world there are frictions and imperfections that may hinder growth patterns resulting in a reduction in the exchange of goods and services and/or in higher costs of production. Such costs may prevent the economy from producing all that it desires or achieving any of the desired transactions. It is these imperfections that make it a necessity for the banking and financial sectors to intermediate the exchange (Khan and Senhadji, 2000).

Against this background, it is also worth noting that the economic complexity and dimensions of a country, such as the legal framework, market structure, and institutional setting, can sometimes make evaluation of a financial system of a country difficult. With respect to this issue the conceptual framework, as developed by The World Bank's Global Financial Development Database (GFDD), may be used to measuring the performance of the financial sector. GFDD has developed a framework based on four proxy variables namely financial depth, access, efficiency, and stability. Financial depth is evaluated in terms of ratios of each component like private sector credit, financial institutions' assets, M2, deposits and gross value added of the financial sector, vis-à-vis GDP. In the finance and growth literature, various studies have used ratio of M2 to GDP as the indicator of financial depth (King & Levine, 1993; Levine, 1997; Jung, 1986; Demetriades, & Hussein, 1996; Gillman et al., 2004; Kemal & Hanif, 2004; Odhiambo, 2008; Al-Malkawi et al., 2012). King and Levine (1993) investigated how the financial system effects the long-run economic growth, by using cross-sectional data. They found, that the financial system fosters economic activities and per capita output. They also found, that government policies, also effected a country's long-run economic growth.

Levine (1997) discussed the positive linkage of the functioning of a country's financial system with long-run economic growth. According to him risks should be diversified to increase liquidity. Industrialised countries with the same standard of living and growth levels showed that the financial structure is unrelated with the growth of a country's economic development. Financial systems are evaluated by the nonfinancial development sectors and relating policies. Technological improvements reduces the transaction costs with monetary and fiscal policies affecting the taxation of financial intermediaries.

Jung (1986) conducted a cross-sectional study of 56 countries in order to examine the causality between the financial and real development. He used currency ratio and the monetisation (M2/GDP) variables as proxies for financial depth. He found that in less developing countries financial development causes economic growth with a reverse causality existing in developing countries.

Demetriades and Hussein (1996) conducted an empirical study to test causality between financial development and economic development by using time series analysis approach for 16 countries. They found strong evidence on bidirectional causality, some evidence on economic development driving financial development causality and little support on financial development driving economic development. They argued that cross-section studies on economies are dangerous when considering them as homogeneous entities. They used bank deposits liabilities to nominal GDP, banks claims on private sector to nominal GDP, and M2 to nominal GDP as proxies for financial depth.

Gillman and Harris (2004) conducted an empirical study on 13 transition countries to investigate the effect of financial development on economic growth. They found that the positive effect of financial development on economic growth did not linger when inflation and investment rate are included in the analysis. They also found a negative effect between financial development and economic growth.

Kemal et al. (2004) conducted an empirical study on a heterogeneous panel of high income countries. They examined the relationship between financial development and economic development while inducing the inflation rate effect on financial development. They found that direct finance has a positive effect on economic growth and that indirect finance has no

significant or positive effect.

Odhiambo (2008) conducted an empirical study on Kenya, in order to examine the dynamic causal relationship between financial depth and economic growth by taking savings as the intermitting variable. He found that economic growth cause savinds and savings drive the financial development in Kenya. He used M2 /GDP as a proxy for financial depth.

Al-Malkawi et al. (2012) empirically examined the relationship between the UAE financial development and economic development. They found that a negative relationship and bidirectional causality existed between these two variables.

Access to banks is measured by branches per 100,000 adults. Efficiency and stability are measured through the lending-deposits spread or ratio of non-interest income to total income and capital adequacy or asset quality ratios. The detailed table on the components and elements in each of the component is given in Chapter 3, Section 3.1. There can be large differences between countries regarding performance of these functions. In the finance and growth literature, the association of financial sector growth with that of the real economic sector has attracted wide attention. However, the consensus on whether financial growth leads economic growth, or vice versa, or both, cause each other, or the two sectors have been growing independent of each other has been scant.

With respect to the literature on the association between financial development and economic growth, the literature covers various approaches based on the causal direction between the two variables. These approaches are the supply-leading or “finance-led growth” approach to association of growth and finance. Under this approach it is generally believed that a well-

functioning and well-behaved financial sector paves the way for higher levels of economic growth and development. This approach presumes that economic growth is possible only through well-developed financial intermediaries to channel surplus capital in priority investment sectors to harness growth patterns in the economy. The second approach is demand following or “growth-led finance”. According to this approach, economic growth causes developments in a country’s financial sector. The opinion under this approach is extended in the sense that development and growth in the real economy can only lead towards spillovers in the financial sector. As the number of transactions in the real economic sectors are rising the demand for financial instruments and tools is rising too. The efficiency of the financial sector is measured in terms of the response to the rising demand, for these financial instruments.

The third approach, considers the two-way association between financial sector growth and economic sector growth. This is known as the feedback or bidirectional approach, to the association between financial and economic growth. Under this approach it is generally considered that the growth in the two sectors is a reinforcing phenomenon. This perspective of the growth-finance association develops the idea that a well-functioning financial sector prompts growth in the real economy through efficient allocation of resources. This stimulates human, as well as, physical capital accumulation and advancement in the level of technology and innovation. Consequently, the growth in technology and innovation leads to higher levels of demand for effective, efficient and vibrant financial sector tools and instruments.

Apart from the above three approaches, there exists another independent approach advocating the notion that there is no association between the growth of the economic and financial sectors. This is known as the independent hypothesis. According to this approach, the link

between growth of the financial sector growth and economic growth has been over stressed in the literature. In reality, no causal link has been found between a country's financial sector growth and economic growth. These two sectors appear to be independent of each other. Theoretical foundations to the idea that financial growth is a prerequisite to the economic growth have been traced in some scientific works (McKinnon, 1973; Shaw, 1973).

Traditionally, real interest rate has been studied as the major factor affecting the lending and borrowing behavior in the system (McKinnon, 1973; Shaw, 1973). It is further postulated that any intervention from the government in pricing (interest rate) and the allocation of loanable funds may cause 'financial repression' and will lead to inhibition of the capital accumulation by depressing real interest rates (for empirical evidence see Kapur, 1976; Mathieson, 1980; and Fry, 1996). Another study by the World Bank (1989) concluded that lower real interest rates may hamper economic growth by affecting the investment productivity and level. However, with growth in the literature on the issue the authors have argued that it is not just the pricing (interest rate) but the basic purpose of the financial system is to remove the information asymmetries and play the role of watch dog over investment projects.

As Jorgenson (1995, 2005) has argued, it is not only the physical capital that matters for growth and economic expansion. Evaluation of market conditions and managers done by the financial sector is of great importance for prompting growth too. Hence, in absence of consensus on finance-growth nexus it can be concluded that the association between financial growth and real economic growth is not a general phenomenon but a country specific subject matter. Thus, the present chapter has been initiated to investigate the nature of association between growth in financial sector and that of the real economic sector. This would be an attempt to build-up the body of knowledge on the subject matter. The literature has identified

two key indicators of the depth in the financial sector, money supply ratio to GDP (M2Y) and domestic credit to private sector (DC). The chapter empirically investigates the extent to which the UAE financial sector can be considered to have contributed to the development and growth of the UAE economy over the period from 1980 to 2013. Empirically, and to measure the degree of financial deepening of the UAE economy, it estimates the financial deepening equation with DC as the dependent variable in Auto Regressive Distributed Lag model (ARDL) and with per capita income (PCI), money supply (M2Y) and number of bank branches as independent variables. Then the economic growth equation is estimated with GDP as the dependent variable and gross investment ratio (GRINV_GDP), Domestic Credit to private sector ratio (DOMCR_GDP), trade (TR) and world oil price (P-oil) as the independent variables. Though the UAE has been following an economic diversification plan to reduce oil dependence, nevertheless, oil export has been the key source of national revenue and the rapid growth in the economy. The rapid growth in the UAE may be undetermined in absence of oil. Even the finance-growth nexus through growth model is established only when oil price is included.

The Error Correction Model for financial deepening and growth models was developed and estimated to avoid the spurious regression results from ordinary least squares method (OLS). Analysis on the long-run and short-run estimates of financial deepening and growth using UAE time series data are completed.

The rest of this chapter is organised in the following way. Section 2 is devoted to the discussion on the theoretical and empirical evidence on the issue. It also presents the existing controversy over the finance-growth link. Section 3 presents a detailed account of the methodologies used by various research scholars in establishing empirical estimations. This

section also includes discussion on the choice of the suitable research technique applied in the present study. Selection of variables and data collection is been discussed in this section. Section 4 presents econometrics estimations, results and their interpretations. Section 5 presents conclusion of the whole chapter with policy recommendations.

5.2 Empirical and Theoretical Evidence

The reviewed empirical and theoretical literature on the association between financial and economic growth presents a diversified opinion on the issue. This section organises the scholarly arguments on the issue by various authors in following way. First, studies are presented that have provide the theoretical foundation of the causal link between financial and economic growth. Secondly, the discussion on the studies that provide empirical evidence on the issue is included to comprehend the evidence in the context of recent statistical analysis. Further, the empirical studies are classified into two categories. The first category encompasses the arguments based on the cross-sectional work. The second category presents the established statistical estimates using time series datasets. Further, the argument in this chapter would evolve along the line as to what are the weaknesses in the cross-sectional or timer series studies. Moreover, the discussion on the existing literature is also aligned with the four approaches of finance-growth nexus as given in the introduction of this chapter. The discussion on the scientific work done in the context of the UAE, would be dealt in a separate section.

The theoretical foundations of the causal link between financial growth and the economic growth are traced back as far as McKinnon (1973) and Shaw (1973) who postulated that the real interest rate is the key factor in financial sector affecting savings and investment and ultimately economic growth. They postulated that any government intervention to influence

the real rate of interest to direct capital to priority sectors would lead to the repression effect by depressing the real interest rate. Several studies have argued that well-developed financial markets are a prerequisite for economic growth and development (Bagehot, 1873; Schumpeter, 1911; Gurley and Shaw, 1955; Goldsmith, 1969; McKinnon, 1973). The noble laureate Miller (1998) provided an extreme argument that “the idea that financial markets contribute to economic growth is a proposition too obvious for serious discussion.” Further, drawing the conclusions from their scientific work Beck et al. (2000) have indicated that there is evidence that finance has a very strong influence over growth through promoting higher productivity levels in the production process and efficiently allocating the precious resources. The impact of financial growth goes beyond mere pure capital accumulation.

Empirical studies by Jorgenson (1995; 2005) have contributed in this context. These studies conclude that much of the existing literature does not support the notion that only physical capital accumulation leads to the long-run economic growth. Evaluating firms managers, and market conditions for individual investor may prove to be impossible because of the huge costs involved. Therefore, it is theoretically possible that the presence of the banking sector facilitates acquisition of critical information about firms and investment opportunities, consequently altering the allocation and flow of credit in the economy (Bagehot, 1873). Further, the degree of confidence amongst investors regarding their expected rates of return would improve with available information. This would in turn reflect the confidence of potential savers opting for different financial instruments

The above studies have also been discussed in context of the saving growth link in the chapter on saving and growth linkage. In contrast to the studies mentioned above supporting the repressions hypothesis are studies that advocate that the elasticity in interest and saving

functions do not show a supportive trend or at best show a neutral trend (Fry, 1980; Giovannini, 1983; Gupta, 1987; Khatkate, 1988). Fry (1980) conducted a quantitative study of cost of financial repression in developing countries finding that saving and growth rates are positively affected by real deposits rates in sample countries. He defined the financial repression as the ways for setting interest rates below the market equilibrium level. He determined repression cost is 0.5% in economic growth for each percentage point of real deposit rate below market equilibrium rate.

Giovannini (1983) conducted an empirical study on interest rate elasticity and saving in developing countries. He determined that results could not be reproduced in the 1970s as in produced in the 1960s by using the data of same countries using the same techniques. He concluded that existing models yield invalid and unreliable results making it difficult to interpret the estimated parameters.

Gupta (1987) investigated the effects of financial intermediation and real interest rates on savings for selected Asian and Latin American countries. He concluded that financial repressionists and structuralists hypotheses have some support in Asia regions but no support in Latin American regions. He did find that nominal interest rates have a positive relationship in these two regions.

Khatkate (1988) conducted an empirical study on 64 LDCs to assess the impact of interest rate on real growth of LDCs. He found, that the level of interest rate has no or little impact on macroeconomic variables like real growth of GDP, saving to income ratio, real financial assets, and investment to income ratios. Previous empirical research following the financial repressions hypothesis focused mainly on the effects of a financial system on savings when

the real deposit rate of interest calculated as the nominal rate of interest adjusted with the current/existing or expected inflation rate as a proxy for financial repression (Fry, 1998).

Apart from studies projecting results against the repressions hypothesis there are studies in the reviewed literature whose authors have presented support for the reverse association between finance and growth. That is to say, they have accepted the notion of presence of finance growth nexus but pleaded that the evidence is in favor of the direction of causality from economic growth to the financial growth. With this opinion, the second hypothesis 'growth-led finance', as elaborated in the introduction, is viewed in contrast to the first hypothesis of 'finance-led growth'. According to the second hypothesis it is not the development in the financial sector that contributes in the growth of the real economy, rather growth in the real economy spurs the demand for more comprehensive financial instruments. Therefore, the second hypothesis assumes financial growth follows economic growth. As Robinson (1952) put it, "where enterprise leads finance follows" (p. 86). Several other studies have supported this hypothesis (Gurley and Shaw, 1967; Goldsmith, 1969; Jung, 1986; and Ireland, 1994).

The third view on the finance-growth association maintains there is a bi-directional causality between growth in the financial sector and real economic growth. Authors supporting this perspective argue that an efficient and effective financial system facilitates efficient allocation of financial resources resulting in technological enhancement by channeling savings of small amounts to large investments. In the due course of time, this activity leads to introduction of innovation in production of goods and services. Given this development on the growth in real economy so do demands for innovative, effective financial tools and instruments. The authors whose research has supported the third hypothesis have claimed that

within the due course of growth in the real economy, given the growth in the demand for new financial instruments, a vibrant financial system responds to this demand and overall changes further propel the economic growth (Majid, 2007; Patrick, 1966; Demetriades and Hussein, 1996; Luintel and Khan, 1999; Al-Yousif, 2002; and Calderon and Liu, 2003).

Patrick (1966) has proposed the stages of development hypothesis. According to his approach, the financial sector growth at early stages of development in countries leads to the real capital accumulation. This accumulated capital opens new vistas of innovation and development opportunities for new investors and potential savers leading towards self-sustained economic growth. However, with the passage of time and the levels of development in financial sector its supply leading characteristics weakens. Later, the growth process is dominated by the demand following financial development.

The fourth view regarding the finance-growth association is strictly in disagreement with the above three hypotheses and the argument has been provided in the existing literature that the relationship between the two sectors is unimportant. This view is known as the “independent hypothesis”. The Noble laureate Robert Lucas (1988) was the originator of the independent hypothesis. He concluded that the two variables are not causally related. Further, according to results from his work, “economists badly overstress the role of financial factors in economic growth” (p. 6).

Ten pioneers in economic development delivered their lectures under the organisation of World Bank, which were then compiled (Meier and Seers, 1984). The main findings of these lectures are: according to Jan Tinbergen development is a learning process; Rosenstein argued that a big push is needed to have better economy; Clark emphasised on the empirical

study and put theory knowledge on secondary position; Hirschman worked for the efficiency of price system and unbalanced growth theory; Myrdal believed that development is achieved from the institutional changes rather than policies and argued on the economic equality; Lord Bauer argued that foreign aid is indispensable for the development of poor countries; Colin Clark discussed the income and price elasticity and industrial jobs may increase the real incomes; and Lewis was concerned about the economically use of capital. Others' conclusions drew from this series of lectures are: development is achieved by exporting primary products and development is accelerated through bringing changes in public sectors and institutions. They recommended that underdeveloped economies must build an economic unit to plan and execute development programs. A study by Ram (1999) concluded that "...the predominant correlation between financial development and economic growth is negligible or weakly negative" (Ram, 1999; p.172).

From the above discussion on the theoretical and empirical evidence it may be concluded that the model of growth based on "one size fits all", as it is the case in finance-growth nexus, does not hold in its entire generalisability. Though there may be some enthusiasm regarding the nexus (various studies by Levine as cited above) there are also equally strong contrasting arguments (see studies by Lucas and other authors). Another issue related with studies on the finance-growth nexus is the evidence of nonlinearity. At different levels of national incomes the nature of the relationship between finance and growth does not remain same. There is empirical evidence from the existing literature review that ushers in the declining effect of finance and growth as the countries grow richer. Deidda and Fattouh (2002) have established nonlinear and possibly non-monotonic relationship between finance and growth using the threshold regression model. Their study concludes that there is no significant relationship between finance and growth in low-income countries. On the other hand, it is significantly

strong and positive in richer countries.

Some studies have identified a nonlinear relationship between finance and growth (Acemoglu and Zilibotti, 1997; Greenwood and Jovanovic, 1990; and Khan, 2001). The literature provides some nonexclusive explanations for such nonlinearities in the relationship. One possible explanation that stands out is the extended scope of financial activities that have gone beyond the traditional activity of intermediation to “non-intermediation”. The literature might not have been able to capture the quality improvements in the system (Demirguc-Kunt and Huizinga, 2010). This may be because the intermediation services measure tools have been less congruent in the context of measurement of the performance of the financial sector.

The second explanation for the issue of nonlinearity may have been more evident in countries close or at the frontier with technology holding countries. This occurs because financial development helps economic growth catch up to the productivity frontier (Aghion et al., 2005). Another reason, as argued by Beck (2012), may have been credit beneficiary. As theory suggests and proven by Beck (2012), the growth effect is possible through enterprise credit rather than the household credit. This is the reason that the growth-finance nexus has been insignificant in rich countries as most of the financial deepening in developed world has been possible through additional household lending. Another factor creating nonlinearity in finance and growth nexus has been documented as the relative size of the financial sector in comparison to the size of the real economy and employs a large number of talented people at the cost of the real economic sector (Bolton et al., 2011).

Another issue which appears in the use of different types of data sets is the time series and cross-sectional data. Most of the studies on financial sector development and growth nexus

have been using cross-sectional or pooled time series data. One drawback of using cross-sectional data for investigation on the finance-growth association is the inherent unrealistic assumption of homogeneity across countries in their financial sectors. Financial sectors across countries differ in their depth and maturity so the assumption of homogeneity invalidates the results of some studies. Secondly, the causality between growth and finance has a different nature across countries. Cross-sectional data analysis does not allow these differences to be examined. Therefore, the causality analysis in cross-sectional will not be able to cover unique causal links for each country. Rather it will be valid only for the average representative country. However, to identify which country is representative and which is not makes this notion invalid (Agrawal, 2001). Further, the cross-sectional analysis does not control for endogeneity factors for all the repressors (Beck et al., 2000).

5.3 Methodology

5.3.1 Model Specification

The key motivation behind the present analytical work is two-fold. First, is to estimate the equation on financial deepening. Second, is to measure the effects of financial development on economic growth in the UAE. The specifications of the present model have been borrowed from Demetriades et al. (1996) with some modifications. In the case of the UAE, a sufficient amount of research studies on financial development and economic growth is not available. Further, the time series data on historical trends in banking controls and non-interest determinants of credit market is not readily available. One study (Grais and Kantur, 2003) investigated the restrictiveness of the regulatory framework in MENA (Middle East and North Africa) countries and reported that the restrictiveness of the regulatory framework in MENA region. Using old data from 2003, the study has claimed that the restrictive regulations have been eased in majority of the MENA region countries (cited in Berthelemy,

2004; p.16). According to the Heritage Foundation (2003), the UAE along with many other MENA region countries were having moderate restrictive banking regulations, which were very high or at least high during 1990s (quoted in Berthelemy, 2004; p.17). Therefore, analytical work involving banking controls and determination of the structure of the market is not possible in absence of the data on relevant variables¹⁷.

The meaning of monetise term depends upon the given context. It refers to money supply and it is classified into M0, M1, M2, M3, and M4. The measure of this money supply depends upon the context of the given economy. M0 and M1 are also known as narrow money whereas M2, M3, and M4 are known as broad money. Broad money is also known as liquid liabilities. In this study, the monetisation ratio is M2 to GDP ratio. According to IMF and World Bank, M2 is the sum of M1 (sum of transferable deposit and electronic currency) and sum of short term time deposits and savings deposits, transferable foreign currency deposits, deposits certificates and repurchase agreements. The World Bank developed framework (Figure 3.1) demonstrates four proxies to measure the financial development or depth. Two of the proxies are widely used. These are private sector credit to GDP and M2 to GDP. The data on these variables are easily available from IMF and World Bank databases. In this study, these two proxies are also used to investigate the financial depth or development of the UAE.

Predominantly monetisation ratio of the ratio of broad money (M2) to the real GDP has been used as the indicator of financial deepening in the literature (King and Levine, 1993; Levine, 1997; Jung, 1986; Demetriades and Hussein, 1996; Gillman et al., 2004; Kemal and Hanif,

¹⁷ Relevant data would include data on liquidity reserve ratio, concentration in banking sector ratio and data on directed credit to priority sector through concessionary lending rates.

2004; Odhiambo, 2008; Al-Malkawi et al., 2012). However, some studies have also been incorporating financial intermediation ratio, i.e. domestic credit to the private sector as percentage of real GDP as an indicator of financial deepening (King and Levine, 1993; Levine, 1997; Kemal and Hanif, 2004). Domestic credit provided to the private sector is deemed as the better proxy for the financial deepening as (1) it gives a clear and precise idea about the credit provision in the economy and (2) by excluding credit availability from banks to government in the overall credit provision in the economy it highlights the role of private sector in overall growth of the economy. Hence, “linked better and in direct way to the investment and growth in the economy” (Calderon and Liu, 2003). Given its strengths, credit provision as percentage of GDP may still be seen as the partial indicator of the financial deepening process as it does not take account of other financial institutions like stock and bonds markets. However, given negligible experience of developing countries in non-bank financial markets this shortcoming seems more relevant for industrialised countries than the developing countries (Khan and Senhadj, 2000).

In the present study, financial deepening has been estimated using natural log of credit provision to private sector (*LDC*) as dependent variable and natural log of real per capita income (*LR_PCI*) as the proxy for the real income. *LM2Y* is given as the indicator of monetisation ratio calculated as the domestic liquidity in percentage of real GDP and natural log of number of banks branches as a measure of financial access. The model is given as under:

$$LDC_t = \alpha_0 + \alpha_1 LR_PCI_t + \alpha_2 LM2Y_t + \alpha_3 LBank_Br_t \quad (\text{Equation 5.1})$$

LDC is the natural log of Domestic Credit provision to private sector as an indicator of financial deepening. *LR_PCI*, *LM2Y* and *LBANK_Br* are the natural log forms of Real Per

Capita Income, Monetisation ratio, and number of bank branches in the country. The following reverse model has been developed to check the consistency of the model in Equation 5.1:

$$LM2Y_t = \alpha_0 + \alpha_1 LDC_t + \alpha_2 LR_PCI_t + \alpha_3 LBank_Br_t \quad (\text{Equation 5.2})$$

In the reverse model in the above equation, the natural log of monetisation ratio (LM2Y) has been taken as the dependent variable instead of domestic credit provision to private sector (LDC). The reverse model in Equation 5.2 did not pass the F-statistics and DW-statistics (as the values are lower than the upper and lower bounds at 90% and 95% confidence interval) and is rejected as not true and valid. This evidently proves that the model of financial deepening given in Equation 5.1 is consistent. See annexure 5.1 for detailed results of ARDL Estimates for reverse model using M2Y as dependent variables. Moreover, growth equation has been estimated in ARDL cointegration model in the following way:

$$GDP_{MAED_t} = \alpha_0 + \alpha_1 GRINV_{GDP_{t-1}} + \alpha_2 DOMCR_{GDP_t} + \alpha_3 TR_{t-1} + \alpha_4 P_OIL + \text{Trend} + e$$

(Equation 5.3)

Here, GDP in million AED calculated at constant prices has been taken as the proxy for economic level as dependent variable in Equation 5.3. The independent variables included in the above model are gross investment as percentage of GDP (GRINV_GDP). Domestic credit provision to the private sector in percentage of GDP (DOMCR_GDP) is the proxy for the financial deepening. Total trade as percentage of GDP (TR) has been a proxy for the trade openness of the country. Finally, International Brent Spot Prices of crude oil prices have been taken as an independent variable (Reuters). This is so because the UAE is a major oil exporting country so oil prices in the international markets would have impact on the government revenues and expenditures and hence on the overall growth of the country. The time series data has been taken from UAE official sources such as online data room and

outreach, publications from the Central Bank of the UAE, online databases of international financial Institutions such as IMF e-library data sources and World Bank open data sources.

5.3.2 Data

Time series annual data on the selected variables has been used here. There have been several studies utilising cross-sectional or pooled time series data in a multi-country setting and other researchers used time series data. Using time series data is simple and overcomes the inherent disadvantages associated with the use of cross-sectional data. The first disadvantage arising from using cross-sectional data is the researcher's assumption of homogeneity across countries. This is unrealistic in the sense that the real world country statistics vary across nations. Further, financial characteristics of each country differ from the rest of the world in terms of maturity and depth of the financial sectors. Continuity in the financial regimes and political stability may also be variant across regions. Cross-sectional data does not allow these differences and takes the average data on the selected countries for the selected variables. Due to averages, the representative problem arises. These averages may end up to be close to the actual values of variables for one country and far away from the others (Agrawal, 2001).

The estimated results, due to homogeneity assumption, may not be able to explain the finance-growth phenomenon in a specific country. In addition, as discussed earlier, some countries have observed nonlinear relationship between finance and growth prospects. Due to these nonlinearities, the causality between finance and growth may hold in a specific country setting and not hold in another country setting. It may be due to the size of the economy, income levels, depth, or maturity of the financial market. Pure cross-sectional studies are not supposed to control for the endogeneity factors for all explanatory variables. This may lead to incorrect inference on the coefficient of the financial development (Beck et al., 2000).

Keeping in view the above apprehensions regarding type of the data, time series data has been used to estimate the unique finance-growth relationship in the context of the UAE in this study.

5.3.3 Selection of Variables

The variables selected for estimating financial deepening in the UAE are given below:

1. Natural Log of Domestic credit provision to the private sector in terms of GDP (LDC):

This variable is taken as a proxy for the financial depth or deepening in the country.

There has been plenty of literature and authors of various prominent studies (as discussed in the chapter on literature review) have used it as a reliable indicator of financial deepening. The actual observations of the variable are transformed into natural log values to overcome any normality of the data issues and use the estimates as the elasticity measures. This is the dependent variable of the financial deepening model.

2. Natural Log of Real Per Capita Income (LR_PCI): The natural log of real per capita income has been used as the indicator of the size of the economy in relation to its population.

3. Natural log of monetisation ratio (LM2Y): The natural log of monetisation ratio has been used as another independent variable indicating the size of money stock in the economy. The prudent monetary policy of the country. However, some authors have also used it as an indicator of the financial deepening.

4. Number of Bank Branches (LBank_Br): The number of bank branches has been taken as a measure of financial access in the economy. The higher the number of branches the better the access to the financial services in the economy.

The variables selected for the growth model are given and explained as under:

1. GDP_Million_AED: GDP in million Dirhams has been taken as the proxy for economic level. Annual time series data on real GDP at current market prices has been used here as dependent variable.
2. GRINV_GDP: Gross Investment has been taken as the proxy for the change in the capita stock in the economy. Investment and the change in the capital stock have been taken by many authors as the independent variable for determination of growth patterns.
3. DOMCR_GDP: Domestic credit provision to the private sector in terms of GDP has been taken here as the indicator of financial deepening in the country. Financial deepening or the depth in the financial sector has been an indicator of smooth business and investment transactions.
4. TR: Total trade volume has been taken as the indicator of the trade openness of the country.
5. P_oil: Oil price in the world market has been taken because oil is the major source for the UAE revenues. Any variation in the oil prices affects the revenues and government spending on development projects.

5.3.4 Autoregressive Distributed Lag Approach

A number of econometrics methods are available for cointegration. Among them the most commonly used are Engle and Granger (1987) test, Johansen (1995), Johansen (1991), and Johansen and Juselius (1990). ARDL has been developed and used by Pesaran and Pesaran (1997), Shin and Pesaran (1999), and Pesaran and Smith (1998). The preference is given to the ARDL approach in cointegration, mainly due to two of its features. First, it can be applied on variables with different order of integration [I (0) and I (1)]. This flexibility of the model, has made it popular among recent researchers and authors (Pesaran and Pesaran, 1997). The

second advantage of using the ARDL approach is that it allows a sufficient number of lags to be taken to capture the data generating process in a general to specific modelling framework (Laurenceson and Chai, 2003). In addition, by simply applying linear transformation on the system dynamic error correction model (ECM) can also be derived. That means that the estimators obtained by estimating long-run parameters incorporate all dynamics (Banerjee, Dolado, Galbraith and Hendry, 1993). Dynamic ECM integrates the dynamics in the short-run with the equilibrium steady state in the long-run with compromising on the long-run information. Shortcomings that appear due to the nonstationary of the data are overcome in ARDL approach (Laurenceson and Chai, 2003). Based on the above general models of financial deepening (Equation 5.1) and growth (Equation 5.3) the error correction representation of the Autoregressive Distributed Lag (ARDL) model is given here.

$$\Delta LDC_t = \alpha_0 + \sum_{t=1}^n \alpha_1 \Delta LDC_{t-i} + \sum_{t=1}^n \alpha_2 \Delta LR_{PCI_{t-i}} + \sum_{t=1}^n \alpha_3 \Delta LM2Y_{t-i} + \sum_{t=1}^n \alpha_4 \Delta LBank_{Br_{t-i}} + \gamma_1 LDC_{t-1} + \gamma_2 LR_{PCI_{t-1}} + \gamma_3 LM2Y_{t-1} + \gamma_4 LBank_{Br_{t-1}} + t + \varepsilon_t$$

(Equation 5.4 – Error Correction depiction for Financial Deepening)

The above depiction of error correction for financial deepening carries short-run and long-run coefficients. The differenced variables with α 's as coefficients are the short-run coefficients and the level variables with γ 's as coefficients are long-run variables. This is so because in long-run the first differences are taken as zero and the original Equation 5.4 reduces to:

$$\gamma_1 LDC_{t-1} + \gamma_2 LR_{PCI_{t-1}} + \gamma_3 LM2Y_{t-1} + \gamma_4 LBank_{Br_{t-1}} = 0 \quad (\text{Equation 5.5})$$

Further, long-run is the equilibrium or the steady state in the system. In other words, things stop changing in long-run leading to zero values of the first differences. The null hypothesis for the model, is that there is no long-run relationship in the system. This is defined by H0: long-run coefficients i.e. γ 's turn to be zero [H0: $\gamma_1=\gamma_2=\gamma_3=\gamma_4=\gamma_5=0$]. The alternative

hypothesis H1, would retain the nonzero values for the long-run coefficients γ 's [H1: $\gamma_1 \neq \gamma_2 \neq \gamma_3 \neq \gamma_4 \neq \gamma_5 \neq 0$].

$$\Delta \text{GDP_M_AED}_t = \alpha_0 + \sum_{t=1}^n \alpha_1 \Delta \text{GDP_M_AED}_{t-i} + \sum_{t=1}^n \alpha_2 \Delta \text{GRINV_GDP}_{t-i} + \sum_{t=1}^n \alpha_3 \Delta \text{DOMCR_GDP}_{t-i} + \sum_{t=1}^n \alpha_4 \Delta \text{TR}_{t-1} + \sum_{t=1}^n \alpha_5 \Delta \text{P_Oil}_{t-1} + \gamma_1 \text{GDP_M_AED}_{t-1} + \gamma_2 \text{GRINV_GDP}_{t-1} + \gamma_3 \text{DOMCR_GDP}_{t-1} + \gamma_4 \text{TR}_{t-1} + \gamma_5 \text{P_Oil}_{t-1} + \epsilon_t$$

(Equation 5.1 – Error Correction Depiction of Growth)

Non-stationarity was considered for the first time in the 1970s. The variables integrated at first level I (1) do not have long-run solutions in pure first difference models. However, there are some models that overcome this problem by considering the combination of lag levels and first difference of cointegrated variables known as error correction models or equilibrium correction models (ECM). Error correction term (ECT) is always depicted with lag operator (t-i). The coefficient of ECM(-i) explains the speed of adjustment and its values lies between and inclusive 0 and -1.

There have been number of studies that have applied the ARDL approach in estimation of the financial deepening and growth factors. One study utilised ARDL model of cointegration to examine the short and long-run dynamics between financial development, inflation, and economic growth in Thailand during post 1997 financial crisis (Majid, 2007). He estimated that there is long-run equilibrium between economic growth, financial depth, inflation, and share of investment. Further, it is argued that economic progress/regress emanates from the prevalent financial system and the price stability. Seetanah (2008) has utilised the same approach of ARDL to estimate the nexus between financial sector performance and economic growth in Mauritius. The study confirmed that there is a long run and a short-run association between financial sector deepening and the growth in the economy of Mauritius. Researchers

using the principal components approach in ARDL found a unique cointegrating relationship between real GDP, financial development, investment, and deposit rate (Kargbo and Adamum, 2010). The study concludes that financial development pushes economy to higher levels of economic growth through more investment. Mohamed (2008) investigated the presence of association between finance and economic growth in Sudan, a MENA country. Using ratio of M3 to GDP and credit provided to private sector as two proxies of financial growth the study concluded that financial development affects GDP negatively. The negative link between financial growth and economic growth, was attributed to banking sector inefficiencies, poor investment climate and poor credit disposal in Sudan. Another study using data on banking controls, financial deepening, and economic growth found a negative impact of banking controls on financial sector development and confirmed that economic growth and financial deepening are jointly determined (Demetriades et al., 1996).

5.4 Econometrics Estimations and Results Interpretation

In this study, the stationarity of financial deepening and growth models of the sample periods was examined by applying the Augmented Dickey Fuller test (ADF). Selected variables for financial deepening like LDC, LR_PCI, LM2Y are stationary at first difference I (1) and LBank_Br is stationary at level I (0). The summary of stationarity results is given in table 5.1. The selected variables for growth model like GDP_Million_AED, DOMCR_GDP, Total trade volume and P_oil are stationary at first difference I(1) and GRINV_GDP is stationary at level I (0). The results of this model are given in Table 5.2

The serial correlation tests (Lagrange Multiplier Test of Residual Serial Correlation) and results are given in Tables 5.4 and 5.8, for both financial deepening and growth models. The null hypothesis regarding the presence of serial correlation was rejected. In spite of higher

order autocorrelation, the OLS estimators remained consistent and unbiased but do not remain efficient. The estimated variances of estimators will be inconsistent and biased and hypotheses testing will not be valid in higher order autocorrelation. Diagnostic tests showed there is no serial correlation or autocorrelation in sample data for selected variables.

Normality means actual data is normal distributed creating a bell shape distribution.

Parametric tests are applied in case of normality and non-parametric tests are applied in non-normality of data. Results are given in Tables 5.4 and 5.8 and show that the data is normally distributed. Therefore, apply the ARDL model was applied for statistical inferences for the financial deepening and economic growth models. Non-normally distributed data may be a problem for small sample sizes and it becomes a serious problem when data lies in the tails of the distribution.

Table 5.1: ADF Test for Financial Deepening Model

Order of Integration	With Constant - T statistics (p values)	With Constant and Trend - T statistics (p values)	Variable
First Difference I(1)	-4.105149 (0.0035)	-4.030148 (0.0188)	LDC
First Difference I(1)	-3.480516 (0.0160)	-3.672722 (0.0406)	LR_PCI
First Difference I(1)	-6.037442 (0.00000)	-5.846094 (0.0002)	LM2Y
Level I(0)	-3.340210 (0.03123)	-3.76138 (0.029688)	LBank_Br

Table 5.2: ADF Test for Growth Model

Order of Integration	With Constant - T statistics (p values)	With Constant and Trend - T statistics (p values)	Variable
First Difference I (1)	-5.259430 (0.00020)	-6.416171 (0.0001)	GDP_Million_AED
Level I (0)	-3.331210 (0.03013)	-3.86138 (0.031411)	GRINV_GDP
First Difference I (1)	-4.105149 (0.0035)	-4.030148 (0.0188)	DOMCR_GDP
First Difference I (1)	-4.890144 (0.0005)	-6.579351 (0.0000)	TR
First Difference I (1)	-6.029567 (0.0000)	-6.772318 (0.0000)	P_oil

Using general models of financial deepening and growth patterns given in Tables 5.1 and 5.2, cointegration process has been performed on Tables 5.3 and 5.4. The summary of the ARDL estimates of financial deepening model is given in the following table, Table 5.3.

Table 5.3: Autoregressive Distributed Lag Estimates of the Financial Deepening Equation

A) Parameter Estimates and the Explanatory Power of the Model				
Coefficients		Standard Error	T-Ratio [Prob]	Independent Variables
-0.25005 [0.804]		0.51243	-0.12813	Constant
6.1952 [0.000]		0.097240	0.60242	LDC (-1)
3.5044 [0.002]		0.012484	0.043748	L_RPCI
6.0592 [0.000]		0.053999	0.32719	LM2Y
-3.4726 [0.002]		0.090549	-0.31444	LBANK_BR
3.6417 [0.001]		0.088109	0.32086	LBANK_BR (-1)
F-Stat [Prob]		DW	Adj R ²	R ²
155.735 [0.000]		1.9047	0.9625	0.9684
B) Confidence Interval Lower and Upper Bounds				
90%		95%		F-Stat
Upper Bound	Lower Bound	Upper Bound	Lower Bound	
4.1319	2.9687	4.9159	3.6123	4.2947
Upper Bound	Lower Bound	Upper Bound	Lower Bound	DW-Stat
16.5276	11.8749	19.6636	14.4493	17.1786

Dependent Variable: Domestic Credit to Private Sector (LDC)

Here natural log is applied on the selected variables. The advantage of transforming time series into natural log is that the parameter estimates can be used as the elasticity measures between dependent and related independent variables. Domestic credit provided to the private sector as percent of real GDP (LDC) has been taken as dependent variable (as proxy of the financial sector development). The explanatory variables included in ARDL equation are monetisation ratio (LM2Y), number of bank branches (LBANK_BR) and real per capita income (LR_PCI). With high values of R2 and adjusted R2 and significant F-statistics the model shows satisfactory level of goodness of fit. This confirms the explanatory power of changes in the dependent variable due to changes in the independent variables. T-ratios and

their probabilities associated with all independent variables are accepted at less than five percent level of significance. Significance of the t-ratios at less than five percent p-values approves that the changes explained in the dependent variable are systematic and not by chance. Meaning the estimated results from the sample series are generalisable to other samples given similar properties. In the lower half of the Table 5.1, the summary of the test results for the existence of the level relationship among the variables is presented. The F-statistics and DW-statistics are calculated. The rule of thumb is “the test becomes inconclusive if value falls in between the lower and upper bounds”. Further, the null hypothesis cannot be rejected. There is no level relationship among the variables if the value is below the lower bound. If the value is above the upper bound the null hypothesis of no level relationship among variables is rejected.

In the present case, the values of the both F-statistics and DW-statistics are accepted at the 10% level of significance because the assumed values are larger than the upper bound values. It can be concluded that there is significant level relationship between financial deepening as dependent variable (LDC) and the selected independent variables (LM2Y, LR_PCI, LBANK_BR). The UAE is a rich high income oil exporting country. The peculiarity of the UAE economy that makes it unique from other Arab oil exporting countries in the region, is its strong motivation to diversify the economic structure away from oil and ensure expatriate driven economic growth.

According to the National Bureau of Statistics, the share of nonoil sectors in GDP of the UAE has increased from 41% in 2003 to 71% in 2013 showing a significant fall in oil dependence during the last decade. Construction and real estate sectors due to financial sector development have recorded significant growth during the last decade though by hydrocarbon

revenues of the country (Central Bank of the UAE, 2014). The smooth process of financial transactions with tax holidays for business entities are some of the factors attracting foreign investment and domestic capital in the UAE. With the passage of time, the financial sector in the UAE has come out of the transition phase and is contributing to economic growth.

Previously, the banks in the UAE were mostly in government sector (Al-Malkawi et al., 2012). The spectacular growth in the nonoil sectors of construction and real estate may not have been possible without smooth and dynamic financial sector in the country. Financial deepening emanating from the careful and prudential monetary policy, sustainable and steady growth in the real per capita income (average of the PCI in USD for the period from 1980 to 2013 has been approximately \$56,765 US) and improved access to the financial sector has been instrumental in affecting economic growth positively. According to the official reports NBAD (2015) the number of local banks has been around 23 and foreign bank around 26 with a strong network of 957 branches in total. The existence of foreign banks, being more in number than the local banks, has been leading the banking sector towards a more competitive environment.

The financial sector has improved in terms of smooth and modern financial services along with improved access for investors and small savers. The PCI has been rising from 1980 till 2008. After 2008 the PCI started declining as economic expansion created an influx of expatriate workers from various countries to fulfill the rising demand for skilled workers. Data available shows the number of migrants per 1,000 of population averaged around 1.22 persons between 2000 and 2006. However, the number rose sharply between 2007 and 2014 averaging around 19.95 persons. This reflects the expanding sectorial development in the UAE was increasing the labor demand. To fulfill the need for more skilled and unskilled workers large number of expatriates was invited into the country.

Table 5.4: Diagnostic Tests of the financial Deepening Equation

F Version (lag, dof)	T statistics (p values)	LM Version t values [p values]	Test Statistics
F (1,26)	0.04854 [0.827]	0.0615 [0.804]	A. Serial Correlation*CHSQ (1)
F (1,26)	0.15779 [0.694]	0.1991 [0.695]	B. Functional Form *CHSQ (1)
Not applicable	Not applicable	4.8128 [0.090]	C. Normality CHSQ (2)
F (1,31)	0.73797 [0.397]	0.7673 [0.381]	D. Heteroscedasticity*CHSQ (1)

Here diagnostic tests have been applied for diagnosing the data series for serial correlation (Lagrange multiplier test of residual serial correlation), for functional form (Ramsey's RESET test using the square of the fitted values), for normality (based on a test of skewness and kurtosis of residuals) and heteroscedasticity (based on the regression of squared residuals on squared fitted values). The test for serial correlation checks and verifies the similarity or the influence between the observations of the time lag between them. The presence of serial correlation leads to the violation of the Best Linear Unbiased Estimators (BLUE) property for the estimators. This further leads to the invalidity of the OLS standard errors and test statistics. The test for functional form is passed for the model and it is concluded that any error is not occurring due to the misspecification of the function form of the model.

Normality tests are run to determine if a data set is well modelled by normal distribution. If the datasets are not normally distributed they cannot be used for further tests like t-statistics or chi-square tests. Homoscedasticity or the homogeneity of variance occurs if all random variables in the sequence or vector have the same finite variance. Violations of the heteroscedasticity assumptions may result in overestimation of the goodness of fit of the model estimations.

The series and the estimations have passed all the tests resulting in the rejection of the null hypothesis of presence of serial correlation and presence of any other discrepancy related with functional form, normality or heteroscedasticity. The p-values in the braces (with each

of the test value) show insignificant results at 95% of confidence interval. Though heteroscedasticity does not affect the property of un-biasedness of the estimator, nevertheless it leaves it inefficient because the true variance and covariance are underestimated (Goldberger, 1964).

Table 5.5: Estimated Long-run Coefficients of financial deepening equation using ARDL Approach

T statistics (p values)	Standard Error	Coefficients	Independent Variables
-0.2398 [0.812]	1.34423	-0.32229	Constant
5.5722 [0.000]	0.14769	0.82296	LM2Y
0.0671 [0.947]	0.24073	0.01615	LBank_BR
2.9300 [0.007]	0.03756	0.11004	L_RPCI

Dependent Variable: LDC [Natural log of Domestic Credit to Private Sector]

Table 5.5 presents the summary of long-run estimates and their asymptotic standard errors of the financial deepening model. As mentioned earlier, the model has estimated the γ 's from Equations 5.4 and 5.5. The results suggest that there is a long-run statistically significant and positive relationship [probabilities associated with t-values of their coefficients are less than five percent shown in braces under column for t-ratios (prob.)] between dependent variable domestic credit availability to the private sector (as a proxy of financial deepening) and the explanatory variables, real per capita income (L_RPCI) and monetisation ratio (LM2Y). Bank branches as a proxy for financial access does not explain the long-run relationship with the domestic credit to the private sector. This may be explained due to the small geographical area of the UAE and the emergence and tremendous urbanisation due to expatriate workers and growth around the cities. The number of bank branches may explain any variations in the financial depth in the short-run. In the long run, it's not the number of bank branches but the important financial indicators of financial development and real economy.

Table 5.6: Error Correction Representation for the Selected ARDL Model

T statistics (p values)	Standard Error	Coefficients	Independent Variables
3.5044[0.002]	0.012484	0.043748	dL_RPCI
6.0592[0.000]	0.053999	0.32719	dLM2Y
-3.4726[0.002]	0.090549	-0.31444	dLBANK_BR
-4.0886[0.000]	0.097240	-0.39758	Ecm (-1)
F-Stat [Prob]	DW	Adj R ²	R ²
14.5280 [0.000]	1.8381	0.6240	0.6828

Dependent Variable: dLDC

Table 5.6 presents the summary of the ECM results of the ARDL model for financial deepening. The coefficients estimated under ECM are the short-run components of the ARDL model. All included variables are statistically significant with less than one percent level of significance. It was found that dLDC has a positive relationship with both the dLRPC and the dLM2Y. It was also found the dLDC has a negative relationship with dLBANK_BR. These results confirm the existence of a short-run relationship between dependent and independent variables.

The value of ECM term is negative and between 0 and -1. The Closer the value is to -1 the stronger the relationship and the nearer to 0 the weaker the relationship. Results of this study suggest that the speed of adjustment or convergence is nearly 40% for the financial deepening model. This condition ensures that there is convergence in the model indirectly indicating a long-run relationship among the selected variables. All included explanatory variables have a short-run significant relationship with domestic credit to private sector. R2 and adj-R2 are sizable explaining 68% of the changes in the dependent variables by the changes in the independent variables. The Durbin-Watson (DW) test with a value around two suggests there are no serial autocorrelation in the variables. F-statistics are large and significant with a p-value at less than a five percent confirming the strength and goodness of fit of the model.

Monetisation ratio as explained earlier has been the reflective of the prudential monetary policy of the UAE. Strengthening of the private sector and the rising confidence of private investors on the UAE's banking sector ratify the given ECM results. The key credit provision categories the UAE banking sector is catering are trade, project, and consumer financing. The scope of banking sector in the UAE has been the largest among Middle Eastern countries with value of aggregated assets equal to 147% of GDP in 2010 (Trabelsi and Fadhel, 2016). The concentration ratio among banking sector is quite high with 75% of total banking assets owned by 10 major banks. The rise in global oil prices were also a major factor in increasing the value of banking assets before the 2008 crisis (Trabelsi and Fadhel, 2016). Another significant development in the UAE banking sector showing resilience in the times of financial turmoil is the emergence and growth in the Islamic banking sector. Though Islamic banks like the Dubai Islamic Bank (DIB), the Abu Dhabi Islamic Bank (ADIB), the Noor Islamic Bank and the Emirates Islamic Bank have assets worth of more than USD 50 Billion in 2010. Yet, they are less diversified and smaller in comparison to the conventional banks.

Further, a reverse model taking one dependent variable from the list of independent variables from the financial deepening model has been estimated to check and verify if the model on financial deepening is consistent. In the reverse model, LM2Y has been taken as dependent variable and other three variables as explanatory variables. As per the estimated F-statistics and DW-statistics, the model does not show any cointegration among the variables because the F-statistics and DW-statistics values are smaller than the lower bounds at 95% and 90% levels of confidence interval.

The following tables describe the results on the estimations of the selected ARDL model, ECM and long run and short-run relationships among variables of the growth model.

Table 5.7: Autoregressive Distributed Lag Estimates of the growth Equation

A) Parameter Estimates and the Explanatory Power of the Model				
T-Ratio [Prob]	Standard Error		Coefficients	Independent Variables
-0.5521 [0.586]	85680.8		-47309.1	Constant
3.5522 [0.002]	0.1424		0.50580	GDP_M_AED (-1)
1.1212 [0.238]	1907.7		2311.5	GRINV_GDP
3.1030 [0.005]	505.86		1569.7	DOMCR_GDP
0.3299 [0.744]	253.83		83.733	TR
16.947 [0.000]	456.14		7730.4	P_Oil
2.9071 [0.008]	2467.8		7176.1	Trend
F-Stat [Prob]	DW		Adj R ²	R ²
155.735 [0.000]	1.9047		0.9625	0.9684
B) Confidence Interval Lower and Upper Bounds				
90%		95%		F-Stat
Upper Bound	Lower Bound	Upper Bound	Lower Bound	
4.5451	3.3629	5.3368	4.0755	5.4812
Upper Bound	Lower Bound	Upper Bound	Lower Bound	DW-Stat
22.7255	16.8145	26.6839	20.3776	27.4062

Dependent variable: GDP (GDP_M_AED)

Table 5.7 presents the summary of estimations of the ARDL model of growth. Real GDP (GDP_M_AED) as a proxy for the economic level in real economy, has been taken as dependent variable and Gross Investment as percentage of GDP, Domestic credit to the private sector (DOMCR_GDP) as percentage of GDP, number of bank branches (LBANK_BR), Total trade (TR) as percentage of GDP as an indicator of openness of the economy, and international prices of crude oil (P_Oil) have been included in the model as independent variables. Here, (DOMCR_GDP) and (LBANK_BR) represent the depth and access in the financial sector in the UAE. From the statistics provided in Table 5.7 it can be confirmed that trade openness as indicated from (TR) does not has significant relation with the dependent variable GDP. The gross investment also does not show a significant link with the dependent variable.

Trade openness indicates the policies of a country in terms of restrictiveness international trade to allow trade with others countries. Policies of high tariffs on trade discourages international trade. This leads to slow the economic development and growth of such countries. The countries that encourage international trade to boom, have economic activities supported from international organisations like the World Bank and the IMF in various ways. Through this support, the given country improves transportation, infrastructure, communicating means, technological advancement, and other sectors. The given country also brings aggressive policies to minimise or eliminate trade tariffs.

The UAE became a member of the WTO in 1996. Up to 2013, the WTO has conducted two trade policy reviews on the UAE. The first review was conducted in June of 2006. The main issues addressed regarding trade openness were: still in process of liberalisation of trade in services with the WTO, committed to accomplish the intellectual property rights law at the end of June 2006, the UAE entered in Greater Arab Free Trade Area (GAFTA) during 1998, and the GCC custom union start to operate in 2003. The second review was conducted during March of 2012 and the main issues were: still foreign participation in domestic company is limited to 49% in capital but 100% in free zones, GCC custom union still does not consolidate, and there is still an absence of competition policy in the UAE. By summarising, on the basis of the results of this study it can be said that trade openness has no role in the GDP of the UAE.

Gross investment is a proxy for capital stock for the UAE economy. Capital stock or goods are assets like machines, factories, and others productive equipment. It does not include the financial and human capital. Capital stock means equipment used to produce commodities. As shown in Figures 1.14 and 1.15, the UAE GDP comes mainly from construction, real

estate, wholesale and retail trade, and financial sectors. Therefore, results for growth model from this study show that it is insignificant for the UAE economic development and it may be interpreted that the UAE economy is being developed or grew because of other factors like construction, trade, financial and other factors, rather than gross investment.

Predominantly, the variable on the financial depth (DOMCR_GDP) and price of oil seem to be significantly cointegrated with the GDP growth. Keeping in view the hydrocarbon revenues and utilisation of these revenues in the construction and services sectors to boost economic growth, the above results seem to be consistent to the economic situation in the UAE. The growth in nonoil sectors has been mainly triggered through hydrocarbon revenues during the oil price boom before financial crisis. The funds in these sectors have been channeled, through an efficient and dynamic financial sector. Growth of banking sector has been complementary to the growth in the nonoil sectors.

In Chapter 1 Section 1.5, the Figures 1.14 and 1.15 explained the variations of oil and nonoil sector proportions towards GDP in detail. It can be seen that nonoil sectors share in the UAE GDP increased from 36.75% in 1980 to 61.45% in 2013. The financial sector has been developing since the 1980s. Various reforms have been taken to strength the banking and non-banking financial sectors in order to increase the economic activities in the UAE from private sectors. These reforms are deeply discussed in Chapter 4 Section 4.3 such as establishment of the Central Bank the UAE, law for commercial companies, commercial code and auditing profession, regulations for banking and investment companies, adaptation of BASEL II, and relaxing the restriction on the foreign banks to open more than eight branches. As nonoil sectors are being developed, government directed programs are being launched for specific sectors like constructions and agriculture, then a strong need for the banking sector

has emerged. This created a push for the banking sector to introduce new financial products and services, improve the quality of services, provide better liquidity functions, and decrease the transaction costs among other activities. The financial sector growth, through rise in the domestic credit to the private sector, has been instrumental to the growth in the real GDP of the UAE.

As discussed in detail in Chapter 3 Section 3.4, the private credit to GDP of the UAE, improves from 1973 to 2013. This variable is used a proxy to measure the financial deepening. This ratio implied that each bank has its own financial and risk management policies and practices to scrutinise the more profitable private corporate projects, granting credit to finance these projects. Consequently, investment and economic activities increase and eventually increase the GDP of an economy like in the UAE. Several researchers argued that better performance of banking sector drives the economic growth in emerging economies (Arestis et al.; 2006; Rioja and Valev; 2004; Levine; 2004). Because of this, the banking sector is a main supplier of funds in the financial systems of these economies.

Further, trade balance for the UAE when oil exports are included is a huge surplus of more than 20% of the GDP in 2004. However, when oil is excluded, it turns out to be negative recorded as 26% in 2000 and eight percent in 2004 (Dubai Chamber of Commerce and Industry, 2007). Most of the UAE's economic level stems from two major emirates of the country, Abu Dhabi and Dubai. Abu Dhabi contributes approximately more than 50%, whereas 40% is contributed by Dubai. The major contribution from Dubai is from growth in the nonoil services and construction sectors.

The UAE being among the most important oil producing countries, its growth in real

economy is explained from the global oil prices and monetisation ratio. Also, the development in the UAE's financial market has a significant impact on GDP growth. Provision of liquidity to the booming construction and services sectors seems to explain the link between growth in real economy and the financial depth. The F-statistic and DW-statistic values are above the upper bounds at 95% level of significance. Therefore, the null hypothesis that there is no cointegration among the variables is rejected. Diagnostic tests have been run and found that the model does pass all tests of serial correlation, normality in data, functional form, and heteroscedasticity. See Table 5.8 for the summary of the results on diagnostic tests.

Table 5.8: Diagnostic Tests of the Growth Equation

F Version (lag, dof)	T statistics (p values)	LM Version t values [p values]	Test Statistics
F (1,222)	1.2207 [0.281]	1.7348 [0.188]	A. Serial Correlation*CHSQ (1)
F (1,26)	24.445 [0.000]	17.369 [0.070]	B. Functional Form*CHSQ (1)
Not applicable	Not applicable	0.9542 [0.621]	C. Normality CHSQ (2)
F (1,31)	0.0315 [0.860]	0.0335 [0.855]	D. Heteroscedasticity*CHSQ (1)

Table 5.9: Estimated Long-run Coefficients of Growth Equation using ARDL Approach

T statistics (p values)	Standard Error	Coefficients	Independent Variables
-0.619 [0.542]	154647.6	-0.9572	Constant
-1.108 [0.279]	5617.8	-6224.2	GRINV_GDP
4.8163 [0.000]	659.47	3176.2	DOMCR_GDP
-1.466 [0.156]	665.81	976.32	TR
13.703 [0.000]	796.06	10908.2	P_Oil
9.6094 [0.000]	1511.1	14520.6	Trend

Dependent Variable: GDP_M_AED

The estimation of the coefficients of the variables affecting the dependent variable of GDP in the long-run has been given in Table 5.9. Gross Investment (GRINV_GDP) and total trade as

percentage of GDP (TR) are not explaining the change in growth patterns of the UAE economy in the long-run as their coefficients are retaining p-values larger than the five percent level of significance. However, oil prices and the financial market are the most important factors affecting the real economy in the long-run. The value of constant includes the impact on the UAE's GDP from other factors. In the present case, it retains insignificant statistical relationship with the GDP. Here, rising credit provision to the private sector and rising oil prices, leads to higher levels of GDP in the UAE. The growth pattern in the UAE has been determined from the oil prices in the world. These hydrocarbon revenues were then channeled into construction and services sectors. The UAE has been following an intensive track of diversification, which diverts the economy away from oil dependence to the nonoil sectors. Nevertheless, historically the UAE's banking sectors were more volatile and seemingly more vulnerable to the global shocks and reacted fiercely to any fluctuations from 2005 to 2007 than from 2012 to 2013. This was mainly because of the rise in the foreign liabilities, which were growing very rapidly recorded as high as 90% annually from 2005 to 2007, as compared to an average 20% from 2012 to 2013 (Irwin and Shukurov, 2014).

Table 5.10: Error Correction Representation for the Selected (Growth) ARDL Model

T statistics (p values)	Standard Error	Coefficients	Independent Variables
1.2117 [0.237]	1907.7	2311.5	dGRINV_GDP
3.1030 [0.005]	505.86	1569.6	dDOMCR_GDP
0.3299 [0.744]	253.82	-83.732	Dtr
16.947 [0.000]	456.14	7730.4	DP_Oil
2.9079 [0.007]	2467.8	7176.1	Dtrend
-3.4708 [0.002]	0.1424	-0.4942	ecm (-1)
F-Stat [Prob]	DW	Adj R ²	R ²
104.2809 [0.00]	1.5839	0.9507	0.9645

Dependent Variable: dLDC

Table 5.10 presents the summary of the ECM results of the ARDL model for growth equation. The coefficients estimated under ECM are the short-run components of the ARDL model. All included variables are statistically significant with less than one percent level of significance except for gross investment and trade openness. These results are reflecting the existence of short-run relationship between the GDP and two variables, financial depth and oil prices. The speed of convergence or adjustment is nearly 50% in this study for the growth model.

5.5 Conclusion

Discussion on theoretical and empirical evidence on the financial depth and growth in the real economy presented in this chapter has been inconclusive on the straightforward link between finance and growth. Studies employing time series analysis on the finance-growth nexus have been very few. Several studies using cross-sectional data analysis have been of mixed arguments. However, authors have been arguing on the weaknesses in the cross-sectional analysis from analytical point of view and have identified several limitations of the cross-sectional studies. For example, according to Agrawal (2001) cross-sectional data needs a representative country for comparison and it is not valid to examine a specific country (here in the UAE) over the specific time period. Beck et al. (2000) also argued that cross-sectional data analysis does not consider endogeneity factors for repressors.

Several studies have been found using the ARDL approach of cointegration using time series data. The present study employed the ARDL approach to investigate the short-run and long-run association between financial deepening and growth in the real economy. Two models have been estimated separately using the ARDL approach. Model 5.1 covers financial deepening by applying domestic credit to the private sector as percentage of GDP, as

dependent variable, and monetisation ratio, real per capita income and number of bank branches as dependent variables. The estimators have been found cointegrated. In the short-run, all independent variables have been found affecting the financial deepening. However, in the long-run only the real per capita income and the monetisation ratio were found cointegrated with the domestic credit to private sector as percentage of GDP. The F-statistic and DW-statistic values confirmed that the model is integrated at 10% level of significance.

Model 5.2 is on the growth in the real economy. Here GDP has been taken as the dependent variable and gross investment as percent of real GDP, domestic credit to private sector as percent of GDP, total trade percentage of GDP as a measure of trade openness, and oil prices (being an important factor for the UAE as one among most important oil producing and exporting countries) are taken as independent variables. F-statistics and DW-statistics confirm the cointegration relationship among the set of variables at five percent level of significance. While estimating the long-run relationship between the variables, it has been found that gross investment as percent of GDP and trade openness have been statistically insignificantly affecting the growth. However, domestic credit to private sector in percentage of real GDP and oil prices are affecting the growth patterns in the long-run. This suggests that the development in financial sector causes changes in the growth patterns in the UAE in the long-run. Furthermore, the variations in the oil prices in international market affect the growth pattern positively.

In Chapter 1 Section 1.7, research questions were formulated and it was found that real per capita income, monetisation and number of bank branches have significantly and positive level relationship with financial deepening or development (domestic credit provision to the private sector in terms of GDP). The variables such as gross investment, domestic credit

provision to the private sector in terms of GDP, total trade volume, and oil prices are taken as the determinants of economic development or growth model.

Domestic credit provision to the private sector in terms of GDP, lag of GDP, and oil prices are statistically significant and have a positive level relationship with GDP. Gross investment and total trade volume have insignificant level relationship with GDP. It was discussed in Chapter 1 Section 1.14 that there are three schools of thoughts regarding the finance-growth nexus. Empirical findings from this study on the finance-growth nexus in the context of the UAE is in line with the researchers who argued on the positive relationship between financial deepening and economic development or growth, and the direction of causality exists from financial development to economic development or growth (Robinson, 1952; Gurley & Shaw, 1967; Goldsmith, 1969; Jung, 1986; Levine, 1997; Gillman & Harris, 2004; Kemal et al., 2004; Lucas, 1988; Ireland, 1994). Hence, the research hypothesis “the development in financial sector of the UAE causes changes in the economic growth patterns in the UAE in long-run” is supported from the results.

Chapter 6 – Saving and Economic Growth: Evidence from U.A.E.

6.1 Introduction: Savings, Investment and Economic Growth

The main purpose of this study is to analyse the saving behavior of individuals in the UAE. In particular, how their saving pattern affects the economic growth and development, of the UAE. This study, discusses the factors influencing the saving pattern of people, in the UAE such as: dependents, real interest rate, level of financial development, and foreign savings over the sample period from 1980 to 2013. After a review of the literature, this appears to be the first study capturing the saving patterns of the UAE (a high income country), by utilising the time series data and its' techniques. The OLS technique, was used to estimate the relationship of saving with dependents, real interest rate, level of financial development and foreign savings. According to Giovannini (1983), interest elasticity of saving in developing countries could not be reproduced the same results in the 1970s as produced was in the 1960s; in spite of applying the data of same countries, using the same techniques. He concluded, that existing models yeilds invalid and unreliable results, making it difficult to interpret the estimated paramters. Hence, only the OLS technique was applied for this study.

As mentioned in Chapter 2 Section 2.4.2, a review of the existing literature classifies saving-growth nexus as: the first group argued that saving has causal relationship with economic growth, the second group argued that economic growth lead saving, and the third group empirically tested bidirectional link between groups one and two. One of the main objectives of this study is to examine the causality direction between saving and growth: whether savings affect economic growth, economic growth affects saving, or both affect each other in in the case of the UAE.

In connection with the main idea of linking economic growth with the development and deepening of the financial market, the present chapter contains two parts. The first part, takes account of theoretical observations of savings and investment, as the integral components of growth and development in a developing country setting. In the second half of the first part, a detailed discussion on the studies presenting empirical evidence on the savings-growth linkage is given. The discussion on the empirical evidence, offers separate elaborations on the studies utilising cross-sectional datasets and the studies utilising time series data sets. In addition, a brief section is allocated for the examination of the strengths and weaknesses of the studies, associated with the use of the two different datasets.

The second part of this chapter, presents the statistical analysis of dynamics of savings marginal propensity to save and consume. Here the statistical link between savings and GDP growth, using time series data on selected variables of the UAE for the period of 34 years from 1980 to 2013, is established. This part is further categorised into three parts. The first part, presents an elaborative approach to investigating the saving and consumption behavior of people in the UAE, by empirically estimating marginal propensities to save and consume from consumption function. In the second part, the economic, financial, and other determinants of saving behavior are explored. Mainly real interest and inflation rates as the financial determinants and income as the economic determinant have been incorporated in the multiple regression equation using Ordinary Least Squares Method to establish statistical link between savings and its determinants. The second part of the chapter is about the review of available studies on the link between savings and the economic growth. This part would include the extensive discussion on the empirical evidence on savings-investment and growth linkages. The first part of section two is classified into three sub-segments. The first sub-segment, discusses the conceptual elaboration of savings function and its' theoretical

framework. The second sub-segment of section two presents the use of the GDP equation to explain saving function and presents marginal propensity to consume and save as a measure of sensitivity to save/consume more or less in an economy, computed from the Keynesian consumption function. The third sub-segment is devoted to the discussion on the investment and saving equilibrium identity as an element of the theoretical framework of savings, investment, and growth nexus.

6.2 Conceptual and Theoretical Framework

Saving in an economy is treated as the amount remaining after covering the cumulative expenditures of public sector. The most important theoretical determinants of national savings are the rate of interest rates and the national income. This relationship suggests that those at the higher levels of national income and the real interest rate households in an economy tend to save more. However, the sensitivity of saving trends with that of the real interest rates depends upon the substitution and income effects associated with each change in interest rate. The substitution effect depicts, that the higher offered real interest rates on saving leads people to save more and spend less, as the opportunity cost of spending rises. The income effect of the interest rate variations suggests, that higher interest rates tend to increase the levels of household income, tempting to raise consumer spending. Therefore, it is the sensitivity of real interest rates towards saving rate, which determines the response of interest rate to saving amount. The theory of marginal propensity to save, explains the degree of sensitivity of people to save more, with rising real interest rates.

This part of the chapter is allocated for discussion on three approaches: first, how the savings and real interest rates linked; second, using marginal propensity to consume how can the sensitivity of interest rate towards saving can be computed; and third, how can saving and

investment be equated in the setting of financial intermediaries. Further, it is also important to know if the savings can be smoothly translated, into investment and growth. The discussion under the third approach, leads to the demand and supply of the loanable funds, where saving is the amount of loanable funds available for potential investors. The demand for loanable funds available with financial intermediaries comes from the potential investors in the economy. The real interest rate is the price of loanable funds, treated as the cost of borrowed capital and is the incentive for potential savers to sacrifice their current consumption, for potential future monetary rewards. This phenomenon has been dealt with in the Two-Period model of saving and consumption. Any change in the interest rate, will leave some better off and others worse off. In other words, when the interest rate rises, this makes savers better off and borrowers worse off. This is so, because savers now have a better incentive to save more, as they would earn higher rates of profit. On the other hand, the borrowers are worse off as the cost of borrowing loanable funds has increased, discouraging some of the potential borrowers. The Two-Period model of savings and consumption, was discussed in detail in Chapter 2 Section 2.4.3.

The following paragraphs, take into account the saving and investment equality, using basic GDP equation (detail discussion in Chapter 2 Section 2.4.1) and consumption multiplier to compute marginal propensity to consume and save (MPC and MPS). The following paragraphs, also present an elaborated discussion. on the savings function and the marginal propensity to consume. Savings function can be derived from equation ($Y-C-G=I$; see Chapter 2, Equation 2.10). Since savings function is corollary of the consumption function, it can be derived from the given consumption function:

$$C = \bar{C} + bY \quad (\text{Equation 6.1})$$

In Equation 6.1, the consumption function is given. \bar{C} is the autonomous consumption, while b is the marginal propensity to consume (MPC), and Y is the national income. By substituting Equation 6.1, in equation (2.8, $Y-C-G=S=I$), the saving function can be obtained:

$$S = Y - [\bar{C} + bY] - G \quad (\text{Equation 6.2})$$

In above equation \bar{C} is the autonomous consumption and is constant, and G is the exogenous variable and constant too therefore the equation can be re-arranged in the following way:

$$S = \bar{A} + (1 - b)Y \quad (\text{Equation 6.3})$$

In Equation 6.3, \bar{A} is the sum total of two constants, i.e. \bar{C} and G . Here \bar{A} represents dissaving that is at zero level of income, the autonomous consumption would be equal to the dissaving. By carefully looking at Equation 6.3, it would be identified that b is the slope of the consumption function. In other words, it is known as the marginal propensity to consume. In Equation 6.3, $(1-b)$ is the slope of the saving function (Dornbusch, Fischer and Startz, 2004). Theoretically, the sum of the marginal propensity to save and marginal propensity to consume is equal to one:

$$\text{MPC} = 1-b$$

$$\text{MPC} = b$$

$$\text{MPS} + \text{MPC} = 1-b-b = 1$$

Given the above notion of marginal propensity to consume and save, it seems imperative to give a brief note on the investment function and its link with interest rate. Investment function is the summary of factors, which have an impact on the amount of the total investment in the economy. Further, \bar{I} is the autonomous investment spending determined, independent of the interest rate and the level of GDP. It states, that lower the rate of interest,

the higher the level of planned investment in the economy (Dornbusch, Fischer and Startz, 2014). In other words, it is the change in the existing capital stocks of the country (Burda, 2013). Formally, the basic investment interest relationship can be written in the following way:

$$I = \bar{I} - bi, b > 0 \quad (\text{Equation 6.4})$$

Equation 6.4, suggests that investment, is mostly determined by interest rate (i). Here, b is the responsiveness of investment spending to the interest rate. For simplicity reasons, national income is being treated as exogenously determined. The investment spending function, given in Equation 6.4 is linear. The linearity assumption holds only when it is assumed, that there would be small changes in the economy. Investment and savings functions are nothing, but the demand for and supply of loanable funds available with the financial intermediaries.

However, the growth in economy is not only a fairy tale about savings only. As the relationship between savings and investment has not been clear and evidence in previous related studies have not been promising, regarding the smooth translation of savings into investment. The following paragraphs take a detailed account of the previous studies on savings, determinants of savings, and its transformation into investment guaranteeing higher economic growth in the economy.

6.3 Theoretical Background

The evidence on the link between savings and growth, in the existing literature is not clear nor straight forward. There have been startling differences in the comments and opinion of the economists, regarding the role of the financial sector in a country's economic growth. For simplicity and a clear understanding of the review of selected studies on the saving-

investment and growth link, the existing literature has been categorised in to two parts. In the first part, the discussion on theoretical findings on saving growth link is presented. This part includes discussion on the theoretical growth models presented as early as in the 19th century (Bagehot, 1873). Following this seminal work, a chain of several important and groundbreaking studies were conducted by various commentators on the dynamics of money, savings, innovation, technology, and economy's growth (Schumpeter, 1911; Harrod, 1939; Domar, 1946; Lewis and Arther, 1954; Solow, 1956; Modigliani, 1970)¹⁸.

In addition, to the elaborate and insightful discussion on above studies, the present chapter discusses the impact of real interest rate on domestic savings and translating into further economic growth, as presented in the literature on financial liberalisation (McKinnon, 1973; Shaw, 1973). A detailed discussion has been presented in this chapter on the linkage between the development of the financial sector and economic growth.

An extended discussion on the Endogenous Growth Theory, which promotes that growth in an economy is not the exogenous phenomenon but primarily a result of endogenous factors, is presented in the upcoming paragraphs. A review, of the foundational work on the Endogenous Growth Theory, is provided by Arrow (1971), Uzawa (1965) and Sidrauski (1967). Several researchers modified the Endogenous Growth Theory, by omitting the technological change (Lucas, 1988; Romer, 1986; Sergio, 1991). They concluded that the growth in an economy is due to indefinite investment in the human capital, having spillover effects on economy and reduces the diminishing returns to the capital accumulation. For further discussion, on endogenous growth theory and related works see Barro and Sala-i-

¹⁸For comprehensive survey of literature see Schmidt-Hebbel, Serven, & Solimano (1996). Also cited in Agrawal, (2001; p.499-500).

Martin (2004).

According to Bagehot (1873), interest rates and the smooth lending policy of the banking sector can avert the economic panic, subject to high levels of the rates at the beginning of the recessionary phases in the money market. The relatively high rates of the interest, will operate as a heavy fine on the unnecessary timidity and works as a prevention device against unwarranted credit expansion. Another study worth mentioning here was conducted by Schumpeter (1911)¹⁹, who asserts the importance of banks as financial intermediaries in an economy. Banks operate as a vehicle to collect loanable funds from the potential savers with surplus capital and disburse these funds to borrowers for investment and profit purposes. Hence, financial intermediaries play a vital role in promoting investment and economic growth, in the economy. In the following quote from his work, Schumpeter (1911) proclaims the importance of the banker as a potential promoter of economic growth, in absence of the government or of any other institution's intervention.

“The Banker, therefore, is not so much primarily a middleman in the commodity “purchasing power” as a producer of this commodity. However, since all reserve funds and savings to-day usually flow to him, and the total demand for free purchasing power, whether replaced or to be created, concentrates on him, he has either replaced the private capitalist or become their agent; he has himself become the capitalist par excellence. He stands between those who wish to form new combinations and the processors of productive means. He is essentially a phenomenon of development, though only when no central authority directs the social process. He makes possible the carrying out of new combination, authorises people, in the name of society as it were, to form them. He is the

¹⁹ Original document in German and later translated in 1934.

ephor of the exchange economy” (Schumpeter, 1911; p.74).

The standard Harrod-Domar model was developed independently through the combined work of Harrod (1939) and Domar (1946). Though initially it was developed to analyse business cycles, it was later adapted to analyse the phenomenon of economic growth. This model implies that economic growth is the result of efficient investment policies, backed by higher savings and adoption of advanced technology. The basic assumption of the model, is the presence of surplus labor in the economy. The following mathematical expression of the model is taken from Fry (1998).

$$Y = \sigma K \quad (\text{Equation 6.5})$$

In the above equation, Y is the output, σ is the capital-output ratio and K is the capital stock in the economy. Further, a priori assumptions include constant returns to scale and the savings investment equality (as solved in Equation 6.5). First, taking differences and dividing both sides by Y , gives the rate of growth relationship with change in capital stock (investment) and given technology.

$$\frac{\Delta Y}{Y} = \sigma \frac{\Delta K}{Y} \quad (\text{Equation 6.6})$$

In above Equation 6.6, ΔK is the change in capital stock that is equal to investment.

Therefore, the same equation can be re written as:

$$\frac{\Delta Y}{Y} = \sigma \frac{I}{Y} \quad (\text{Equation 6.7})$$

In above Equation 6.7, $\frac{\Delta Y}{Y}$ is the rate of the growth in the economy's output. An increase in the saving investment rate, leads a permanent increase in the growth rate of the economy

(Fry, 1998). Another model reduces the two factor (capital and labor) model to only a one factor (capital) model, as the key determinant of the growth in the developing country setting (Lewis, 1954). The binding of labor requirement, has been appropriately dropped, since the developing countries face “unlimited supplies of labor”. This would entail that the growth in the economy is proportional to capital accumulation, in other words, savings. Provided below is the quote the prompted argument from Lewis’ (1954) study:

"The central problem in the theory of economic development is to understand the process by which a community which was previously saving and investing 4 or 5 percent of its national income or less converts itself into an economy where voluntary saving is running at about 12 to 15 percent of national income or more. This is the central problem because the central fact of development is rapid capital accumulation (including knowledge and skills with capital)". We cannot explain any "industrial" revolution until we can explain why saving increased relatively to national income" (Lewis, 1954; p.155).

In contrast to the model of fixed proportions of the factors of production, presented by Harrod (1939) and Domar (1946), Solow (1956) proposed a model featuring production function featuring smooth substitution of the factors of production. Due to the inherent assumption of the decreasing returns to scale of one factor of production (capital), growth may not be able to continue and an economy may not be able to maintain the pace of growth. This is because the marginal product of capital eventually becomes zero, causing a halt in the growth of economy. Interestingly, this occurs despite the current high levels of savings. In the long-run, a higher level of per capita income ensures higher saving rates, giving the economy a chance to growth at a higher steady state income (Agrawal, 2000).

More recent Endogenous Growth models, borrowed from the Harrod-Domer model assumption of constant returns to scale of capital, rather than Solow's (1956) decreasing returns to scale assumed (Romer, 1986; Lucas, 1988). These models contend that high saving rates and high capital formation lead to higher growth in income levels. Raut and Srinivasan (1992) have argued that if the assumption of zero marginal product of capital featuring Solow (1956) assumption is substituted with marginal product turning to its minimum but to positive levels, then even the neoclassical model would assume similar implications to those of the endogenous growth theories.

Endogenous Growth models, have been embracing two approaches. One approach was presented and advocated by Romer (1986) and Lucas (1988), as discussed above. According to this approach, human capital as only the single growth factor pushes the productivity of all other factors of production. The second approach advocated and promoted in the work of Gerald (1989) comments on the economic growth as quoted by Fry (1998):

“Gerald (1989) sets the elasticity of output with respect to the aggregate capital stock at one, implying increasing returns to capital and labor together. Empirically, it is much easier to broaden the concept of capital and posit a learning externality than it is to identify and estimate any specific growth factor. In any event, either approach justifies the inclusion of the investment ratio in an aggregate growth rate function” (Fry, 1998; p.121).

Comparing the Neoclassical models with that of the Endogenous Growth models it is obvious that the growth rate in an economy in the long-run is determined by the external factors such as savings (Harrod-Domar model) or the technical progress as advocated in Solow's model. However, the rate of savings and the technical progress and their impact on the economic

growth, has remained ambiguous in the previous studies. Therefore, the microeconomic foundations have been recalled to resolve the riddle of economic growth, from within the economy (endogenously). Households maximise utility and the intentional decision to invest by the profit maximising firms pushes the technical progress and technological change in the economy, leading to higher growth rates in long-run. Crucial role and the credit as the engine of growth have been given to new technology and the human capital. With constant marginal product of capital, growth is possible in the long-run.

Krugman (1993) argues about feature of non-diminishing returns to capital and the assumption of constant returns to capital in endogenous growth models, in the following way:

“The basic idea of this literature . . . is that there may be external economies to capital accumulation, so that the true elasticity of output with respect to capital greatly exceeds its share of GNP at market prices” (Krugman, 1993; p.17).

Taken two factors of production, K as capital [representing the combination of physical capital and knowledge] and X as any other factor having fixed supply per capita, production function can be written as $Y = K^\alpha + X^\beta$. Here α assumes value that is larger than or at least equal to 1 depicting the increasing returns to scale (Fry, 1998).

Krugman (1993) argues that the paradoxical situation arising from the international capital flows, has been noted in the following way:

“Endogenous growth models provide a paradox with respect to international capital flows. On the one hand, neoclassical growth models imply that capital flows from the capital-rich

countries to capital-poor countries which exhibit higher marginal returns to capital.

However, this flow can exert only a small and temporary effect on poor countries' growth rates. Endogenous growth models, on the other hand, provide a much more important role for capital in the growth process. Without diminishing marginal productivity of capital, however, there is no incentive to transfer it from capital-rich to capital-poor countries" (Krugman, 1993; p.17).

Shaw (1973) argued that financial sector has a vital role in the economic development of a country. According to him, developing countries should move towards financial liberalisation and deepening, so that real interest rate determined mainly by the market. Simultaneously, the control over the money supply may be beneficial for LDCs in the following ways: higher domestic interest rates cause an increase in domestic savings to income, financial liberalisation opens the way for the competitive flow of saving and allocation of savings with interest rate rather than administrative decisions, higher interest rates switch production methods to less capital intensive and in this way unemployment tends to reduce and employment effects monopoly reduced.

In this study, the dependent variable domestic saving to GDP ratio that presents the aggregation of domestic saving from different sources such as individuals, private and public institutions and the government itself. The foreign saving (balance of trade), presents the net of capital inflows from abroad in the case of low domestic savings (spending more), to maintain the rate of investment in an economy.

The Saving-Growth model, was discussed in detail in Chapter 2 Section 2.4.1. This model may be used for both closed and open economies (Dornbusch, Fischer, and Startz, 2004). For

the open economy, balance of trade may be included in Equation 2.6. Further, an endogenous model argued, that innovation plays a vital role for an economy and how local savings and foreign savings play their roles (Aghion et al., 2006). If local sectors catch the current frontier technology, then economic growth will be there. Aghion et al. (2006) argued that domestic savings may fail to play pivotal role with the global capital market. Therefore, foreign savings may boom developing economies.

Economies with a large distance from frontier technologies, have a positive effect on domestic savings and economies, those economies closed to frontier technologies, have no effect with domestic savings. It is also explained in Chapter 2 Section 2.4, how both savings (domestic and foreign) play a pivotal role in determining the interest rate (Figure 2.1). Here, it is briefly discuss as to how foreign savings affect economic growth. Foreign savings in the form of FDI, is a best source of transferring technology and finance. If it is in the shape of capital goods, then the investment rate rises in an economy and ultimately it is boosted. If it is in the shape of debt and equity, it may volatile the macroeconomic activities. Prasad et al. (2012) conducted a cross-sectional study that concluded that non-industries economies that rely less on foreign capital, grow faster than those economies relying more on foreign capital. According to economist, when the domestic savings in an economy fall (higher spending), it means that more import of goods and services for consumption purposes and domestic investment is financed from foreign capital in the shape of capital goods. For example, Japan has had capital deficit account and surplus on current account.

The above section, provided a discussion on the theoretical linkages, between saving and the long-run economic growth possibilities. The following section, presents the discussion and review of empirical studies, on the statistical link between savings (Investment) and the

economic growth.

6.4 Empirical Evidence

This section takes account of the empirical evidence and includes more recent empirical studies, on the saving growth nexus. This section is categorised into two parts, keeping in view the analytical nature, data types, and exploratory nature of the studies. The first part of this section, takes into account the studies, examining the statistical link between savings and economic growth. The existing literature, presents research specifying two groups of studies. One group of authors statistically justifies causal association from savings to economic growth. The second group of authors, suggest the association in the opposite direction, from economic growth to savings. The theory based foundation, on the significant relationship between savings and economic growth, can be traced as early as the growth models of Harrod (1939) and Domar (1946). The second part of this section is devoted to review of selected studies, which are classified according to the use of datasets (i.e. cross-section and time series). The following paragraphs, present a detailed discussion on the studies presenting the association between savings and economic growth, from the perspective of both directions.

Selected studies in this paper provide empirical evidence on the bidirectional link between savings and growth. That is, the belief that rises in national savings leads to higher levels of economic growth, through increased capital formation and investment. This link is backed by several models of growth (Harrod, 1939; Domar, 1946; Solow, 1956). The empirical work provides evidence in support of saving-growth shows positive association (Alquaci, 2004; Fry, 1998; Giovannini, 1983; Giovannini, 1985; Lahiri, 1988). Alquaci (2004) used the Granger Causality Test procedure²⁰ to investigate the causal link between higher savings

²⁰ Developed by Toda and Taku (1995) and Dolado and Lütkepohl (1996).

rates, with the higher levels of economic growth. It is further claimed in the study that the results of the study are in harmony with the theoretical findings of the Solow (1956) model. The results of the study are in contrast with the outcomes of the other contemporary studies that have found the reverse causation from growth to savings. For instance, Gavin and Talvi (1997) present the argument in following way:

“Higher growth rates precede higher saving rates rather than the reverse. The argument is based on the evidence of the Latin America’s low rates of savings that have been the consequence rather than the cause of low and volatile growth patterns in the region” (Gavin and Talvi, 1997; p.13).

The pattern of slow growth in Latin American had been observed during the period from 1960 to 2000, though this did not represent the role of savings in the positive growth experience of Chile (Prescott, 2006; Aghion et al., 2006). Further, the existence of an association between savings and growth patterns has also been supported by positive robust empirical findings by Modigliani (1970), Barry (1993), Carroll and Weil (1994) and Edwards (1995). However, these studies have argued in favor of positive association, which does not imply causality (Alguaci, 2004). The issue of causality from savings to growth or vice versa, is far from being settled. The controversy on the issue, has been the main question mark in macroeconomic research (Schmidt-Hebbel, Servén, and Solimano, 1996).

In addition, the limitations of these studies are that they did not verify data for presence of unit roots and the time series analysis was not conducted. Therefore, it may be assumed, that these studies are not immune to the problem of spurious regressions (Banerjee, Dolado, Galbraith and Hendry, 1993).

The key implication, of the causality moving from higher savings to higher growth levels for developing economies, would be to formulate policies and initiatives to raise savings rates (Agrawal, 2000). This will boost investments and foster capital formation, ultimately leading towards a higher level of growth rates. There is research, which provides support for the hypothesis, that savings growth promotes economic growth (Singh, 2010). The study, used single-equation and the maximum-likelihood model. The estimates of the model have consistently supported the predictions of the Neoclassical Exogenous and the Post-Neoclassical Endogenous models of economic growth and suggest the significant long-run effects of saving on income, in the case of India. The study further implies, that developing nation should formulate policies to accelerate savings enhancing capital accumulation, for sustained long-run economic growth.

There are plenty of studies, advocating the link from economic growth to savings in contrast to the studies reviewed, in the above paragraphs (Sinha and Sinha, 1998; Agrawal, 2000; Anoruo and Ahmad, 2001; Narayan and Narayan, 2006). For a detailed literature review on economic growth-saving link see Al-Foul (2010).

Aghion et al. (2006) attempted to develop a theory of endogenous local savings, with foreign investors. In their model, the growth prospects of a country emanate from the innovations, allowing local sectors to catch up with the current frontier technology. Predominantly, the long-run growth theories have advocated the strong role of domestic savings, in the growth of developing countries. Nevertheless, it has been argued, that domestic savings may not play a pivotal role with international capital markets (Aghion et al., 2006). This allows the domestic economies of developing countries, to grow with foreign savings. In contrast, role of

domestic savings in economic growth has been reinforced by the case of Latin American's low savings-low growth and high savings-high growth in South East Asian countries, during 1960²¹ (Aghion et al., 2006) Further, this study predicts that savings affect growth positively in countries with large distance from frontier technology and does not affect countries who are too close to the frontier technology. It is argued that the domestic entrepreneurs in countries in close proximity with frontier technology are more likely to be familiar to the frontier and does not make it worthwhile for foreign investor to participate in the co-financed projects. Moreover, it is also predicted that the real engine to the growth is not the capital accumulation, as most growth theories have predicted as discussed above, but the total factor productivity.

The empirical evidence on the savings-growth link is sparse, which be due to the non-availability of studies, with sufficiently large time series datasets²². The existing literature, has argued that the findings from the cross-sectional analytical studies, seem to be prone to certain limitations. These limitations may include the inherently unrealistic assumption of the homogeneity of saving-growth relationship, in the countries included in the analysis. Secondly, the cross-section nature of the studies ignores that there may be some countries, where causality is from savings to growth and in others it is from growth to savings. Therefore, the findings would be valid only on average, for the representative country. This is again not clear, as to, which country is a representative country and which is not. Third, in such studies, mostly the other determinants of savings and growth are omitted leading to ambiguity to the reliability of the Granger causality test. For further discussion on the limitations of the cross-sectional studies' findings see Agrawal (2001). After having a

²¹ Specifically, for the East Asian countries the average private saving rate from 1960 to 2000 was 25%, whereas for the Latin American countries it was only 14%. (Aghion et al., 2006),

²²With exceptions to the studies like World Bank (1993) and Carroll & Weil (1994) who have advocated causality from growth to savings.

detailed discussion on the theoretical link between savings and growth and the subsequent discussion on the empirical evidence, it becomes imperative to explore more about the key determinants of saving, in a developing country setting.

6.4.1 Savings and Consumption Behavior

A number of studies have been conducted by authors investigating the determinants of saving behavior (Lahiri, 1988; Edwards, 1996; Hebbel et al., 1996)²³. The existing literature predominantly uses cross-section of panel data for large number of countries, ignoring the country specific characteristics and assuming the homogeneity in the national attributes. The saving and consumption behavior in each country is generally characterised by the unique attributes of the people, the level of development, and the socio-economic structure. The possible determinants of savings behavior in selected south Asian countries have been identified as per capita income, economic growth rates, dependency ratio, foreign investment real interest rate, inflation, share of agriculture to GDP (to account for the possibility of a different saving pattern), and financial sector development [real interest rates, inflation, ratio of broad money to GDP] (Agrawal et al., 2009). Several studies concluded, there is a positive impact of financial sector reforms, on domestic savings (Dayal-Gulati and Thimann, 1997; Edwards, 1996; Johansson, 1996). These studies argue that it is true that financial sector reforms include availability of a wider variety of financial instruments to potential savers and provides more security to savers, motivating them to save more.

The existing literature has also raised controversies regarding impact of savings on economic growth, where it is assumed that the savings may be automatically translated in to

²³With exceptions to the studies like World Bank (1993) and Carroll & Weil (1994), who have studies have advocated causality from growth to savings. For a detailed discussion on studies on saving behaviour see (Agrawal et al., 2009).

investments and capital formation (Harrod, 1939; Domar, 1946; Romer, 1986; Lucas, 1988). There are several, empirical studies, in line with the above given growth theorists (Mamingi, 1993; Pelagidis and Mastroiannis, 2003). However, consumption theorists have developed a contrasting point of view and argued that income and growth lead towards variations in consumption, hence savings (Modigliani, 1970; Modigliani, 1983; Deaton and Paxson, 1994; Deaton and Paxson, 2000). The relationship of real interest rates and savings has been ambiguous, given the substitution and income effects pointing in opposite directions. Rising interest rates, generate positive substitution, with shifting of current consumption to future leading to higher current savings (as discussed in detail Chapter 2 Sections 2.4.3 and 2.4.1) and negative income effects due to higher returns on the saved wealth. Empirically, Fry (1995) has found a positive impact of interest rate on savings (larger substitution effect than income effect) and Giovannini (1983) has argued that there is a statistically insignificant relationship between interest and savings. On the other hand, a found inconclusive relationship has been found, between interest rate and saving (Schmidt-Hebbel, 2006). Consumption theorists have argued, that income and it's grow thin an economy, having a first lead in determining consumption and hence, savings and not vice versa²⁴ (Modigliani, 1970; Modigliani, 1986; Deaton and Paxson, 1994; Deaton and Paxson, 2000; Carroll and Weil, 1994).

6.5 Econometric Analysis

This section is devoted to the estimation of the saving function, with its determinants. The Error Correction Model is estimated to find out if saving as percent of real GDP is cointegrated with the growth of the UAE, in the long-run. The savings function, as percentage of real GDP, is estimated using Ordinary Least Squares Method. The long-run

²⁴ Ibid

relationship, between savings as percent of real GDP and growth, is estimated through the Error Correction Model. This is done through performing the regression on the coefficient of the lagged residual of Error Correction Model. Before proceeding to the econometric estimations, it is imperative to have elaborated discussion on the data, unit roots in time series, description on the criteria of inclusion or exclusion of the variables, and the related issues.

The following sections, present elaborated discussions on the quality of data and calculation of the selected variables in the study and the interpretation of results from: OLS regression of savings function, Error Correction Model, Order of Integration as per Augmented Dickey Fuller Tests, and cointegration and econometrics issues. Before proceeding to the estimation of the savings function, it is imperative to understand about the order of the integration of the selected variables. The literature, on cointegration provides the argument that if the order of integration is known and the selected variables indicate presence of unit root, the traditional procedures of estimation do not hold (Engle and Granger, 1987; Banerjee et al., 1993). Thenceforth, the choice of the appropriate technique of estimation of the given savings function, is imperative.

6.5.1 Order of Integration

Time series of the macroeconomic aggregates mostly exhibit non-stationarity in their statistical properties. This indicates that their means, variances, and autocorrelation are not constant over time. The basic assumption, while analyzing any time series remains the independence of the observations included. When this property does not hold, the time series happens to be nonstationary. Therefore, to have a meaningful regression analysis, the time series is supposed to be “stationarised” and “detrended” by logging or deflating. Stationarity

in the time series data is important to avoid any spurious regression results. This happens when the R^2 and t-statistics values no longer follow the usual distributions and are too inflated to show strong causal links between two variables, which otherwise may not be existing. One reason for spurious regression results is the trending behavior in the variables selected for analysis (Granger, 1974). Secondly, the assumption of the independence of the observations in explanatory variables from their past values (autocorrelation), is violated. Nonstationary data analysis, brings varying variances and means and do not remain close to the long-term mean and variances of the data series, the stationary data process reverts around the mean, and has a constant variance. The unit root test is applied on the raw data, to determine if the data series used for the selected variables is stationary or nonstationary. Further, it is the objective of this study, that the data should be “stationarised” to avoid the spurious regression. According to Lorodanova (2007), there are different types of nonstationary process, such as:

1. Pure random walk: Random walk predicts the value at time ‘t’ that includes stochastic component, that is white noise in the last period value. Mathematically it is written as follows: $Y_t = Y_{t-1} + \varepsilon_t$
2. Random walk with Drift: This predicts value with stochastic component, white noise, with a drift (constant). Mathematically it is written as follows: $Y_t = Y_{t-1} + \varepsilon_t$
3. Deterministic Trend: The value at time ‘t’ is regressed on a time trend βt instead of being regressed on $Y_{(t-1)}$ Mathematically it is written as follows: $Y_t = \alpha + \beta t + \varepsilon_t$
4. Random Walk with Drift and Deterministic Trend: In this case second and third nonstationary processes are combined. Mathematically it is written as:
 $Y_t = \alpha + Y_{t-1} + \beta t + \varepsilon_t$.

The Augmented Dickey Fuller test has been applied to investigate if unit root exists in the selected variables. By including the lags of order k, Augmented Dickey Fuller Test formulation can allow for higher order autoregressive processes. The following table presents the summary of the Augmented Dickey Fuller test. If the time series is stationary, it is treated as the I(0) or Integrated of order zero. However, if the first difference of the time series is stationary, it is treated as the I (1) or Integrated of order one. The test is based on following regression Equation 6.8:

$$\Delta X_t = \alpha_0 + \alpha_1 t + \beta X_{t-1} + \sum_{j=1}^k \gamma_j \Delta X_{t-j} + \varepsilon_t \quad (\text{Equation 6.8})$$

6.5.2 Savings Function

Keeping in mind, the discussions on `the theoretical and empirical evidence presented in previous sections, the present section is devoted to the statistical analysis of the saving-growth linkage. The analysis undertaken in this section encompasses understanding and analyzing the saving behavior, in the UAE. This is done through estimating the key determinants of savings behavior, in the country. Theoretically, saving behavior is determined by economic, financial, demographic, and socioeconomic variables in a country. Using household survey data on immigrants in the United Arab Emirates, researchers have investigated that the saving patterns among immigrants are remarkably different, indicating cultural influence over saving patterns (Al-Awada and Elhiraikab, 2003). The present study, follows the analogy of Agrawal et al. (2009). Equation 6.9, is used to estimate the saving function using time series data of the UAE, on economic and financial variables. Therefore, the following saving function has been estimated using ordinary least squares method, with saving ratio as the dependent variable and other independent variables. Domestic saving function estimated by Agrawal et al. (2009) is given as under:

$$S_Y = \alpha_0 + \alpha_1 DEPEND + \alpha_2 REAL_INT_ + \alpha_3 M2Y + \alpha_4 FS_Y + \alpha_5 GROWTH + \alpha_6 INF + \alpha_7 BANK_BR + \alpha_8 URBAN + e \quad (\text{Equation 6.9})$$

This study, estimates the econometric relationship between savings in percent of GDP, with only four variables such as: dependents, real interest rate, M2Y (proxy for financial deepening), and foreign savings. Other variables from the Agrawal et al. (2009) model were dropped due to geographic, socio-economic, and demographic reasons. The reason behind dropping off inflation is because it is already present in the real interest rate variable. Data on the real interest rate was not available. Data on the lending rate was available only for a couple of years. The data on real interest rate is the lending rate, adjusted with the inflation rate. The missing values from the series are replaced by linear interpolation, using PASW 20 (previously known as SPSS). The presence of missing values in statistical survey data is an important issue to deal with. These data usually contained missing values due to many factors such as machine failures, changes in the siting monitors, routine maintenance and human error. Incomplete data set usually cause bias due to differences between observed and unobserved data. Therefore, it is important to ensure that the data analysed are of high quality. A straight forward approach to deal with this problem is to ignore the missing data and to discard those incomplete cases from the data set. This approach is generally not valid for prediction, in which the value of a system typically depends on the historical time data of the system. One approach that is commonly used for the treatment of missing items is the adoption of an imputation technique. The linear interpolation is used in this study as it is widely accepted that it provides a very good fit to data²⁵.

Geographically, the country of the UAE is not too big and the population in the country

²⁵Performance indicators used in the literature to test the goodness of fit of linear interpolation include the mean absolute error (MAE), root mean squared error (RMSE) and coefficient of determination (R²).

includes many expatriates. Expatriates, make a big chunk of the total population, approximately 85% of total population²⁶. Eighty percent of the population inhabit in the urban centers, at an average age of years)²⁷. Therefore, classification of the population into rural and urban area, does not seem to be suitable for having a statistically significant impact on savings as percent of real GDP. Further, interconnectedness and congested urban centers have made distances meaningless. This is the reason, the number of bank branches as a determinant of savings function, has been dropped from the present study.

Therefore, estimate the savings model is estimated as follows:

$$S_Y = \alpha_0 + \alpha_1 DEPEND + \alpha_2 REAL_INT_ + \alpha_3 M2Y + \alpha_4 FS_Y + e \quad (\text{Equation 6.10})$$

As per the discussion on the empirical evidence, the savings have ambiguous association with growth and the real PCI. Therefore, growth has been used in the Error Correction Model, to check the causality of saving growth link. The objective here, is to estimate the determinants of the saving behavior in the UAE, using time series data on the selected variables for 34 years from 1980 to 2013. The above equation has been estimated using OLS regression method, to find out the statistical link of the selected variables as the determinants of the saving rate in the UAE. The detailed discussion on the selected variables and quality of the data is given in the next section.

6.5.3 Data and Selected Variables

The required data on the selected variables has been obtained from two key sources. The first key source is the annual/quarterly reports and statistical bulletins published periodically by the Central Bank of the UAE and the National Bureau of Statistics of the UAE, on economic

²⁶National Bureau of Statistics UAE (2010)

²⁷ Calculated by the author.

and financial performance of the country. The second source, came from online databases of official websites of international financial institutions like the World Bank (World Development Indicators), the IMF, and the United Nations are explored to find the relevant data. The data sources were officially recognised by the governments and researchers therefore are reliable. The discussion on the selected variables and the way they are prepared for analysis in the present work is presented below:

1. (S_Y) saving percentage of real GDP: The savings rate is determined as the ratio of gross domestic savings to the real GDP of the country. Here gross savings are used rather than the net savings due to the very arbitrary nature of the capital consumption allowances, which differ from country to country and may cause comparability problems (Agrawal, 2000).
2. Real Per Capita Income and Growth Rates: the findings of the Harrod-Domar and Endogenous Growth models suggest that the savings are associated with higher levels of real income and the higher growth rates in the economy. RPCI is used here as the measure of real income and GROWTH is measured as the growth in the economy's real output or income. The expected sign as found in previous studies has been positive. However, it may be ambiguous. These two variables do not have any significant association with saving percentage of real GDP. The growth variable is used to estimate Error Correction Model and Cointegration, between savings and growth.
3. Depend: It is the ratio of dependent population to working population. It is assumed that higher the dependency ratio, the lower the saving rate.
4. Real Interest Rate: Higher rates of real interest rates lead towards higher levels of capital stocks and investments (McKinnon, 1973). By including real interest rate the objective is to investigate the saving growth link. This further leads to higher levels of

real income and growth. The data on real interest rates, was not available for most of the years for the given time period, used in this research. Therefore, the data on this variable required some simple calculations. According to World Bank data description, real interest rate is the inflation adjusted lending rate. Therefore, lending rate data are available for a few years as the yearly average and have been adjusted with the prevailing inflation rate. Secondly, even the straight forward data was not available on lending rates, as well. It was identified, that there were five categories presented in the periodicals of Central bank of the UAE. These five categories on which the lending rate is applied are other loans, interest on trust and deposits, interest on over drafts, interest on business, and personal loans. In addition, quarterly data on the above mentioned categories have been available. The average of the four quarters is taken as the year representative figure of the lending rate. To obtain the figure on the real interest rate for the period of 1980 to 2013, it is adjusted with the prevailing rate of inflation for the same year.

5. M2Y: The savings rates, may also be associated with the deepening of the country's financial sector. It is assumed, that higher levels of financial development, may tend to induce higher levels of savings in the country. M2Y is the ratio of money supply to the real GDP, as a measure of financial deepening, in the UAE. M2 is the private domestic liquidity. The ratio of private domestic liquidity to real GDP, is used here as an important variable to measure the association of the savings rates to the financial deepening, in the UAE.
6. Foreign Savings ratio to GDP: Foreign savings, are measured by the current account balance of the country. Surpluses on current account balance means there are more domestically, foreign payments. This may tend to induce more consumption. However, savings may rise and the coefficient may assume a negative/positive sign, given the size

of marginal propensity to save/consume.

Ramakrishnan and Ghosh (2017) defined the current account balance, as the difference between national savings and investment. Deficit current account balance means, that there is a low level of domestic savings relative to investment. Prasad et al. (2007) argued that current account deficit, indicates the net capital flowing in or it is an excess of domestic investment over domestic savings. They used the current account deficits as a proxy for capital inflows and it is positively related with growth, for financial dependent industries for a more open economy for capital. As discussed above in this chapter, the Agrawal et al. (2009) model is being used in this study.

For this study four variables were selected on the following bases: First, foreign savings discourage domestic savings and encourages more consumptions. Researchers and economist argued that foreign and domestic savings are likely to be substitute (Fry, 1995; Schmidt-Hebbel and Serven, 1999). Therefore, foreign savings was used as a proxy of current account balance to GDP. Second, the M2Y is used as a proxy for financial development and a detail discussion is given in Chapter 5. It is also known as monetisation ratio. It indicates the domestic liquidity in a given economy. Third, the dependent ratio is used as a proxy for demographics. It indicates, that the higher this ratio, the lower the savings of working individuals. It also means, the aggregate saving is affected by the age distribution, in an economy. As discussed in Chapter 2 Section 2.4.4, the life cycle hypothesis younger consumes more than their incomes, at middle ages savings are accumulated, and at old ages accumulated savings are to be used. Forth, the negative real interest rate discourages the savings as discussed in detail in Chapter 2. Its sign is ambiguous, positive in case of substitution effect and negative toward income effect.

While transforming the actual observations of Real Interest Rate and Growth Rate, the log values were undetermined as the actual observations were retrieving negative values. These logs transformed negative values, are treated as the missing values and are replaced with linear interpolated values using PASW 20. This a usual practice in the literature and several studies have previously used this approach with no significant effect on the results. This is largely because the cases of negative values are few in terms of number (quantity) and with small magnitude. In studies where there was a considerable number of negative values it was reported that the effect on the final results was only mild and insignificant. The actual number of negative values in this study was very small (less than 1 percent of the observations) and these values with linear interpolation had no effect in the final results produced in this study.

6.5.4 Econometric Estimation and Results Interpretation

Empirical estimations of the savings function and Error Correction model cointegration regressions, are performed to establish the statistically significant relationship between saving and its determinants, and saving and growth separately. It is generally observed, that the raw time series data due to trending and present section offers detailed discussion on the nonstationary of time series and Unit Root Tests with constant and a linear trend. The more the negative the number, the stronger the confidence that there is no unit root and the data is stationary. The coefficient on the time trend on the lag order of the autoregressive process imposing the constraints and corresponds to the modeling a random walk and using the constraints and corresponds to the random walk with drift.

Table 6.1: Summary of Augmented Dickey Fuller Test for Unit Root Test on Selected

Order of Integration	Without Constant - T statistics (p values)	With Constant and Trend - T statistics (p values)	Variable
Level	2.3911 (0.990)	0.8375 (0.990)	Saving GDP ratio
First Difference I(1)	-0.6476 (0.437)	-5.2961 (0.000)	
Level I(0)	-4.6618 (0.000)	-5.4887 (0.000)	Growth
Level I(0)		-3.0981 (0.107)	RPCI
Level I(0)	-2.0812 (0.035)	-3.4303 (0.047)	Depend
Level I(0)	-1.1348 (0.234)	-4.7560 (0.000)	Real Interest Rate
First Difference	-5.6386 (0.000)	-5.4255 (0.000)	
Level	-4.1555 (0.000)	-2.1885 (0.495)	Bank_BR
First Difference I(1)	-8.9704 (0.000)	-7.1803 (0.000)	
Level I(0)	-0.3323 (0.566)	-4.1596 (0.005)	Inflation
First Difference	-4.9864 (0.000)	-4.8428 (0.000)	
Level	-1.4458 (0.139)	-1.78225 (0.714)	FS_Y
First Difference I(1)	-4.0939 (0.000)	-4.93923 (0.000)	
Level	1.8581 (0.985)	-1.9967 (0.603)	M2Y
First Difference I(1)	-1.9311 (0.052)	-3.3893 (0.053)	

6.5.5 Determinants of Saving

Various methods have been used to determine the variables, from among the set of selected variables to investigate the statistically significant impact of savings, in the UAE. In each case, financial sector development (indicated by domestic liquidity ratio with GDP denoted by M2Y), demographic factor (Dependency ratio, no of family members depending on the working population), and foreign savings (denoted by current account balance as percentage of GDP) have a statistically significant impact on the saving as percentage of GDP (denoted as S_Y). The following table shows the regression equation estimated, using saving ratio as the dependent variable and M2Y, Current Account Balance, and Dependency ratio as independent variables. The estimates are significant at a five percent probability. The large R2 and adjusted R2 values suggest, that the changes in the dependent variable (savings ratio), are explained by the independent variables. The f-value is large and is significant at less than

the probability value of five percent. This indicates the strength and goodness of fit of the model. Further, the model passes the diagnosis test of serial autocorrelation, Normality and heteroscedasticity except the functional form. Summary of the OLS estimations is given in Table 6.2. The results provided in Table 6.2, suggest that the most dominant factors affecting the saving in the UAE financial market represented by the domestic liquidity (M2) as percentage of real GDP, demography represented by dependency ratio (DEPEND), and foreign savings as percentage of real GDP represented by FS_Y.

Table 6.2: Summary of OLS Estimators of Saving Function 1980-2013

A) Parameter Estimates and the Explanatory Power of the Model			
T-Ratio [Prob]	Standard Error	Coefficients	Independent Variables
45.981 (0.000)	0.0769	3.5348	Constant
4.6832 (0.000)	0.0010	0.0048	M2Y
1.9301 (0.000)	0.0017	0.0275	FS_Y
-17.752 (0.000)	0.0017	-0.02993	DEPEND
3.0915 (0.004)	0.0155	0.0481	L_Real
F-Stat [Prob]	DW	Adj R ²	R ²
385.093 [0.000]	1.6564	0.9789	0.9815
B) Diagnostic Test			
F Version (lag, dof)	T statistics (p values)	LM Version t values [p values]	Test Statistics
F (1,222)	1.0812 [0.307]	1.2641 [0.261]	A. Serial Autocorrelation
F (1,26)	0.5179 [0.478]	0.6174 [0.432]	B. Functional Form
Not applicable	Not Applicable	0.0649 [0.968]	C. Normality
F (1,31)	0.7627 [0.389]	0.7915 [0.374]	D. Heteroscedasticity

6.5.6 Saving Growth link (Error Correction Model)

In the previous section, the determinant of saving as percentage of GDP was applied. The estimates were reliable and statistically significant. Since the statistically significant link, between saving and growth was not established, it is imperative to check if there is any association between growth as dependent variable and saving as percent of real GDP as

independent variable. For that matter the Engle-Granger Test for Integration was applied on the series, to find out the long-run association between saving as percentage of GDP and growth of the economy. It can be seen, from the summary of the Augmented Dickey Fuller Test results for all the selected variables, that the growth is stationary at order zero I(0) of integration whereas the savings as the percentage of real GDP is stationary at order one I(1) of integration. Therefore, the stationary series are taken to run Engle Granger Test of Cointegration. Engle Granger test is applied to the tune of following equation:

$$\Delta Y_t = \varphi_1 \Delta X_{t-1} + \varphi_2 \Delta Y_{t-1} - \gamma \{Y_{t-1} - \hat{\beta}_1 - \hat{\beta}_2 X_{t-1}\} + \omega_t \quad (\text{Equation 6.11})$$

The lag residual from the cointegrating regression $\{Y_{t-1} - \hat{\beta}_1 - \hat{\beta}_2 X_{t-1}\}$ is given in the curly brackets in Equation 6.11. This captures the departure from the attractor from the last periods in the series. The coefficient γ (gamma), is the speed of adjustment from the shocks. If it is not statistically significant, the variable is weakly exogenous. Before estimating the error correction model, must first estimate the cointegration regression and save the residuals.

Table 6.3: Summary of the Cointegration Regression Estimates of Savings as Percent of Real

A) Parameter Estimates and the Explanatory Power of the Model			
T-Ratio [Prob]	Standard Error	Coefficients	Independent Variables
-0.2341 (0.816)	0.7545	-0.1766	Constant
2.9412 (0.006)	0.1087	0.3196	Growth
F-Stat [Prob]	DW	Adj R ²	R ²
8.6514 [0.006]	2.0908	0.1929	0.2182
B) Diagnostic Test			
F Version (lag, dof)	T statistics (p values)	LM Version t values [p values]	Test Statistics
F (1,222)	0.0843 [0.774]	0.0924 [0.761]	A. Serial Autocorrelation
F (1,26)	0.0041 [0.949]	0.0045 [0.946]	B. Functional Form
Not applicable	Not applicable	95.661 [0.000]	C. Normality
F (1,31)	0.2442 [0.625]	0.2579 [0.612]	D. Heteroscedasticity

The first attempt is made on the cointegrating regression taking saving I (1) in percentage of real GDP as dependent variable and growth as the independent variable. Table 6.3 summarises the results of the estimation.

The above Table 6.3, summarises the results of the estimation from the cointegrating regression, taking saving as the dependent variable and the growth as independent variable. The coefficient is significant with DW value approximately equal to two. However, the cointegrating regression has violated the diagnostic test of normality, at less than five percent of level of significance. The relationship seems to be non-normal distribution.

Further, assuming that the non-normality of the relationship may not affect the Error Correction Model, regression is performed to estimate the coefficient of the lag residual (Equation 6.11) to check if there is a long-run relationship between savings I (1) and growth I (0). Table 6.4, summarises the results of the estimation.

Table 6.4: Summary of the Cointegration Regression Estimates of Savings as Percent of Real

A) Parameter Estimates and the Explanatory Power of the Model			
T-Ratio [Prob]	Standard Error	Coefficients	Independent Variables
2.3213 (0.027)	0.0949	0.2205	D_growth Short-run relationship
-0.2734 (0.786)	0.1946	-0.0532	E5(-1) Long-run Relationship
F-Stat [Prob]	DW	Adj R ²	R ²
3.7997 [0.061]	1.8741	0.0828	0.1124
B) Diagnostic Test			
F Version (lag, dof)	T statistics (p values)	LM Version t values [p values]	Test Statistics
F (1,222)	0.6143 [0.440]	0.6638 [0.415]	A. Serial Autocorrelation
F (1,26)	0.7108 [0.406]	0.7650 [0.382]	B. Functional Form
Not applicable	Not applicable	70.093 [0.000]	C. Normality
F (1,31)	0.4356 [0.514]	0.4580 [0.499]	D. Heteroscedasticity

A close look at Table 6.4, gives a glimpse of the results of the estimation of lag residual coefficient. The F-statistics, predicts the overall significance of the model and it is insignificant. The coefficient is 0.786, which is too large and does not satisfy the significance level at less than five percent p-value. The violation of one diagnostic test still prevails in the error correction model test. Therefore, the data analysis fails to reject the null hypothesis of no unit root in the residual. Moreover, it is concluded that there does not seem to be a long-run relationship. And the properties of constant mean, variance, and autocorrelation are violated.

The whole process of the estimation of the coefficient of the lag residual is repeated with growth $I(0)$, as the dependent variable and saving in percent of real GDP as the independent variable. The summary of the estimates is presented in Table 6.5.

Table 6.5: Summary of the Cointegration Regression Estimates of Savings as Percent of Real

A) Parameter Estimates and the Explanatory Power of the Model			
T-Ratio [Prob]	Standard Error	Coefficients	Independent Variables
2.7677 (0.009)	0.9882	2.7351	Constant
2.9413 (0.006)	0.2321	0.6826	DS_Y
F-Stat [Prob]	DW	Adj R ²	R ²
7.4513 [0.005]	1.5035	0.1831	0.2081
B) Diagnostic Test			
F Version (lag, dof)	T statistics (p values)	LM Version t values [p values]	Test Statistics
F (1,222)	1.9036 [0.178]	1.9690 [0.161]	A. Serial Autocorrelation
F (1,26)	7.6096 [0.101]	6.6769 [0.010]	B. Functional Form
Not applicable	Not applicable	2.8915 [0.236]	C. Normality
F (1,31)	0.7354 [0.398]	0.7647 [0.382]	D. Heteroscedasticity

The estimates are reliable and significant, at less than five percent of level of significance.

The regression has not passed the diagnostic test of functional form. That may be due to the

independent variable with first difference. The variable is taken as first difference, because saving in percent of real GDP is nonstationary at $I(0)$. Therefore, to remove the unit root, ADF test suggests estimating the first difference of the variable. Otherwise, the whole process would be nonstationary. This would lead to the spurious regression. The null hypothesis, that there is no cointegrating relationship between growth and savings in percent of real GDP, is rejected.

To proceed to the next step, in estimating the Error Correction Model, the residuals from the above regression estimations are saved. It can be concluded, that the series can be written as the error correction model. Equation 6.11 is to be estimated under error correction model for growth as dependent and saving in percent of real GDP as independent variable, with lag residual series.

Table 6.6: Summary of the Cointegration Regression Estimates of Savings as Percent of Real GDP (DV) and GDP Growth Rate (IV) with Residual Lag Coefficient

A) Parameter Estimates and the Explanatory Power of the Model			
T-Ratio [Prob]	Standard Error	Coefficients	Independent Variables
2.3213 (0.027)	0.0949	0.2205	D_growth Short-run relationship
-0.2734 (0.786)	0.1946	-0.0532	E5(-1) Long-run Relationship
F-Stat [Prob]	DW	Adj R ²	R ²
23.959 [0.000]	1.8972	0.4255	0.4440
B) Diagnostic Test			
F Version (lag, dof)	T statistics (p values)	LM Version t values [p values]	Test Statistics
F (1,222)	0.0441 [0.835]	0.0486 [0.825]	A. Serial Autocorrelation
F (1,26)	0.7976 [0.379]	0.8566 [0.355]	B. Functional Form
Not applicable	Not applicable	0.3658 [0.833]	C. Normality
F (1,31)	0.4356 [0.514]	0.1929 [0.661]	D. Heteroscedasticity

Table 6.5, shows that DS_Y has a significant effect on growth. The coefficient 0.683 implies that 1 percent increase in DS_Y will increase growth by 0.68%. An increase in the volume of

savings increases the growth rate. The rise in saving increases the supply of loanable funds and consequently decreases the interest rate. With the decrease in interest rate, investment goes up and so does the growth. The magnitude of the coefficient is perhaps no the higher side of the effect savings have on growth rate but this perhaps can be explained with the cultural differences between Arab and western countries and the concept of risk sharing. In Arab countries investments are done in a more prudent manner and there are no excessive risks taken. Savings therefore translate to higher growth rates.

In Table 6.6, the short-run equilibrium relationship is indicated by the coefficient of DS_Y (saving to GDP ratio) and long-run equilibrium is indicated by the coefficient of $E4(-1)$ (residual with lag). The estimated value of coefficient of DS_Y is 0.69324 and it is significant at less than one percent. It represents the coefficient for the short-run and the short-run equilibrium. It means, that model corrects its previous period disequilibrium, at the speed of 69.324% between savings and growth. $E4(-1)$ indicates the variables (saving and growth) of the model corrects disequilibrium. Its sign should be negative and significant. Its coefficient shows, the rate at which it corrects its previous period disequilibrium of model subject to negatively and significant. Its coefficient is -0.75597 and significant at less than one percent level. This means, that the speed of disequilibrium of the model, is 75.60% annually.

All other estimates are reliable and strong, suggesting a long-run relationship between growth and savings, as percent of real GDP. The estimation of error correction model of the series involved is presented in Equation 6.11, which puts forward the conclusion that the long-run relationship between saving as percent of real GDP and growth exists. However, the direction of casualty goes from saving to the growth and not the vice versa. In other words, higher

gross domestic saving as percent of real GDP, leads to the higher long-run growth rates.

Data presented in Table 6.3, fails to pass the normality test. It means that regression of real GDP (DV) and GDP Growth rate (IV), does not have normal distributed residuals. While the final results that satisfied normality tests are presented in Tables 6.5 and 6.6. It means that in the UAE, savings affect the long-run growth rates, rather than the UAE growth affecting savings (results in Tables 6.3 and 6.4).

6.6 Conclusion

This chapter, offers elaborative discussion on saving and growth linkage and explored previous theoretical studies, from Endogenous Growth models to Neoclassical Growth models. More or less, all theoretical growth models in their theoretical findings have emphasised the role of savings in determining the growth patterns, in a country's economies. However, the empirical evidence is still ambiguous. One reason is the absence of enough empirical evidence in time series data analysis, as the causal link and long-run association between saving and growth can only be established using time series data. Studies involving cross-sectional data analysis seem to be prone to certain limitations, as they unrealistically assume that saving-growth association is homogenous across countries. In reality, this assumption does not hold given varying demographic, socio-economic, and geographic characteristics of the countries and regions. Further, there may arise the issue of representative countries in studies involving cross-sectional data analysis, evidently showing causal direction from saving to growth. However, it remains unclear how to select a representative country. Using time series data, involves challenge of unit root and nonstationarity. Augmented Dickey Fuller Test is applied on all the selected series, to check the order of integration of the selected variables.

The present chapter is an independent study and an attempt to analyse the determinants of saving function, to have a clear idea about the factors affecting saving patterns in a country. From estimations, it has been identified that saving is statistically significantly affected by domestic liquidity percentage of real GDP (M2Y), foreign savings as percent of real GDP (FS_Y), dependency ratio (DEPEND) and real interest rate (L_REAL). In case of all independent variables, the sign, and magnitude of the associated coefficients, the estimates are strong and statistically significant. Overall, goodness of fit of the model is reflected from large and statistically significant values of R^2 and F-stats. The level of significance is set at five percent. The regression estimates have passed all four diagnostic tests of data series quality and reliability.

As a second step, saving and growth long-run association has been estimated using Error Correction Model specifications and cointegration. Due to the statistically insignificant value of the lagged residual values of the cointegration regression, the null hypothesis that saving is dependent on growth in long-run, could not be rejected. However, the same process is repeated with growth as dependent series and saving as independent series. The statistically significant value of lagged residual coefficient in cointegration regression reflected the notion that growth in case of the UAE is dependent upon saving in long-run. The null hypothesis that growth-saving are not associated in long-run was rejected which was consistent with Agrawal et al. (2009).

Chapter 7 – Stock Market Development and Economic Growth: Evidence from Selected Arab Countries

7.1 Introduction

The discussion and empirical findings on the link, between financial development and financial deepening in United Arab Emirates, have already been presented in the chapter on the financial development and economic growth links. This chapter is devoted to the empirical investigation of the link between the stock market development and a country's economic growth.

There have been various channels, through which financial development affects economic growth in any country. The first most important channel recognised in the existing literature is the efficient allocation of resources through overcoming information asymmetries and the cost of transactions. The efficient allocation of resources seems to lead towards more innovation and productivity growth in a country's economy. The literature on financial development suggests that innovation is the engine of growth (King and Levine, 1993). Further, the literature on the role of financial development and the real economy has been going through the process of refinement. Initially, the role of financial sector was to provide the necessary finances to the potential investors for profit making projects beneficial for the investors and the society as a whole. An empirical study by Gurley and Shaw (1955) has argued that the key difference between developed countries and developing countries has been the quality, efficiency, and effectiveness of the financial sector. To be more precise, the financial sector in developed countries is more efficient and developed than in developing countries. In developing countries, the history of stock markets as an integral part of the

financial market is only a recent phenomenon. It needs to go a long way to be more deepened and mature to play an important role for growth and development in the real economy.

Historically, the financial intermediaries' efficiency in the developed world was measured in terms of their role in extending the borrowers' financial capacity and smoothening of the trading activity.

The existing literature on the financial sector's development and growth nexus presents two main streams of thought based on the type of the financial institutions. Some authors have claimed the importance of the development of the banking sector for the economic growth of a country over the stock markets (Stiglitz and Weiss, 1981). In addition, Arestis and Demetriades (2002) have argued that though the role of the equity market and bank development is very important for the growth prospects of a country, the impact of banking activities is much more in the long-run on economic growth of the country than the stock markets. Some researchers have shared views that the efficient allocation of scarce resources can better be watched over by the banking sector than the equity market (Boyd and Prescott, 1986; Stiglitz, 1985). Notwithstanding, scientific evidence on the importance of banking over stock markets for growth in long-run is available from the literature. It is claimed that the studies sometimes have ignored the bottlenecks preventing efficient allocation of credit that may be inherently prevailing in the developing country's setting²⁸. It is argued, that despite the absence of interest rate ceilings in developing countries asymmetric information would be a great obstacle in the allocation of credit in projects beneficial for the whole economy and society (Caprale et al., 2004). Recent literature suggests that the focus of researchers has gradually shifting towards effective role of various stock market indicators. Refocused and

²⁸Literature has treated interest rate ceilings as the indication of financial repression in the country (Demetriades & Luintel, 2001; Mathieson, 1980; Pentecost & Moore, 2009).

revisited studies have provided intensive scientific evidence on the vitality of stock market indicators for growth (Demirguc-Kunt and Levine, 1996; Levine and Zervos, 1998; Levine and Zervos, 1993; Levine and Zervos, 1996). The argument is extended that stock markets are facilitating risk-averse investors and savers to carry on safer investment options at lower costs by diversifying their portfolio. This is done because of the provision of a more liquid means of sharing risk, which ensures that capital flows towards the more promising investment projects (Dailami and Atkin, 1990). There are very few studies (those are even in Arabic) on the empirical links between stock market variables and economic growth. Researchers have concluded that due to the infancy of the capital market in the UAE there is a degree of inefficiency due to harmful speculative activities. Compared to other stock markets there is greater volatility in the UAE's capital market due to geopolitical circumstances in the region (Moustafa, 2004).

The present chapter is focused on the estimation of the role of stock markets on the economic development of Arab countries with particular focus on UAE. For the analysis, panel data on the selected variables have been collected from 10 Arab countries namely: Bahrain, Egypt, Jordan, Kuwait, Lebanon, Morocco, Oman, Qatar, Saudi Arabia, and the United Arab Emirates. These countries are closely related to each other in terms of their economic and financial systems. Studying them together will give a better insight of their movements and behaviors. These countries could provide a better insight of the relationship of the factors under consideration. The financial system of these countries are still developing and are vulnerable to various external factors. Studying these countries also provide better insight to investors as well as policy makers. The results of this study could be applied by policy makers of these countries for their economic growth and development. Investors can better diversify their investment based on the results of this study.

This chapter is organised in following way. The first section is presented as the introduction of the chapter. Section 7.2, discusses the theoretical framework through which the economic growth, is linked with the development in stock markets. Section 7.3, takes a detailed account of the previous empirical literature, on the stock market and economic growth link. Section 7.4, is devoted for discussion on the model specification, data and research technique used in the study. Section 7.5, presents an overview of the UAE's stock markets. This section, also reviews the recent development in and performance of, the UAE's stock market. Sections 7.6 and 7.7 are devoted to the presentation and discussion of the econometric methods applied in this study. This section will also present an econometric analysis and interpretation of the results. In addition, this section will present the interpretation of results and provide a comprehensive discussion of the material covered in this chapter. The last section 7.8 concludes the chapter.

7.2 Stock Market and Economic Growth: Theoretical Linkages

It is widely believed and discussed in the existing literature on theoretical links between the stock market development and the economic growth is going through a rise in future capital stock and the growth in productivity. As suggested by Levine and Zervos (1998), the empirical findings of the capital stock growth and the change in the physical capital and productivity growth may give a reasonable reflection of technological change, quality advances, and resource allocation advancements altogether (also used in regressions a term for investment in human capital).

The theoretical literature, on the link between the development of the stock market and economic growth, has been a recent phenomenon. The exploration of the previous literature (attributed Exogenous Growth Theories) was focused on the steady state level of capital stock per

worker productivity with no direct focus on the rate of growth. However, recent research attributed to Endogenous Growth Theory considers growth as a self-sustaining process and influenced by the initial economic and other conditions in a country. This change in thinking patterns has led authors to hypothesising on the relationship between financial intermediaries and the growth prospects of the country. This framework is able to reflect both the level of effects in the economy (productivity effects) and the rate effects of growth (Levine, 1991). The impact of stock market reforms on the growth rates of the economy are also discussed in the context of the recent move on reforming stock markets. Henry (2000) studied the impact of stock markets in autarky on growth and the impact of stock market development after liberalisation reforms have been framed. The key idea behind the theoretical framework has been the investigation of the impact of liberalisation in stock markets on aggregate valuation and physical investment. For a view of the open market extension of the analysis see section 2.4, Tobin and Brainard (1997).

Research by Henry (2000) on the theoretical relationship of the stock market and economic growth, was discussed in Chapter 2 Section 2.5. Equations 2.11, 2.12, 2.13, and 2.14 describe the relationship phenomena between the stock market and economic growth. Some researchers argued that more liquid stock markets drive higher economic growth (Levine, 1991; Bencivenga et al., 1995). It is also argued that the stock market provides a channel for saving mobilisation and better allocation of resources. According to Seetanah et al. (2008) savings lead to capital accumulation and finance the mega projects through equities. Hence, high level of economic growth is achieved. Moreover, mobilisation of savings provides the liquidity and more liquid markets boost the economy.

7.3 Empirical Evidence on Stock Development and Economic Growth

The theoretical part of the literature review is presented in Section 7.2. This section, presents the empirical evidence on the link between stock market development and economic growth.

The existing empirical literature, on the link between stock development and the economic growth, can be classified into two parts. Part one, includes cross-sectional studies and the second part includes the time series studies. Cross-sectional studies have some inherent weakness, like being more about the association, rather than causality. In contrast to the cross-section and panel studies, the time series approach's basic structure is a transparent framework, providing robust empirical evidence on the causality linkages between dependent and independent variables. Further, time series studies essentially avoid the estimation issues confronted by the alternative methods, concentrating only on the fundamental question of causality. As time series studies are used to estimate simple Vector Auto Regression (VAR), it does not require the unlikely assumptions about the Data Generation Process (DGP), as is the case with cross-section or panel estimators.

Studies on financial development and economic growth have been initiated as early as Gurley and Shaw (1955). Later studies, investigated the statistical association of financial development with that of the real economy, in terms of per capita income (Goldsmith, 1969; Shaw, 1973; McKinnon, 1973).

The focus on stock market development is a recent phenomenon and even more recent is the initiatives taken by researchers, to study stock market development in developing countries (Caprale et al., 2004). There are studies promoting the empirical evidence of stock market development and its impact on the growth of the economies, in developing countries (King

and Wadhvani, 1990; Joen and Von Furstenberg, 1990). These studies have drawn the attention of other researchers, who have also evaluated the stock development and economic growth in emerging and developing countries (Bekaert and Harvey, 1995; Neaime, 2012). As discussed earlier, the controversies around the linkage between the financial sector and economic growth have created disagreement among researchers over the role of stock markets in the growth of real economic sectors. For instance, Mayer (1988) has argued that the size of the stock markets has no significant impact on the growth of a country's economy. There are studies, claiming there is no role of liquidity, in enhancing the incentives for acquiring information or exerting corporate governance (Stiglitz, 1985). He argues that premature revelation of information, leads to the problem of free rides. Also, there has been a number of papers arguing that the reduced risk due to international integration, may lead to ambiguous effects on savings. This is because, of the income and substitution effects of reduced risk (Devereux and Smith, 1994).

Levine and Zervos (1998) used cross-country regressions on a number of countries over 18 years, between 1976 and 1993. They demonstrate their results, on the linkage between various measures of equity market and that of the real activities in the economy. They have argued, that in developing countries, the linkage between the equity market and the economy is positive and relatively strong. Further, being more open the stock market volatility on the return of the investment, has been lower in those capital markets. This assertion has been supported by Demirguc-Kunt and Levine (1996) who have argued that the relatively larger equity markets tend to be less volatile. Levine and Zervos (1993) have argued that the rate of return in less volatile markets, tend to be less risky and variance assumes lower value. Therefore, it can be concluded, that the size of equity markets has a positive impact on real economic activity.

Studies on the Middle East, regarding financial sector and growth nexus are scant. However, there are a couple of studies on stock market development in the MENA region, which have found these stock markets to be very unsophisticated (Neaime, 2012). The stock markets in the MENA region are treated as segmented markets as they never treat foreign investors (other than those from the GCC²⁹ countries). Removal of restrictions from these regional stock markets, may lead to improve and enhance their role in economic growth.

Demetriades and Hussein (1996) empirically examine the causality between financial development and economic development for 16 countries, by using time series analysis. They found strong evidence on bidirectional causality, some evidence on economic development leads financial development causality, and little support that financial development leads economic development. They argued, that cross-section studies on economies are dangerous, when viewing them as homogeneous entities.

Demetriades and Luintel (1996) conducted an empirical study in India, to examine the effects of direct costs of financial repression on financial development. They found, that financial repression negatively affects financial development and that the relationship between financial development and real GDP per Capita, is not weakly exogenous. They built a financial liberalisation index, through the principal components approach. In this way, they were able to examine the direct effects of repressions independently of real interest rate. In the index, they used the dummy of financial repression. For example, they used “1” if there was any control on interest rates or on others variables and “0” for absence of control. The key variables for building the index were: normal deposit rate, fixed deposit rate, deposit rate ceiling, deposit rate floor, fixed lending rate, lending rate ceiling, lending rate floor, reserve ratio on deposits

²⁹ Gulf Cooperation Council.

(time deposit), and demand deposit.

Arestis et al. (2001) conducted an empirical study on five developed countries' stock market. Their purpose, was to examine the relationship between the development of stock markets and economic growth, by controlling the banks and market volatilities' effects of the sampled economies. They found that banks and stock markets drove the economic growth, but that stock market had less effects. Using cross-country growth regressions, they claim that the role of stock markets in economic growth is exaggerated.

Arestis, et al. (2003) conducted an empirical study to examine the effects of financial policies, on capital productivity. Their sample consist of 14 countries, over a period of 40 years. Using a panel approach, they found that effects of financial policies vary from country to country, dependent upon institutional differences. They further argued, that there is positive relationship between financial policies and capital productivity, where the institution quality is weak.

7.4 Data, Model Specification and Research Methodology

This section discusses the availability, quality, and the sources of the data collected on the selected variables. Elaborative discussions on the research technique and the associated advantages of the used technique are provided. This section also includes, the discussion on how the technique Generalised Method of Moments (GMM) is used for the fulfillment of the objectives, of this study. The last subsection in this section is devoted to the estimation of the order of integration of the selected variables. The order of integration or presence of unit root in the selected variables is mandatory in time series data, to avoid the issues related with the non-stationary data.

7.4.1 Data and Variables

For analysis panel data on the selected variables has been collected from 10 Arab countries namely: Bahrain, Egypt, Jordan, Kuwait, Lebanon, Morocco, Oman, Qatar, Saudi Arabia, and the United Arab Emirates. Though the data series is not sufficiently large, because of reasons associated with a developing countries setting, the empirical analysis is both robust and efficient. In developing countries the stock market development is not mature nor deep, in comparison to the developed world. Seetanah et al. (2008) has argued that the banking sector in developing countries are more effective for economic growth, than the stock market. The reason behind this, is the same as why the stock markets in developing countries have not developed and have not attained the maturity levels of newly industrialised and developed countries from the perspective of firms' and the investors. There are more endogenous factors affecting the growth of economies in developing countries. It has been argued, that there may be bi-direction causal relationship, where output levels serve as proxies of the nation's wellbeing, are also playing an important role in the development of the stock markets (Seetanah et al., 2008).

Several Arab markets (e.g. Algeria, Tunisia, Libya, Iraq, Yemen etc) are missing from the sample because firstly the data for the variables under consideration are not available for these countries. Secondly, these countries are facing some extraordinary conditions (e.g. political and social turmoils) that makes them different even compared to other Arab countries. Hence, these countries are not considered in the present study but could be the subject of empirical investigation of future studies and when there is availability of data.

The data series used in this paper has been extracted from various sources i.e. World Development Indicators (World Bank Website) and International Financial Statistics (IFS).

Using two different data sources leads to results and measures being subjected to measurement and consistency issues, due to using two different data sources (Levine and Zervos, 1998). Levine and Zervos (1998) have also used indicators of bank development, along with the stock market performance and development (Mohtadi and Agarwal, 2004; Mohtadi and Agarwal, 2004). This is out of scope of the present study. Therefore, only stock market indicators are presented and described here.

The following three stock market measurement indicators have been used as variables by many authors (Caprale et al., 2004; Levine and Zervos, 1998; Demirguc-Kunt and Levine, 1996):

1. Market Capitalisation Ratio: This is equal to the value of listed shares at the stock exchange, divided by the GDP. This is the indicator of the size of the market. Despite this, there is no absolute rule of thumb that the large markets function efficiently, most authors have used as an indicator of stock market development.
2. Value Traded Ratio: This equals the total value of the shares traded in the stock exchange divided by the GDP. This is the measure of liquidity. It measures the trading volume, relative to the national output.
3. Turnover Ratio: This is another indicator of variations in the liquidity in the stock market. It is equal to the value of the total domestic shares traded on the country's stock markets, divided by the value of total listed shares. This helps to understand the volume of domestic equities traded on domestic exchanges, relative to the size of the market. It is generally inculcated, that high turnover ratios, mean low transaction costs in the markets. Its relative importance may be known, from the fact that a very large but inactive market may have large capitalisation but small turnover.
4. Economic Growth: GDP growth rate in percentage has been used as a measure of

economic growth and development.

Although significant effort was spent to develop the dataset using in this study the limited number of sources available meant that a more complete sample was not possible to be compiled. For instance, braking down information on liquidity indicators and identify trading for individual stocks or sectors in order to explore concentration of trading was impossible to obtain.

7.4.2 Model Specification

The present study is an attempt to investigate statistically significant relationship between economic growth and the stock market variables. The variables of the stock market have been devised to undertake (1) the size of the market and (2) the level of liquidity in the market.

The general specification of the model can be given as under:

$$Y_GR_{t-1} = \alpha_0 + \alpha_1 MKT_{CAP}_{Y_t} + \alpha_2 VAL_{TR_RATIO}_t + \alpha_3 TURN_{OVER}_t \quad (\text{Equation 7.1})$$

The description of the dependent and independent variables has been provided in Section 7.4.1

7.4.3 Methodology

This study uses the generalised method of moments (GMM), for estimation of results, from the panel data of Arab countries. The first step would be to explore the order of Integration of all variables.

7.4.3.1 Order of Integration

Panel data aggregates often are infected with non-stationarity that causes means, variances,

autocorrelations, and other statistical properties to be non-constant. This takes away the independence of the observations from each other. To run regressions with meaningful and robust statistical results from time series aggregates, the data should be “stationarised” and “detrended”. This is done through testing for the order of integration in each selected variable. These tests are called unit root tests. This chapter uses the Levin, Lin and Chu test for Panel Unit Root. The method is as follows: the test is run at the level with actual observations and verified if the data is stationary. If the data is not stationary at this level, the test is applied at a higher order level, with first difference of the time series. Further, the observations seem to be independent from their past trend. This confirms that the data series is not serially auto correlated. However, in case of non-stationary data it brings up values of variances and means, that are varying and do not remain close to the long-term mean and variances of the data series. Various types of non-stationary processes have been identified in the literature, like pure random walk, mathematically it is written as: $Y_t = Y_{t-1} + \varepsilon_t$ (Lorodanova, 2007). It estimates the value in time “ t ”, which includes the stochastic component, which is white noise in the last period value. Another non-stationary process, is known as the random walk with drift. It only includes drift (constant) in the analysis. Mathematically it shows as $Y_t = \alpha + Y_{t-1} + \varepsilon_t$. The third non-stationary process is the deterministic trend. Here, instead of regressing dependent variable at its own past values, it regresses dependent variable at the time trend. Mathematically it shows: $Y_t = \alpha + \beta t + \varepsilon_t$. Here β is the coefficient of time trend, being estimated for dependent variable Y_t . In the fourth non-stationary process, along with time as an independent variable, past values of the dependent variable are also used as independent variables. This is known as the random walk with a drift and deterministic trend. It is shown in $Y_t = \alpha + Y_{t-1} + \beta t + \varepsilon_t$. Levin, Lin and Chu test has been applied to investigate if unit root exists in the selected variables. The table 7.5 presents the summary of the Levin, Lin and Chu test.

7.5 Stock Market Developments in the UAE

Formally initiated in 2000, the UAE stock market is relatively new and small. It just represents two stock markets: Dubai (generally called Dubai Financial Market or DFM) and Abu Dhabi (generally known as Abu Dhabi Stock Exchange or ADX). Both UAE stock markets, are under the supervision of the Emirates Securities and Commodities Authority. UAE market is fragmented as there are two main stock markets. Volume is split between the markets. Companies are not allowed for cross listing. This somehow reduces the liquidity across the markets but because of strong government regulation and investments, markets are showing reasonable volume. There are no dual listed stocks in UAE and cross listing is not allowed by the government perhaps with the purpose of controlling arbitrage activities.

Unofficially, the trading in capital market happens through Over The Counter (OTC) methods through several brokerage firms with most being affiliated to banks dating back to 1970 (Bin Sabit, 2000). There is an electronic trading in UAE and any individual or institution can apply for an Investor Number (NIN) with the stock markets in order to trade both DFM and Nasdaq Dubai listed securities. However, it is not used much in practice. The system was recently introduced by the authorities and still in its initial phase.

Though stock and financial markets in the UAE are still a recent phenomenon, the UAE capital markets were upgraded from frontier markets to emerging markets, in 2013³⁰. The number of UAE listed domestic companies in 2001 was 13, increasing to 104 in 2010 (World Bank's World Development Indicators Database).

³⁰Capital Finance International (retrieved on 29.11.2015 <http://www.grantthornton.ae/content/files/defining-period-for-uae-capital-markets-cfi-co.pdf>)

Historically, the stock or capital market in the UAE has witnessed four phases, regarding trading activities and price per share (Bin Sabit, 2000; Moustafa, 2004). For a period of seven years (1975 to 1982), rising oil prices in the world market provided leverage to the UAE capital market, in terms of the new emerging companies. With increased revenues and petrodollars, there was a strong urge by the UAE government towards modernisation and building a strong national economy. The second phase started in 1983, when a couple of unfavorable incidents occurred in the region. The first, of the incidences was the crash of the Kuwaiti stock market. This led to uncertainty in the region's capital market, still in its infancy. The second incident was the 1983 crisis of the Al-Manakh market. The third incident was the 1986 falling of oil prices in the world market. These incidents had a negative impact on the UAE's capital market and the nation building plans.

From 1993 to 1998, a fixed exchange rate regime was introduced, with new issues of AED with par value. A number of new companies emerged in the market. By now the number of investors was constantly rising, so speculative activities and trading started taking place in the market. The UAE government was not well experienced with the intricacies of the capital market; therefore, the market went into deep decline by 1998. The reasons as mentioned in the literature were: the lack of regularity, manipulation of the market, negative speculative trading, lacks of financial disclosure, and the drop in oil prices once again (Moustafa, 2004). The deep decline in 1998 necessitated establishment of a regulatory authority to curb speculative and harmful trading activities. Consequently, the government body of Emirates Securities and Commodities Authority was established. This authority has been monitoring, observing, and developing both primary and secondary markets in the capital markets. There have been very few empirical studies on the stock markets in the UAE. Ebid (1990) conducted a study utilising serial correlation with time lags of 1, 2, and 3 to investigate the

characteristics and behavior of the UAE stock markets. Using weekly data for 21 companies between 30 Sept. 1986 and 31, July 1990, the study concluded that the UAE stock market is inefficient and operates at a weak level.

Al-awad and Hassan (2011) have attempted to investigate the predictability among stock prices of banks, insurance, and services sector companies over the period from November 1997 to May 2000. Using Granger's causality test and impulse response function, they found strong linkages among stock price indices. This confirms that the UAE market is inefficient. Further, they found no strong link in the long-run among the stock price indices. The inefficiency attributes of the market, may be due to the fact that the UAE stock market is newly developed and just recently has become official, with presence of regulatory body. Moustafa (2001) has examined the randomness in the stock prices in the UAE, rejecting the Efficient Market Hypothesis.

The development of financial market in the UAE, was discussed in Chapter 4 Section 4.2.3. The historical step towards the establishment of the UAE financial markets, was the incorporation of Stock Exchange Law, in June of 1999. In 2000, two financial markets were established: the Dubai Financial Market (DFM) and the Abu Dhabi Securities Market (ADSM). The UAE capital market consist of different exchanges: the Dubai Financial Market (DFM), the Abu Dhabi Securities Market (ADSM), and the Dubai International Financial Exchange (DIFX). The Dubai Gold and Commodities Exchange (DGCX), incorporated in November 2005 to trade in financial derivatives, was the first derivatives exchange in the Middle East Region. It is regulated by the Securities and Commodities Authority (SCA). The DFM, was financed and fully owned by the Dubai government, since its inception in November of 2006. In March of 2007, 20% of DFM's shares were offered to

the general public. The NASDAQ Dubai, is the third exchange in the UAE, dealing in the trading of regional and international shares in Middle East. Its major shareholder is the DFM, holding 67% of shares. It is operated under the supervision of Dubai Financial Services Authority and situated in the DIFC. The number of listed stocks in 2013 in ADSX was 65 companies, (DFM) was 29 companies and Nasdaq Dubai had 7 listed companies.

Chapter 4 Section 4.5.1, compares the UAE stock market to the stock market in other GCC countries, from 2004 to 2013 (see Table 4.4). The UAE market capitalisation to GDP ratio, is below that of other GCC countries excluding Oman. Total value traded to GDP for the UAE, is slightly above Oman and Bahrain and below other GCC countries. Among the GCC countries, stock turnover ratio of the UAE is better than Oman, Bahrain and Qatar.

As mentioned in Chapter 4 Section 4.3, the UAE government has been consistently making efforts to make the financial sector more efficient and competent, in order to compete globally. With the passage of time, it has been incorporating the various laws and rules, to make the UAE financial markets more transparent and efficient. These UAE governments efforts, has increase the investors confidence. Some of these efforts are: ESCA law No. 4 of 2000, Law No. 8 of 1984, Law No. 164/8/94, new Code of Corporate Governance and Practices, shifting of IPOs supervision from Ministry of Economy to private sector and such others. Consequently, in 2000 the DFM and the ADSM have grown to 1,238% and 343% since their inception (Central Bank of the UAE Annual Report, 2004).

Table 7.1 and Figure 7.1, describe the historical growth from March 2000 to December 2013, of the DFM. Initially eight firms were listed on the DFM, to trade shares and no bonds were listed to trade, during its first year of operations. From March to December 2000, the shares trade value and shares market capitalisation were 436.567 million and 21,156.044 million

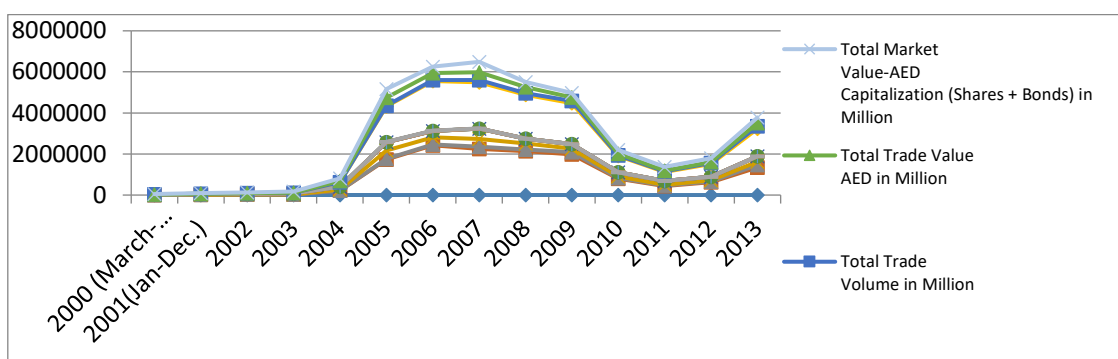
AED, respectively. The bonds market, have no listed firm to trade bonds and total markets capitalisation was 21,156.044 million AED. The first bond was listed on the DEM during 2001, by the name of Emirates FRN 2006 and total market capitalisation reached to 30,539.068 millions AED (29,039.068 million was shares market capitalisation). The highest total market capitalisation was 507,474.456 million AED, during 2007. The shares market capitalisation was also highest in 2007, at 499,719.447 million AED. The highest bonds capitalisation was 7,834.630 million AED, during 2006. The first foreign bond was listed during 2004, by the name of Shuaa Capital Bond (\$).

Table 7.1: Growth of Shares and Bonds Markets in the UAE

Year	Shares Market in Million				Bonds Market in Million				Market Grand Total in Million			
	Time Period	Number Of Shares Trades	Shares Trade Volume In Million	Shares Trade Value AED in Million	Shares Total Market Value-AED Capitalisation in Million	Number Of Bonds Trades	Bonds Trade Volume in Million	Bonds Trade Value AED in Million	Bonds Total Market Value-AED Capitalisation in Million	Total Number Of Trades	Total Trade Volume in Million	Total Trade Value AED in Million
2000 (March-Dec.)	6,590	23.974	436.567	21,156.044	-	-	-	-	-	-	-	21,156.0
2001 (Jan-Dec.)	13,623	58.697	980.999	29,039.068	38	0.002	210.490	1,500.000	13,661	58.699	1,191.5	30,539.0
2002	25,094	147.9	2,526.328	34,943.939	15	0.003	277.006	1,503.150	25,109	147.957	2,803.3	36,447.1
2003	25,276	326.2	3,771.491	52,465.974	47	0.007	225.840	2,959.500	25,323	326.243	3,997.3	55,425.5
2004	215,934	5,122.1	50,453.821	133,665.229	20	0.012	602.158	3,041.940	215,954	5,122.132	51,055.9	136,707.2
2005	1,734,488	25,541.7	405,092.086	411,349.101	8	0.003	69.389	7,550.890	1,734,496	25,541.701	405,161.5	418,899.9
2006	2,422,990	39,643.8	347,548.310	311,321.402	11	0.005	431.729	7,834.630	2,423,001	39,643.785	347,980.	319,156.0
2007	2,252,002	105,256.9	378,990.552	499,719.447	13	0.005	419.848	7,755.010	2,252,015	105,257.002	379,410.4	507,474.4
2008	2,131,079	76,508.3	305,176.216	231,811.528	3	0.000	25.844	6,272.770	2,131,082	76,508.312	305,202.0	238,084.3
2009	1,984,272	110,683.6	173,507.599	213,376.836	-	-	-	2,587.770	1,984,272	110,683.607	173,507.6	215,964.6
2010	794,661	38,392.3	69,664.768	199,085.543	-	-	-	1,799.770	794,661	38,392.303	69,664.8	200,885.3
2011	444,814	25,163.7	32,088.192	180,093.428	-	-	-	1,899.770	444,814	25,163.682	32,088.2	181,993.2
2012	621,421	40,462.9	48,588.075	181,899.358	13	0.002	186.278	1,937.418	621,434	40,462.904	48,774.4	183,836.8
2013	1,337,857	127,180.3	159,882.038	259,629.147	1	0.000	4.000	100.000	1,337,858	127,180.364	159,886.0	259,729.2

Source: <http://www.dfm.ae/marketdata/bulletins>

Figure 7.1: Growths of Shares and Bonds Markets in the UAE



Source: <http://www.dfm.ae/market-data/bulletins>

Table 7.2 and Figure 7.2, explains the historical growth of the domestic listed firms, since its incorporation from March 2000 to December 2013. There is an gradual increase in listed domestic firms and numbers reached 117, at the end of 2013. The total stock traded value, in terms of GDP percentage, was highest “22.55” during 2009 and lowest in 2000. Domestic shares turnover, in terms of GDP percentage, was highest during 2008. The market capitalisation of domestic listed firms to GDP percentage, was highest during 2009.

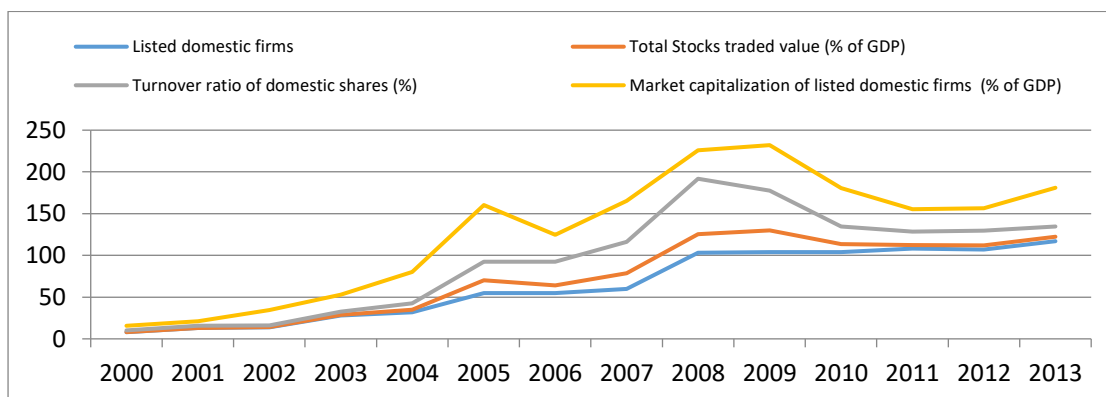
Table 7.2: Stock Market Indicators of the UAE in terms of GDP

Variables	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
Listed domestic firms	8	13	14	28	32	55	55	60	103	104	104	108	107	117
Total Stocks traded value (% of GDP)	0.11	0.14	0.33	0.78	2.89	15.13	9.09	18.46	22.55	25.95	9.69	4.31	4.81	5.52
Turnover ratio of domestic shares (%)	2.06	2.52	1.78	3.82	7.69	22.29	28.41	37.72	66.26	47.60	21.08	16.01	17.72	11.90
Market capitalisation of listed domestic firms (% of GDP)	5.49	5.59	18.55	20.38	37.54	67.90	31.99	48.93	34.03	54.52	45.97	26.89	27.13	46.40

Source: World Bank Financial Development Data

The turnover ratio although it seems quite low in the first few years it has increased values in most recent years, particularly prior to the 2007 financial crises. Considering the size of the market and the number of stocks listed its value is quite reasonable. The early low values might be justified by the investing culture in UAE. People living in developed countries have developed an investing culture and investing in stocks has become mainstream. In arab countries and in most frontier and emerging markets however this is not the case and investing in stocks is not one of the main elements of the investment culture. Investing in the equity market has become more mainstream in the last ten to fifteen years. The values of the turnover ratio in more recent years is similar to most developing countries and even to few developed markets causing no concern for thin trading.

Figure 7.2: Stock Market Indicators of the UAE in terms of GDP



Source: World Bank Financial Development Data

Given the description on the emergence, development, and ongoing performance of the stock market it can be concluded that the UAE stock market sector is still in its infancy. However, people in the region have increased their investments and interests in the UAE stock market. Creating the hope that the country will develop a vibrant capital market that is self-sustaining and efficient in allocating national resources.

7.6 Stock Market Development and Economic Growth: A Preliminary Analysis

Descriptive statistics results for all ten Arab countries are given in Table 7.3 whereas Table 7.4 provides results for each individual country. The average GDP growth, market capitalisation, stocks traded, and stocks turnover in Table 7.3 are respectively 5.20%, 67.33 as percentage of GDP, 28.20 as percentage of GDP, 31.47 as percentage of GDP for all Arab countries. The middle values of GDP growth, market capitalisation, stocks traded, and stocks turnover are respectively 4.69%, 61.03 as percentage of GDP, 10.36 as percentage of GDP, 17.78 as percentage of GDP in some selected Arab countries. Maximum GDP growth, market capitalisation, stocks traded and stocks turnover are respectively 26.17%, 238.67 as percentage of GDP, 372.25 as percentage of GDP, 136.90 as percentage of GDP in some selected Arab countries. Minimum GDP growth, market capitalisation, stocks traded and stocks turnover are respectively -7.07 percent, 6.92 as percentage of GDP, 0.29 as percentage of GDP, -1.14 as percentage of GDP in some selected Arab countries. Standard Deviation of GDP growth, market capitalisation, stocks traded, and stocks turnover are respectively 4.39%, 39.74 as percentage of GDP, 51.49 as percentage of GDP, 32.13 as percentage of GDP in some selected Arab countries. GDP growth, market capitalisation, stocks traded, and stocks turnover are positively skewed. GDP growth, market capitalisation, stocks traded, and stocks turnovers are having a Lepto – Kurtic distribution.

Table 7.3: Descriptive Statistics for All Arab Countries

Statistics	GDP Growth	Market Capitalization	Stocks Traded	Stocks Turnover
Mean	5.20	67.33	28.20	31.47
Median	4.69	61.03	10.36	17.78
Maximum	26.17	238.67	372.25	136.90
Minimum	-7.07	6.92	0.29	-1.14
Std. Dev.	4.39	39.74	51.49	32.13
Skewness	1.31	1.32	4.13	1.35
Kurtosis	7.54	6.14	24.01	4.21

Table 7.4: Descriptive Statistics for Each Arab Country

	Statistics	GDP Growth	Market Capitalization	Stocks Traded	Stocks Turnover
UAE	Mean	5.20	67.33	28.20	31.47
	Median	4.69	61.03	10.36	17.78
	Maximum	26.17	238.67	372.25	136.90
	Minimum	-7.07	6.92	0.29	-1.14
	Std. Dev.	4.39	39.74	51.49	32.13
	Skewness	1.31	1.32	4.13	1.35
	Kurtosis	7.54	6.14	24.01	4.21
Bahrain	Mean	5.01	15.19	0.59	5.01
	Median	5.36	16.43	0.30	5.36
	Maximum	8.29	27.09	2.08	8.29
	Minimum	1.98	6.60	0.16	1.98
	Std. Dev.	1.93	6.54	0.56	1.93
	Skewness	-0.12	0.09	1.84	-0.12
	Kurtosis	-1.03	-0.80	3.11	-1.03
Egypt	Mean	4.37	82.99	45.38	4.37
	Median	4.28	85.13	42.79	4.28
	Maximum	7.16	139.27	95.83	7.16
	Minimum	1.76	48.85	12.74	1.76
	Std. Dev.	1.93	28.15	30.37	1.93
	Skewness	0.22	1.00	0.50	0.22
	Kurtosis	-1.38	1.62	-0.96	-1.38
Jordan	Mean	5.39	31.33	9.31	5.39
	Median	5.37	30.86	4.62	5.37
	Maximum	8.57	40.84	27.19	8.57
	Minimum	2.31	25.76	0.47	2.31
	Std. Dev.	2.33	5.46	9.17	2.33
	Skewness	0.06	0.90	0.89	0.06
	Kurtosis	-1.60	-0.04	-0.67	-1.60
Kuwait	Mean	5.04	59.74	32.28	5.04
	Median	5.34	60.95	21.76	5.34
	Maximum	17.32	107.06	92.37	17.32
	Minimum	-7.08	19.46	1.17	-7.08
	Std. Dev.	6.11	36.85	30.35	6.11
	Skewness	-0.02	0.25	0.91	-0.02
	Kurtosis	0.55	-1.87	0.41	0.55
Lebanon	Mean	4.68	6.81	0.73	4.68
	Median	3.33	8.60	0.46	3.33
	Maximum	10.05	12.85	2.01	10.05
	Minimum	0.92	1.23	0.05	0.92
	Std. Dev.	3.23	4.51	0.70	3.23
	Skewness	0.66	-0.15	0.84	0.66
	Kurtosis	-1.22	-1.75	-0.75	-1.22
Morocco	Mean	4.59	58.89	6.57	4.59
	Median	4.39	56.96	4.01	4.39
	Maximum	7.57	69.15	23.17	7.57
	Minimum	1.91	52.48	1.00	1.91
	Std. Dev.	1.66	7.60	5.93	1.66
	Skewness	0.43	1.05	1.94	0.43
	Kurtosis	-0.49	-0.09	4.16	-0.49
Oman	Mean	3.67	18.10	3.38	3.67
	Median	4.47	18.35	2.79	4.47
	Maximum	9.33	36.77	8.80	9.33
	Minimum	-2.67	4.06	0.35	-2.67
	Std. Dev.	3.51	10.88	2.56	3.51
	Skewness	-0.39	0.08	0.79	-0.39
	Kurtosis	-0.46	-1.31	-0.12	-0.46
Qatar	Mean	12.10	108.20	25.69	12.10
	Median	11.96	95.51	21.83	11.96
	Maximum	26.17	152.58	48.19	26.17
	Minimum	3.72	76.53	18.40	3.72
	Std. Dev.	7.47	39.58	9.82	7.47
	Skewness	0.41	1.30	2.12	0.41
	Kurtosis	-1.09	n/a	4.77	-1.09
Saudi Arabia	Mean	4.17	370.35	469.47	4.17
	Median	5.23	353.41	362.40	5.23
	Maximum	11.24	467.37	1403.05	11.24
	Minimum	-2.82	318.73	22.29	-2.82
	Std. Dev.	4.25	57.80	402.19	4.25
	Skewness	-0.15	1.60	1.28	-0.15
	Kurtosis	-0.60	2.84	1.42	-0.60

Table 7.5 shows the results of correlations, in which different sets of variables are chosen to check the degree of association among variables. These results show that there exists a low level of association among the GDP growth rate and market capitalisation in Arab countries. Similarly, stocks traded and the GDP growth has association of low level. These low levels of association have also been explored between stocks turnover and GDP growth, market capitalisation, and stocks traded. There exists association of moderate level between stocks traded and stocks turnover.

Table 7.5: Correlation Analysis

Variables	GDP Growth	Market Capitalisation	Stocks Traded	Stocks Turnover
GDP Growth	1			
Market Capitalisation	0.21	1		
Stocks Traded	0.12	0.20	1	
Stocks Turnover	0.17	0.16	0.44	1

7.7 Econometric Results and Interpretation

The econometric analysis starts with the stationarity test of the series. The Levin, Lin and Chu panel unit root test was applied and the summary of the results are presented in Table 7.6. Here GDP growth rate (in percentage denoted by Y_GR), is taken as the dependent variable. In the level test, the analysis of the data allowed the rejection of the null hypothesis and shows that there is no unit root. Therefore, the panel data of Y_GR is said to be integrated of order zero I (0). The value of the test statistics is sufficiently large and significant at less than one percent threshold level of significance. In regards to the other three independent variables included in the model, market capitalisation (indicating the size of the stock market and denoted as MKT_CAP_Ratio, the null hypothesis of unit root in the series, was easily rejected. Therefore, it is said that the series is integrated at level or of the order I(0). Value Traded (indicating the degree of liquidity in the stock market) is denoted as

Val_Tr_Ratio. In this case the null hypothesis of unit root in the series is rejected at level. Therefore, it is confirmed that the series is integrated at level or of the order I (0). The second indicator of liquidity is the stocks turnover. It is denoted by Tur_Ov_Ratio. In regards to stocks turnover, the analysis of the data proved successful in rejecting the null hypothesis of unit root in the series and it is declared that the series is integrated of the order I(0). The p-values associated with test statistics estimates of all the selected variables are less than five percent. Therefore, the estimates are accepted as statistically significant at less than five percent level of significance.

Table 7.6: Summary of Levin, Lin & Chu Test for Unit Root Test

Variables	Unit Root test in	By Including	Statistic	Probability	Remarks
GDP Growth	Level	Intercept	-2.37	0.00	I(0)
Market Capitalisation	Level	Intercept	-14.56	0.00	I(0)
Stocks Traded	Level	Intercept	-2.10	0.01	I(0)
Stocks Turnover	Level	Intercept	-1.55	0.05	I(0)

Empirical estimations of the economic growth as dependent variable and stock development as the independent variables, using the Generalised Method of Moments (GMM) approach, are performed to establish the statistically significant relationship of stock variables (both market size and the liquidity). The GMM Method is applied to run linear regressions on the following equation (7.2):

$$Y_GR_{t-1} = \alpha_0 + \alpha_1MKT_CAP_Y_t + \alpha_2VAL_TR_RATIO_t + \alpha_3TURN_OVER_t \quad (\text{Equation 7.2})$$

Table 7.7, presents the summary of GMM estimates and their asymptotic standard errors of the economic growth and stock performance model. The results suggest that there is a statistically significant (probabilities associated with t-values of their coefficients are less than ten percent shown under column for “Prob.”) relationship between dependent variable

economic growth and the explanatory variables, market capitalisation ratio (MKT_CAP_Y), stocks traded (VAL_TR_RATIO) and stocks turnover (TURN_OVER). The value of stocks traded and turnover ratio, are indicators of liquidity in the market. This positive relationship may also be explained because of investor myopia, which can partly affect liquidity. The underlying causes of investor myopia have institutional and cultural nature and exert influence on the human behavior with time lags. On the one hand, investor myopia is a reaction to higher uncertainty due to ineffective institutions leading to a lack of enforcement or lack of punishment for opportunistic behavior. These aspects are very serious problem in some developing countries. On the other hand, investor myopia is a reflection of values of economic culture emphasising the importance of maximising short-term financial gains and/or current consumption. It implies that in developing countries, like arab countries and UAE in particular, investor myopia can be a product of evolution of money managers and the dynamics of mass consumption society.

It is also argued, that the greater liquidity leads to reduced uncertainty and risk. Lower uncertainty, can end up with lower savings rates, because of the ambiguous effects of lower risk on the savings. It may be argued, that the investor myopia coupled with the adverse effect on the corporate governance, may lead to the lower or no impact on the economic growth. Several researchers provide further discussion, on the liquidity in stock markets and economic growth (Seetanah et al., 2008; Deininger and Binswanger, 1999; and Yartey and Komla, 2007).

The results given in Table 7.7, indicate that the economic growth of last year, is a cause of reduced economic growth in Arab countries. Market capitalisation is increasing economic growth in Arab countries, indicating that market capitalisation is a significant cause of higher

economic growth and it is significant at a 10% level of significance. It may be interpreted, that a one percent rise in market capitalisation will increase economic growth by 0.15%, in Arab countries. Stocks turnover is reducing the economic growth of Arab countries, with statistically significant coefficient. It shows that a one percent rise in stocks turnover, will reduce the economic growth of Arab countries by 0.23 percent. This result seem quite surprising and in contrast to previous empirical evidnce in the literture. Further investigation of the data indicates that this relationship is largely affected by strong negative market performance, particularly following the 2007 financial crises. This result particularly highlights the issue that generalisations of previous studies should be viewed with caution. It seems that in developing and frontier markets, given their size, the effect of down markets can be more profound compared to the effect of up markets in terms of market trading and investor sentiment.

Table 7.7: Summary of the Generalised Method of Moments (GMM) Results

Variable	Coefficient	Std. Error	t-Statistic	Prob.
Y_GR (-1)	-0.02	0.65	-0.03	0.97
MKT_CAP_Y	0.15	0.09	1.64	0.10
TURN_OVER	-0.23	0.12	-1.91	0.05
VAL_TR_RATIO	0.20	0.11	1.79	0.07
MKT_CAP_Y (-1)	0.13	0.07	1.90	0.05
TURN_OVER (-1)	-0.06	0.10	-0.64	0.51
VAL_TR_RATIO (-1)	0.05	0.38	0.13	0.88
J – statistic	98.70	Prob. (J – statistic)		0.00

On the other side, the value of stocks traded is positively related with economic growth of Arab countries. The value of coefficient is statistically significant at 10% level, denoting that a one percent rise in stocks traded will increase economic growth by 0.20%. Market capitalisation of last year, is positively associated with economic growth of Arab countries,

with statistically significant coefficient value. Stocks turnover of last year, negatively affected the economic growth of Arab countries, but probability value is not significant. The value of stocks traded last year is increasing the economic growth of Arab countries. J – Statistic was used to determine overall significance of model 1 having probability value as 0.00, indicating that overall GMM model results are significant and reliable. Youden's J statistic (also called Youden's index) is a single statistic that captures the performance of a dichotomous diagnostic test. Unforcedness is its generalisation to the multiclass case and estimates the probability of an informed decision.

To examine the cause and effect relationship among various sets of variables, this study utilises the Panel Granger causality tests. Results are presented in Table 7.8. These results, propose a bidirectional causal relationship between market capitalisation and economic growth, indicating that market capitalisation affects economic growth and also market capitalisation can be a cause of economic growth. Unidirectional causality may be examined between the value of stocks traded and economic growth, which is moving from economic growth to value of stocks traded. Causality does not exist between stocks turnover and economic growth in Arab countries. In addition, the test indicates that there is no causality between the value of stocks traded and market capitalisation in Arab countries. This may be partly explained because of several reasons. Firstly, because these markets are new and investor confidence needs time to build up and secondly, regulations for trading in stock market are quite tight in frontier and emerging markets as compared to developed countries, since governments in these markets have tight control of stock market activities. Also in the case of Arab countries, two-way causal relationships may be seen between stocks turnover and market capitalisation. In Arab countries, there also exist a bi-variant causal relationship between stocks traded and stocks turnover.

Table 7.8: Panel Granger Causality Tests

Null Hypothesis	F-Statistic	Prob.
MKT_CAP_Y does not Granger Cause Y_GR	6.60	0.00
Y_GR does not Granger Cause MKT_CAP_Y	4.77	0.01
VAL_TR_RATIO does not Granger Cause Y_GR	0.47	0.62
Y_GR does not Granger Cause VAL_TR_RATIO	2.98	0.05
TURN_OVER does not Granger Cause Y_GR	0.90	0.40
Y_GR does not Granger Cause TURN_OVER	0.85	0.42
VAL_TR_RATIO does not Granger Cause MKT_CAP_Y	0.88	0.41
MKT_CAP_Y does not Granger Cause VAL_TR_RATIO	1.60	0.20
TURN_OVER does not Granger Cause MKT_CAP_Y	6.63	0.00
MKT_CAP_Y does not Granger Cause TURN_OVER	15.52	0.00
TURN_OVER does not Granger Cause VAL_TR_RATIO	4.13	0.01
VAL_TR_RATIO does not Granger Cause TURN_OVER	4.56	0.01

Note: Y_GR is growth rate, MKT_CAP_Y is market capitalisation, VAL_TR_RATIO is stocks traded, TURN_OVER is stocks turnover.

7.8 Conclusion

The key objective of this study was to investigate the impact of stock market development variables on the economic growth of Arab economies. Namely: the size of the stock market, as indicated by market capitalisation ratio and the liquidity variables, as indicated by value trade ratio and the turnover ratio.

The existing literature, suggests that due to its' infancy and early stage of development in the UAE capital market, there have been inefficiencies in the market owing to negative speculative trading activities. The existing literature, on the statistical linkage between stock market development and growth in the real economic activities, present a mixed response. There are several cross-sectional studies, which argue that there is a positive link between stock variables and the real economy. This is because efficient stock market reduces the risk and uncertainty and allocates resources to the profitable projects in the economy. This

generates economic activity and profits for firms and managers. Some studies have argued, for bidirectional causality between stock development and growth of a country's economy. Another group of studies have argued that the development in the stock market does not show any significant impact, on real economic activities. Even the size or the liquidity in the stock markets does not lead to higher growth rates. The ambiguous impact of reduced risk and increased return on savings of the nation has been taken as an argument against the stock-growth nexus. Some authors have argued that this linkage is not a general phenomenon, but is country specific. Cross-sectional studies, lack the ability to focus on a single country, therefore are unable to capture country specific effects in terms of the nexus.

The present study has used panel data on stock market variables and economic growth. The Generalised Method of Moments (GMM) model has been used for analyzing the relationships between variables. Results suggest, that stock turnover is negatively related with GDP growth rate, while value of stocks traded is increasing the GDP growth rate of Arab countries. Nevertheless, the size of the UAE's stock market in terms of market capitalisation is positively associated with the GDP growth.

The results from this study supported the hypothesis that the size of equity markets is positively linked with growth. The findings of this study, are similar to many other researchers who argued, that more liquid stock markets lead to higher levels of growth in the economy (Dailami and Atkin, 1990; Demirguc-Kunt and Levine, 1996; Levine and Zervos, 1998; Levine and Zervos, 1993; Levine and Zervos, 1996; Levine, 1991; Henry, 2000; Bencivenga et al., 1995).

Chapter 8 – Summary and Conclusions

8.1 Introduction

The present chapter is divided into three parts. Part one, summarises the discussion regarding the role of the UAE financial sector, the steps that were taken to improve this sector, and a summary of this study's findings. Part two discusses the implications for policy makers whereas part three outlines the limitation of this study and suggests areas for further research.

8.2 Summary of the Main Findings and Implications

The UAE is classified as one of the high-income countries, rich in oil and gas resources. It was established by the alliance of seven Gulf Emirates during 1970. It became the member of GCC block to have mutual cooperation in political, economic, commercial, financial, and monetary areas from other countries in the GCC. UAE has been enjoying a good credit rating from Moody's and Fitch. For example, Moody's assessed UAE's debt and ranked its sovereign long-term debt as Aa2 negative and its short-term debt as P-1 in 2016.

The UAE government undertook a series of steps to promote and stabilise its financial sector for both banking and capital markets since the establishment of the Currency Board in 1972.

The UAE Central Bank was established in 1980, by the incorporation of Federal Law 10.

This Central Bank has more powers and responsibilities than the Currency Board. In order to encourage the domestic bank to play active role in the UAE economy, The Central Bank

relaxed the restriction on domestic banks on opening new branches and imposing restrictions such as licensing and maximum eight branches for foreign banks in the UAE, during 1981.

Later on, branch limit for foreign banks is relaxed subject to the special prior approval.

During 1978, the UAE government also introduced the interest free credit line for water, fishing boat engines, and greenhouses. From 1980s to 1990s the Central Bank introduced a variety of reforms such as minimum capital requirements, reporting and auditing requirements, establish separate department to oversee bank loan risks, limit directors' loans, mandatory to maintain 10% capital to total assets ratio during 1993, retain 10% from net profits and equalise their reserve account to 50% of their paid up capital, adaptation of International Accounting Standards (IAS) during 1998, adaptation of corporate structure during 1999, commercial banks must be registered as a shareholding company under the UAE company law and also registered under the Federal Ministry of Economy and Trade, restructuring of banks and financial support two banks to maintain their liquidity and public confidence during 1986 and 1990, Federal Law 6 was incorporate to legalise the Islamic Banking during 1985, establishment of Dubai International Financial Corporation (DIFC) in June 2004 (first step towards banking liberalisation) and supervised by Dubai Financial Services Authority (DFSA).

BASEL II was incorporated during 2006-2007, which enable banks to manage risks and for the transparency of financial data. Federal Law 4 of 2002 and Federal Law 1 and 8 of 2004, were incorporated for Anti money laundering and combating the financing of terrorism (AML/CFT). Real Time Gross Settlement (RTGS) was introduced and has been functioning since 2002.

Fifty-one banks were operating (23 were domestic) with 928 branches, having 4,664 ATMs in the UAE as on December 2013. The deposit growth and loans growth for banks over the period from 2004 to 2014 were 389.23% and 439.15%, respectively.

Stock Exchange Law was incorporated in June of 1999. Following this law the Dubai Financial Market (DFM) and the Abu Dhabi Securities Market (ADSM) were established in 2000. The Dubai Gold and Commodities Exchange (DGCX) established in 2005, is supervised by Securities and Commodities Authority (SCA) for the trading of financial derivatives. The NASDAQ Dubai deals in regional, as well as, international shares in Middle East. It is under the supervision of the Dubai Financial Services Authority and situated in the DIFC. Equity markets in the UAE are less deep and less diversified. Therefore, it is highly volatile. Shares and bonds have been trading on the DFM since 2000 and 2001, respectively. On average, the UAE stock markets suffered losses, from 2007 to 2011. In 2011 its recorded loss was 6.45 million AED. There are 67 firms listed as of 2014. Squalli (2005), conducted empirical study on the UAE financial markets and found that it is a weak form of efficiency.

Economist such as Bagehot (1873) argued that there must be a rate on the banks borrowings against its good financial assets. Schumpeter (1911) highlighted that there should be corporate governance to monitor the firms and managers.

According to McKinnon (1973) and Shaw (1973), real interest rate influences savings and investment. Eventually, economic growth is promoted and government interventions to control inflation and launch of credited programs influence real interest rate. World Bank (1989) work explained that low interest rate slows down economic growth by affecting the productivity of investments. Stiglitz (1994), argued that a controlled interest rate increase the saving behavior because of better governance of financial system.

According to some researchers, capital requirements may make banks' portfolio more risky Genotte and Pyle (1991), Kim and Santomero (1988). According to other authors, a directed

credit program may increase the productivity for specific sectors (Arestis (2002), Demetriades (2002), Fattouh (2002), Mouratidis (2002) and Schwarz (1992)). On the above discussion, it can be said that financial system of any economy is shaped by financial policies prevailed in that economy.

The main purpose of this study was to capture the specific attributes for the economic development of the UAE, by taking the time series data from 1980 to 2013. To the best knowledge, it is the first study that considers the uniqueness and specific attributes for the UAE financial development, economic growth, and performance of the financial system. This study covers the time period from 1980 to 2013, which is important because of a variety of financial reforms and changes have been brought about during this period. Economist such as Agrawal (2001) and Beck et al. (2000), favored to study time series rather than cross-sectional study. They criticised on the grounds such as cross-sectional data do not captured the specific attributes for a single economy over a specific time period and do not control for the endogeneity factors for all the repressors. In case of time series analysis, the same issue does not arise and time series analysis may claim some sort of analytical and accuracy supremacy over the cross-sectional approach.

Keeping in view this, our study bridges the gap on economic and financial development for the UAE. This study sees the saving behavior, financial deepening, financial instruments and policies over the sample period of the UAE. A description is also provided on the role of the stock market and banking sector in the UAE's growth.

The detailed discussions on the theoretical and empirical evidence from studies were the authors have argued in favor of the finance and growth nexus and claimed a strong and

positive role of financial deepening in the economic growth of any country (Bagehot (1873), Schumpeter (1911), Gurley and Shaw (1955), Goldsmith (1969) and McKinnon (1973)). This claim is made on the basis of the role of financial sector in elimination of information asymmetries, mobilisation of savings, and supervision through ensuring the good corporate governance practices. Beck et al. (2000), have argued that the causality flows from finance and growth thus confirms the results of Goldsmith (1969), McKinnon (1973) and others of the same group.

In case of the financial sector development and the economic growth, first financial deepening model is estimated. The financial deepening model includes domestic credit provision (LDC) as the dependent variable and monetisation ratio, real Per Capita Income and the number of bank branches have been taken as the independent variables. To check the consistency of the model, a reverse model has also been estimated with monetisation ratio as the dependent variable and other three including the credit provision as the independent variables. The reverse model did not show any significant statistical link between the dependent and independent variables. Therefore, the present model of financial deepening taking domestic credit provision as the dependent variable proved as consistent and reliable.

Autoregressive Distributed Lag estimates of the financial deepening model present that there is significant positive impact of money supply, real per capita income and banking network as the proxy for the banking access on the domestic credit provision. That is to say that the financial deepening and the lag residual coefficient of the banking access have a positive and significant link. Rising per capita income and the increasing number of bank branches with prudent and balanced monetary policy (money supply) helps deepen the financial sector in the country. However, in the long-run, there is no any impact of number of banks and bank

branches in the country on the financial sector development. The conceivable pretext for such a result is that the UAE is a highly urbanised country with 80% of total population living in the urban areas and cities. Expansion in the banking sector, may not help improve financial sector performance and in long-run it will not be an important factor. Rather, per capita income growth and the money supply along with availability of loanable funds with increasing customer base will lead to the further financial deepening in the long-run. Error Correction Model estimation of the financial deepening measure the short-run relationship between dependent and independent variables. The results suggest that all selected variables are contributing positively in the financial sector deepening in short-run however number of banks branches does not show any significant impact on financial sector development in long-run.

Moreover, the growth model is estimated taking GDP as the dependent variable and gross investment ratio to GDP, trade ratio to GDP, domestic credit provision to GDP and oil price in the world market as the independent variables. The regression estimates of the ARDL growth model suggest that there is a statistically significant link between GDP and domestic credit provision and oil prices. However, the trade ratio to GDP and gross investment ratio to GDP do not have any statistically significant impact on GDP. This is understandable, from the fact that United Arab Emirates is predominantly oil based economy. Revenues from nonoil trade, do not make any substantial amounts of money, in comparison to the oil revenues. The gross investment in the country is also driven from the government's oil revenues. The economic diversification plan, of the UAE has recently been launched and the economic base has started from fundamentally an oil dependent country to a more diversified country, where only 35-40% share of GDP is oil revenues. The growth in other sectors like real estate, transportation, and wholesale and retail trade, financial sector development and

tourism. Merchandise trade does not have much influence on the UAE's GDP. Further, the gross investment in the mega construction projects is primarily coming from government sector, therefore it has an implicit base in the petro dollars revenues earned from the hydrocarbon exports. The most important implication from the estimations of the growth model is that there is a statistically significant relationship between GDP and the domestic credit provision as a proxy of financial deepening. The hypothesis that the growth follows the financial development stands proved in the case of the UAE. The results further confirm that the financial development in the UAE plays an important role for growth and development of the economy, along with the oil price as the proxy for the hydrocarbon revenues from export of oil in shaping the economic growth. A vibrant, dynamic, and competitive financial system in the country is a prerequisite to the growth in the real sector.

Several researchers have concluded that there is a positive link between savings and growth (Alguaci (2004), Fry (1998), Giovannini (1983), Giovannini (1985) and Lahiri (1988)). A rise in income as a result of higher interest premiums leads to higher spending. Consequently, it becomes mandatory for the economic and financial system to translate the accumulated savings in terms of loanable funds to be disbursed and allocated in the economically and socially profitable projects. Bagehot's (1873), seminal work on role of commercial banks; Schumpeter's (1911), work on banks as the financial intermediaries; Lewis's (1954), one factor model (reduced from labor and capital to capital only as the key determinant of the economic growth); and slow growth models have contributed explicitly towards saving as the determinant of growth. More recent studies like Romer (1986) and Lucas (1988), have elaborated on endogenous growth models with inherent assumption of constant returns to scale in capital rather than that of the decreasing returns to scale.

Econometric model developed and estimated is on the saving function and the determinants of saving rate for the United Arab Emirates for the period of 33 years from 1980 to 2013. The data collected on the variables is from well recognised official sources of National Bureau of Statistics and Central Bank of the UAE annual and quarterly reports and the online databases of International Monetary Fund and the World Bank. The variables included in the saving function are saving-GDP ratio (dependent variable) and monetisation ratio (M2Y), current account balance as the proxy for foreign savings ratio to GDP (FS_Y), dependency ratio and real interest rate. All variables transformed into natural log values. In the results, financial and demographic variables showed a significant relationship, between dependent and independent variables. The diagnostic tests verified the fact, that there are no serious issues of serial autocorrelation or difference in variances related with the data. The results reflect the fact, that in an economy with small production and economic base, it is not the growth variables that affect savings rather the financial and economic variables determine the level of savings. Except dependency ratio showing the negative significant link with savings, all other three variables are showing positive significant link with savings. The dependency ratio has a negative impact on savings. This confirms the fact, that as the number of dependents on the working population rises, it compels the household to increase the expenditure and reduce savings. Interest rate, in real terms (nominal rate adjusted with annual inflation rate), has a positive impact on savings. As real interest rate rises, it offers higher incentive to the small savers to save more. In the same way the supply of money relative to GDP leads to higher amounts in the hands of people affecting their saving attitude positively. A prudent financial policy and financial deepening in the country would lead to a higher saving rate in the country.

The Error Correction Model has been estimated to investigate presence of long-run and short-

run significant relationship, between savings and economic growth. The estimations are done in three separate models. The first model, takes savings as the dependent variable and the growth as the independent variable. The estimation results refute the idea that saving is significantly dependent on the growth in the real economy because one of the diagnostic tests (normal distribution) is violated and the model seems to be the non-normal. The same process is repeated in the second model, with the lag residual coefficient with savings-GDP ratio as the dependent variable and growth as the independent variable. The test generates a large p-value (0.786, more than five percent cut off point for significant relationship) therefore the null hypothesis may not be rejected if there is no unit root in the residual. The same model is repeated a third time with saving-GDP ratio taken as the independent variable and growth as the dependent variable with lag residual coefficient. The relationship is statistically significant with p-values for t-test and f-tests are significant and less than the five percent levels of significance. This confirms a hypothesis in this study, that there is significant causal link between savings and GDP and the causality runs from growth to savings and not the vice versa.

The results have serious implications for the policy makers of the UAE. Given the inherent nature of consumption driven economy with less local population and large number of tourists, the spending dominates the saving patterns when the economy is observing growth trends. The key factor affecting the GDP growth in long-run and short-run is the rise in capital accumulation through savings that leads to the innovation and productivity growth in the country. Hence, the results of the estimations go with the conclusions of studies by researchers, who claim that the increased savings lead to economic growth through capital formation and investments (Harrod, 1939; Domar, 1946; Romer, 1986; Lucas, 1988). In addition, other studies concluded that there is a positive impact of financial sector reforms on

domestic savings Dayal-Gulati and Thimann (1997), Edwards (1996) Johansson (1996).

Some studies have been arguing that it is not the size of the capital market that matters for the economic growth of the country Mayer (1988) or even any role of enhanced liquidity plays any role Stiglitz (1985). On the other hand, there are numerous studies claiming that the stock markets are the integral component of the financial sector that leads to the faster economic growth and facilitates investment Demirguc-Kunt and Levine (1996), Levine and Zervos (1998) and Levine and Zervos (1993).

Additionally, a separate model of economic growth and stock market development is developed and estimated, in this study. Economic growth, has been taken as the dependent variable and market capitalisation ratio as the indicator of size of stock market, value trade ratio and turn over ratios as the indicators of liquidity have been taken as the independent variables. The Generalised Method of Moments (GMM) model, has been used for analysing the relationships between variables. The results suggest that stock turnover is negatively related with GDP growth rate, while value of stocks traded is increasing with GDP growth rate of Arab countries. Nevertheless, the size of the stock market in terms of market capitalisation is positively associated, with the GDP growth.

The GDP growth is influenced by the changes in the size of the stock market and the turnover ratio as the liquidity indicator. The estimated results are in conformation with the remarks of authors who have been advocating the presence of positive causal relationship between GDP growth and the stock market development Bekaert and Harvey (1995), Neaime (2012).

8.3 Policy implications

This study highlights the significance roles of variables such as Real Per Capita Income and

monetisation ratio and number of bank branches in the UAE financial deepening (Domestic credit provision to the private sector ratio). The UAE economic development has been significantly affected by the international oil prices. Stock market development has been also played a vital role to build the UAE economy.

Therefore, this study will help to the UAE stakeholders such as the government. The UAE government may consider these factors regarding to bring reforms and changes for financial development in order to have better economic development. Market participants may take caution to access the financial markets in terms of its liquidity and size. Policy Makers and researchers may consider these factors and their changing behavior while formulating and implementing a specific policy for the UAE economic development.

Rise in capital accumulation through savings has significant effect on GDP growth in long-run and short-run. Therefore, financial policies focusing on the real interest rate as incentive for savers and the monetary policy (prudent level of money supply) lead to mobilisation of savings.

The policy implications for the growth of the economy propose that the strong and deep reforms in the regulatory and functional authorities may be introduced so that the speculative activities may be curtailed and waste of the resources may be avoided. Although the stock market is quiet a new phenomenon in the country, yet it has tremendous potential and strong implication for the financial sector in the region.

Further a prudent loan and advances policy towards a health and stimulating money supply can lead the economy to sustainable GDP growth in short-run and long-run. In addition, amid

the economic diversification plan, the strong financial system facilitates the efficient allocation of resources towards economically and socially profitable projects.

As concerns with the liquidity of stock market in terms of value of stocks traded and the size of the stock market in terms of market capitalisation is positively associated with the GDP growth for selected Arabian countries including the UAE. Formulation of policies for the development of stock markets should consider these determinants to have high GDP growth rate.

8.4 Recommendations for Further Study

This study provided a further insight into the relationship of financial development, savings and economic growth from the perspective of a frontier market. Although the study contributes to the existing literature and adds to the limited volume of empirical research in this subject for frontier markets, there is still a long way before we are able to fully appreciate the true relationships examined in this thesis.

Further research is required with respect to the determinants of financial deepening for frontier and emerging markets. A wide range of frontier markets which are depended on different than oil resources may offer additional insight as to whether different resource commodities have a different effect on financial development. Furthermore, using different measurements for the money supply (e.g. M0, M1, M2, M3, and M4) might offer additional insights into the relationship for emerging and frontier markets.

In terms of the saving-growth nexus, further research could utilise additional variables to explore this relationship. Given the constraint of data availability only a limited number of

variables were used in this study as indicators of financial deepening. Alternative measurements to money stock ratio to GDP and domestic credit to private sector as percentage of GDP as an indicators may offer additional insight into the saving-growth relationship.

Finally, with respect to financial development- growth nexus, additional research is required to explore the effects of both liquidity and volatility in frontier and emerging markets on the relationship between financial development and growth. Although there is a significant amount of empirical evidence for developed markets the research for frontier markets is non-existent. This however may be easier said than done. The relevant information and datasets for developed markets is rich with many reliable sources offering an abundance of data. This is not the case however for emerging and frontier markets where most of such relevant information and data are proprietary and not publicly available.

8.5 Final remarks

Frontier and emerging market offer some exciting opportunities to explore economic theories and relationships that have been in the forefront of academic research for many years. These theories have long been established when it comes to empirical testing using data from developed countries. This cannot be said however for smaller and still developing markets. Limited initial evidence suggests that these markets may behave in a different way from what the theories developed for mature markets predict and hopefully the results of this study will contribute towards further progress in the subject.

References

- Abdel Baki, M, 2012, *Phasing-in BASEL III capital and Liquidity requirements in post-revolution Egypt*, Journal of Governance and Regulation, Vol. 1, No. 3, pp. 36-43.
- Abu Al Foul, B, 2010, *The causal relation between savings and economic growth: Some evidence from MENA countries*, Topics in Middle Eastern and North African Economies, Vol. 12, pp. 1-12
- Acemoglu, D. and Zilibotti, F, 1997. *Was Prometheus unbound by chance? Risk, diversification, and growth*, Journal of political economy, Vol. 105, No. 4, pp. 709-751.
- Adjasi, C.K. and Biekpe, N.B., 2006. *Stock market development and economic growth: The case of selected African countries*, African Development Review, Vol. 18, No. 1, pp. 144-161.
- Adjasi, C.K. and Yartey, C.A., 2007. *Stock market development in Sub-Saharan Africa: Critical issues and challenges*, No. 7-209. International Monetary Fund.
- Agénor, P.R. and Montiel, P.J., 2015. *Development macroeconomics*, Princeton University Press.
- Aghion, P. and Howitt, P., 1990. *A model of growth through creative destruction*, National Bureau of Economic Research, No. w3223, pp. 1-39
- Aghion, P., Comin, D. and Howitt, P., 2006. *When does domestic saving matter for economic growth?* National Bureau of Economic Research, working paper 12275.
- Aghion, P., Howitt, P. and Mayer-Foulkes, D., 2005. *The effect of financial development on convergence: Theory and evidence*, The Quarterly Journal of Economics, Vol. 120, No. 1, pp. 173-222.
- Agrawal, P., 2000. *Savings, investment and growth in South Asia*, Indira Gandhi Institute of Development Research, pp. 1-47.
- Agrawal, P., 2001. *The relation between savings and growth: cointegration and causality evidence from Asia*. Applied economics, Vol. 33, No. 4, pp. 499-513.
- Agrawal, P., Sahoo, P. and Dash, R.K., 2009. *Savings behaviour in South Asia*, Journal of Policy Modeling, Vol. 31, No. 2, pp. 208-224.
- Aizenman, J., Cheung, Y.W. and Ito, H., 2017. *The interest rate effect on private saving: Alternative perspectives*, Journal of International Commerce, Economics and Policy, No. 715, pp. 1-40.
- Al Sadik, A.T., 2001. *UAE Economy 1972–1998*. United Arab Emirates: a new perspective, p.202.
- Al Shamsi, N., 2001. *Investment Climate in UAE*. Al Sharja, UAE, Al Masar Publishing (In Arabic).
- Al-Awad, M. and Elhiraika, A., 2003. *Cultural effects and savings: Evidence from immigrants to the United Arab Emirates*, The Journal of Development Studies, Vol. 39, No. 5, pp.139-151.

- Al-Awad, M. and Hassan, A., 2001, April. *Predictability among stock prices in the UAE*, In the second annual research conference at UAE university, pp. 17-18.
- Alguacil, M., Cuadros, A. and Orts, V., 2004. *Does saving really matter for growth? Mexico (1970-2000)*. Journal of International Development: The Journal of the Development Studies Association, Vol. 16, No. 2, pp.281-290.
- Allen, F. and Gale, D., 2000. *Comparing financial systems*, MIT press.
- Allen, F., 1990. *The market for information and the origin of financial intermediation*, Journal of Financial Intermediation, Vol. 1, No. 1, pp. 3-30.
- Al-Malkawi, H.A.N., Marashdeh, H.A. and Abdullah, N., 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. 105-115.
- Al-Mannai, A.A., 2001. *The GCC Banking Industry and the Future Challenges*. Institute of Economic Studies and Banking Research, Bahrain Working Paper.
- Almeida, A., Fry, M.J. and Goodhart, C., 1996. *Central banking in developing countries: Objectives, activities and independence*. Routledge.
- Althawadi, M.A. and Kukreja, G., 2017. *Implementation of the BASEL III and its effect on Bahrain's Banking Sector, corporate ownership & control*, Vol. 15, pp. 224-234.
- Amihud, Y. and Mendelson, H., 1986. *Asset pricing and the bid-ask spread*, Journal of financial Economics, Vol. 17, No. 2, pp. 223-249.
- Amihud, Y., Mendelson, H. and Lauterbach, B., 1997. *Market microstructure and securities values: Evidence from the Tel Aviv Stock Exchange*, Journal of Financial Economics, Vol. 45, No. 3, pp. 365-390.
- Amsden, A.H., 1994. *Why isn't the whole world experimenting with the East Asian model to develop? Review of the East Asian miracle*. World Development, Vol. 22, No. 4, pp. 627-633.
- Anoruo, E. and Ahmad, Y., 2001. *Causal relationship between domestic savings and economic growth: Evidence from seven African countries*, African Development Review, Vol. 13, No. 2, pp. 238-249.
- Arellano, M. and Bond, S., 1991. *Some tests of specification for panel data: Monte Carlo evidence and an application to employment equations*, The review of economic studies, Vol. 58, No. 2, pp. 277-297.
- Arellano, M. and Bover, O., 1995. *Another look at the instrumental variable estimation of error-components models*, Journal of econometrics, Vol. 68, No. 1, pp. 29-51.
- Arestis, P. and Demetriades, P., 1997. *Financial development and economic growth: assessing the evidence*, The Economic Journal, Vol. 107, No. 442, pp. 783-799.
- Arestis, P., Demetriades, P. and Fattouh, B., 2003. *Financial policies and the aggregate productivity of the capital stock: evidence from developed and developing economies*, Eastern Economic Journal, Vol. 29, No. 2, pp. 217-242.

- Arestis, P., Demetriades, P., Fattouh, B. and Mouratidis, K., 2002. *The impact of financial liberalization policies on financial development: evidence from developing economics*, International Journal of Finance & Economics, Vol. 7, No. 2, pp. 109-121.
- Arestis, P., Demetriades, P.O. and Luintel, K.B., 2001. *Financial development and economic growth: the role of stock markets*, Journal of money, credit and banking, pp. 16-41.
- Arrow, K.J. and Debreu, G., 1954. *Existence of an equilibrium for a competitive economy*, Econometrica: Journal of the Econometric Society, pp. 265-290.
- Arrow, K.J., 1971. *The economic implications of learning by doing*, In Readings in the Theory of Growth Palgrave Macmillan, London, pp. 131-149.
- Atje, R. and Jovanovic, B., 1993. *Stock markets and development*. European Economic Review, Vol. 37, No. 2-3, pp. 632-640.
- Azeem, M.M. and Mohammad, A., 2015. *Money and Physical Capital Relationship: McKinnon's Complementarity Hypothesis on Turkey's Economy*, Expert Journal of Finance, Vol. 3, No. 1, pp. 21-30.
- Bagehot, W., 1873. *Lombard Street: A description of the money market*, London: HS King.
- Banerjee, A., Dolado, J.J., Galbraith, J.W. and Hendry, D., 1993. *Co-integration, error correction, and the econometric analysis of non-stationary data*, OUP Catalogue.
- Bauer, P.T., Meier, G.M. and Seers, D., 1984. *Pioneers in development: Second series*, Oxford University Press.
- Beck, T., 2012. *Finance and growth—lessons from the literature and the recent crisis*, LSE Growth Commission, p.3.
- Beck, T., 2015. *Macro research for development*, International Monetary Fund, viewed March 2017, <https://www.imf.org/external/np/res/dfidimf/topic5.htm>
- Bekaert, G. and Harvey, C.R., 1997. *Emerging equity market volatility*, Journal of Financial economics, Vol. 43, No. 1, pp. 29-77.
- Bekaert, G. and Harvey, C.R., 2000. *Foreign speculators and emerging equity markets*, The Journal of Finance, Vol. 55, No. 2, pp. 565-613.
- Bencivenga, V.R., Smith, B.D. and Starr, R.M., 1995. *Transactions costs, technological choice, and endogenous growth*, Journal of economic theory, Vol. 67, No. 1, pp. 153-177.
- Benlamine, M., Bulir, M.A., Farouki, M., Horváth, A., Hossaini, F., El Idrissi, H., Iraoui, Z., Kovács, M. and Laxton, M.D., 2018. *Morocco: A Practical Approach to Monetary Policy Analysis in a Country with Capital Controls*, International Monetary Fund.
- Berthélemy, J.C. and Bentahar, N., 2004. *Financial reforms and financial development in Arab countries*, International conference in institutions and development performance, pp. 1-41
- Bhattacharya, S. and Pfleiderer, P., 1985. *Delegated portfolio management*, Journal of Economic Theory, Vol. 36, No. 1, pp. 1-25.

- Bhide, A., 1993. *The hidden costs of stock market liquidity*, Journal of financial economics, Vol. 34, No. 1, pp. 31-51.
- Bin Sabit, S., 2000. *Establishment and Development of the Emirates stock Exchange*, In the Stock Exchange Conference, Allied Business Advisory, Abu Dhabi.
- Black, S.W. and Moersch, M., 1998. *Financial structure, investment and economic growth in OECD countries, advances in finance investment and banking*, Vol. 5, No. 1, pp. 157-174.
- Blundell, R. and Bond, S., 1998. *Initial conditions and moment restrictions in dynamic panel data models*, Journal of econometrics, Vol. 87, No. 1, pp. 115-143.
- Bodie, Z., Treussard, J. and Willen, P., 2007. *The theory of life-cycle saving and investing*, FRB of Boston Public Policy Discussion Paper, pp. 07-3.
- Bolton, P., Santos, T. and Scheinkman, J.A., 2016. *Cream-skimming in financial markets*, The Journal of Finance, Vol. 71, No. 2, pp. 709-736.
- Boot, A.W. and Thakor, A.V., 2000. *Can relationship banking survive competition?* The journal of Finance, Vol. 55, No. 2, pp. 679-713.
- Boot, A.W., Greenbaum, S.I. and Thakor, A.V., 1993. *Reputation and discretion in financial contracting*, The American Economic Review, pp. 1165-1183.
- Bosworth, B.P., Collins, S.M. and Reinhart, C.M., 1999. *Capital flows to developing economies: implications for saving and investment*, Brookings papers on economic activity, Vol. 1999, No. 1, pp. 143-180.
- Bouزيد, A., 2012. *McKinnon's complementarity hypothesis: empirical evidence for the Arab Maghrebean countries*, The Romanian Economic Journal, Vol. 44, pp. 23-36.
- Boyd, J.H. and Prescott, E.C., 1986. *Financial intermediary-coalitions*. Journal of Economic theory, Vol. 38, No. 2, pp.211-232.
- Boyd, J.H. and Smith, B.D., 1992. *Intermediation and the equilibrium allocation of investment capital: Implications for economic development*, Journal of Monetary Economics, Vol. 30, No. 3, pp. 409-432.
- Bresser-Pereira, L.C. and Nakano, Y., 2002. *Economic growth with foreign saving?*, pp. 1-27
- Burda, M. and Wyplosz, C., 2013. *Macroeconomics: a European text*, Oxford University Press.
- Burger, A. and Moormann, J., 2008. *Productivity in banks: myths & truths of the cost income ratio*, Bank and bank systems, Vol. 3, pp. 85-93.
- Calderon, 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.
- Cameron, R., 1963. *Banking in the early stages of industrialization a preliminary survey*, Scandinavian Economic History Review, Vol. 11, No. 2, pp. 117-134.
- 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.

- Caporale, G.M., Howells, P.G. and Soliman, A.M., 2004. *Stock market development and economic growth: the causal linkage*. Journal of economic development, Vol. 29, No. 1, pp. 33-50.
- Carosso, V.P., 1970. *Investment banking in America: A history*, Vol. 25, Harvard University Press.
- Carroll, C.D. and Weil, D.N., June 1994. *Saving and growth: a reinterpretation*, In Carnegie-Rochester conference series on public policy, North-Holland, Vol. 40, pp. 133-192.
- Carroll, C.D., Overland, J. and Weil, D.N., 2000. *Saving and growth with habit formation*. American Economic Review, Vol. 90, No. 3, pp. 341-355.
- Chortareas, G.E., Garza-Garcia, J.G. and Girardone, C., 2011. *Financial deepening and bank productivity in Latin America*, The European Journal of Finance, Vol. 17, No. 9-10, pp. 811-827.
- Coase, R.H., 1937. *The nature of the firm*, *Economica*, Vol. 4, No. 16, pp. 386-405.
- Commodities Exchange, D. G., *Dubai Gold Commodities Exchange*, viewed April 2017, <https://www.dgcx.ae/>
- Crane, D.B., Froot, K.A., Mason, S.P., Perold, A., Merton, R.C., Bodie, Z., Sirri, E.R. and Tufano, P., 1995. *The global financial system: A functional perspective*, Harvard Business School Press, Boston.
- Cristadoro, R. and Marconi, D., 2012. *Household savings in China*, Journal of Chinese Economic and Business Studies, Vol. 10, No. 3, pp. 275-299.
- Dailami, M. and Atkin, M., 1990. *Stock markets in developing countries: key issues and a research agenda*, World Bank Publications, Vol. 515.
- De Gregorio, J. and Guidotti, P.E., 1995. *Financial development and economic growth*, World development, Vol. 23, No. 3, pp. 433-448.
- Deaton, A.S. and Paxson, C., 1994. *Saving, growth, and aging in Taiwan*, In Studies in the Economics of Aging, University of Chicago Press, pp. 331-362.
- Deidda, L. and Fattouh, B., 2002. *Non-linearity between finance and growth*, Economics Letters, Vol. 74. No. 3, pp. 339-345.
- Deininger, K. and Binswanger, H., 1999. *The evolution of the World Bank's land policy: principles, experience, and future challenges*, The World Bank Research Observer, Vol. 14, No. 2, pp. 247-276.
- DeLong, J.B., 1991. *Did JP Morgan's men add value? An economist's perspective on financial capitalism*, In Inside the business enterprise: Historical perspectives on the use of information, University of Chicago Press, pp. 205-250.
- Demetriades, P.O. and Hussein, K.A., 1996. *Does financial development cause economic growth? Time-series evidence from 16 countries*, Journal of development Economics, Vol. 51, No. 2, pp. 387-411.

- Demetriades, P.O. and Luintel, K.B., 1996. *Financial development, economic growth and banking sector controls: evidence from India*, The Economic Journal, Vol. 106. No. 435, pp. 359-374.
- Demetriades, P.O. and Luintel, K.B., 1997. *The direct costs of financial repression: evidence from India*, Review of Economics and Statistics, Vol. 79. No. 2, pp. 311-320.
- Demetriades, P.O. and Luintel, K.B., 2001. *Financial restraints in the South Korean miracle*, Journal of Development Economics, Vol. 64, No. 2, pp. 459-479.
- Demirguc-Kunt, A. and Huizinga, H., 2010. *Bank activity and funding strategies: The impact on risk and returns*, Journal of Financial Economics, Vol. 98, No. 3, pp. 626-650.
- Demirguc-Kunt, A. and Levine, R., 1996. *Stock markets, corporate finance, and economic growth: an overview*, The World Bank Economic Review, Vol. 10, No. 2, pp. 223-239.
- Demirguc-Kunt, A. and Maksimovic, V., 2002. *Funding growth in bank-based and market-based financial systems: evidence from firm-level data*, Journal of Financial Economics, Vol. 65, No. 3, pp. 337-363.
- Demirguc-Kunt, A., Laeven, L. and Levine, R., 2003. *Regulations, market structure, institutions, and the cost of financial intermediation*, National Bureau of Economic Research, No. w9890, pp. 1-60.
- Devereux, M.B. and Smith, G.W., 1994. *International risk sharing and economic growth*, International Economic Review, pp. 535-550.
- Diamond, D.W. and Verrecchia, R.E., 1982. *Optimal managerial contracts and equilibrium security prices*, The Journal of Finance, Vol. 37, No. 2, pp. 275-287.
- Dolado, J.J. and Lutkepohl, H., 1996. *Making Wald tests work for cointegrated VAR systems*, Econometric Reviews, Vol. 15, No. 4, pp. 369-386.
- Domar, E.D., 1946. *Capital expansion, rate of growth, and employment*, Econometrica, Journal of the Econometric Society, pp. 137-147.
- Ebid, S., 1990. *Characteristics and behavior of UAE stock market*, Journal of Economic and Administrative Sciences, Vol. 6, pp. 19-61.
- Edwards, S., 1995. *Why are saving rates so different across countries? An international comparative analysis*, National Bureau of Economic Research, No. w5097, pp. 1-46.
- Edwards, S., 1996. *Why are Latin America's savings rates so low? An international comparative analysis*. Journal of development economics, Vol. 51, No. 1, pp. 5-44.
- Engle, R.F. and Granger, C.W., 1987. *Co-integration and error correction: representation, estimation, and testing*, Econometrica: journal of the Econometric Society, pp. 251-276.
- Errunza, V.R. and Miller, D.P., 2000. *Market segmentation and the cost of the capital in international equity markets*, Journal of Financial and Quantitative analysis, Vol. 35, No. 4, pp. 577-600.

- Eschenbach, F., 2004. *Finance and growth: A survey of the theoretical and empirical literature*, Tinbergen Institute Discussion Paper, Tinbergen Institute, Amsterdam and Rotterdam, No. 04-039/2, pp. 1-43.
- Fama, E.F. and Jensen, M.C., 1983. Agency problems and residual claims, *The journal of law and Economics*, Vol. 26, No. 2, pp. 327-349.
- Fama, E.F. and Jensen, M.C., 1983. *Separation of ownership and control*, *The journal of law and Economics*, Vol. 26, No. 2, pp. 301-325.
- Floyd, D., 2016. *Four most important effects rising interest rates*. Investopedia, viewed May 2017 <http://www.investopedia.com/news/4-most-important-effects-rising-interest-rates/>
- Fry, M.J., 1980. *Saving, investment, growth and the cost of financial repression*, *World Development*, Vol. 8, No. 4, pp. 317-327.
- Fry, M.J., 1998. *Savings, investment, growth and financial distortions in Pacific Asia and other developing areas*, *International Economic Journal*, Vol. 12, No. 1, pp. 1-24.
- Galor, O. and Zeira, J., 1993. *Income distribution and macroeconomics*, *The review of economic studies*, Vol. 60, No. 1, pp. 35-52.
- Genotte, G. and Pyle, D., 1991. *Capital controls and bank risk*, *Journal of Banking & Finance*, Vol. 15, No. 4-5, pp. 805-824.
- Gillman, M. and Harris, M.N., 2004. *Inflation, financial development and growth in transition countries*, Monash University, Department of Econometrics and Business Statistics, No. 23/04, pp. 1-19.
- Gillman, M. and Nakov, A., 2004. *Granger causality of the inflation growth mirror in accession countries*, *Economics of Transition*, Vol. 12, No. 4, pp. 653-681.
- Giovannini, A. and Alberto, G. eds., 1993. *Finance and development: issues and experience*, Cambridge University Press.
- Giovannini, A., 1983. *The interest elasticity of savings in developing countries: The existing evidence*, *World Development*, Vol. 11, No. 7, pp. 601-607.
- Giovannini, A., 1985. *Saving and the real interest rate in LDCs*, *Journal of Development Economics*, Vol. 18, No. 2-3, pp. 197-217.
- Goldsmith, R.W., 1969. *Financial structure and development*, No. HG174 G57, Yale University Press.
- Gomez, E. M., 2012. *United Arab Emirates*, World Trade Organization, viewed April 2017, https://docs.wto.org/dol2fe/Pages/FE_Search/FE_S_S009-DP.aspx?language=E&CatalogueIdList=230395,48445,55924&CurrentCatalogueIdIndex=1&FullTextHash=&HasEnglishRecord=True&HasFrenchRecord=True&HasSpanishRecord=True
- Gourinchas, P.O. and Jeanne, O., 2013. *Capital flows to developing countries: The allocation puzzle*, *Review of Economic Studies*, Vol. 80, No. 4, pp. 1484-1515.

- Granger, C.W. and Newbold, P., 1974. *Spurious regressions in econometrics*, Journal of econometrics, Vol. 2, No. 2, pp. 111-120.
- Greenwood, J. and Jovanovic, B., 1990. *Financial development, growth, and the distribution of income*, Journal of political Economy, Vol. 98, No. 5, Part 1, pp. 1076-1107.
- Greenwood, J. and Smith, B.D., 1997. *Financial markets in development, and the development of financial market*, Journal of Economic dynamics and control, Vol. 21, No. 1, pp. 145-181.
- Gregory, A.W. and Hansen, B.E., 1996. *Residual-based tests for cointegration in models with regime shifts*, Journal of econometrics, Vol. 70, No. 1, pp. 99-126.
- Grossman, S.J. and Stiglitz, J.E., 1980. *On the impossibility of informationally efficient markets*, The American economic review, Vol. 70, No. 3, pp. 393-408.
- Gupta, K.L., 1987. *Aggregate savings, financial intermediation, and interest rate*, The Review of Economics and Statistics, pp. 303-311.
- Gurley, J.G. and Shaw, E.S., 1955. *Financial aspects of economic development*, The American Economic Review, Vol. 45, No. 4, pp. 515-538.
- Gurley, J.G. and Shaw, E.S., 1967. *Financial structure and economic development*, Economic development and cultural change, Vol. 15, No. 3, pp. 257-268.
- Hachicha, N., 2005. *Banking sector controls and financial deepening: A structural error correction model for tunisia*, The Developing Economies, Vol. 43, No. 2, pp.265-284.
- Hamilton, A., 1781. Quoted from Hammond, B., 1967. *Banks and Politics in America: From the Revolution to the Civil War*, Vol. 99, Princeton University Press.
- Harris, R.D., 1997. *Stock markets and development: A re-assessment*. European Economic Review, Vol. 41, No. 1, pp.139-146.
- Harrod, R.F., 1939. *An essay in dynamic theory*, The economic journal, Vol. 49, No. 193, pp. 14-33.
- Hashmi, M.A., 2007. *An analysis of the United Arab Emirates banking sector*, International Business and Economics Research Journal, Vol. 6, No. 1, p.77.
- Hellwig, M., 1991. *Banking, financial intermediation and corporate finance*, European financial integration, Vol. 35, p.63.
- Henry, P.B., 2000. *Do stock market liberalizations cause investment booms?.* Journal of Financial economics, Vol. 58, No. 1-2, pp. 301-334.
- International Monetary Fund, Capital Markets Department, Middle East and Central Asia Department, 2007, *United Arab Emirates: Financial System Stability Assessment*, No. 7-357.
- Iordanova, T. and Data, C.R., 2009. *Introduction to stationary and non-stationary processes*, Retrieved September, Vol. 19, p.2013.
- Ireland, P.N., 1994. *Money and growth: an alternative approach*, The American Economic Review, pp. 47-65.

- Istaitieh, A., Hugo, S. and Husain, N., 2007. *UAE macroeconomic report*, Macroeconomic Report Series, Dubai Chamber of Commerce and Industries, Data Management and Business Research Department, pp. 1-52.
- Jacoby, H.G., 1994. *Borrowing constraints and progress through school: Evidence from Peru*, *The Review of Economics and Statistics*, pp. 151-160.
- Jagadeesh, D., 2015. *The impact of savings in economic growth: an empirical study based on Botswana*, *International Journal of Research in Business Studies and Management*, Vol. 2, No. 9, pp. 10-21.
- Jensen, M.C. and Meckling, W.H., 1976. *Theory of the firm: Managerial behavior, agency costs and ownership structure*, *Journal of financial economics*, Vol. 3, No. 4, pp. 305-360.
- Jensen, M.C. and Murphy, K.J., 1990. *Performance pay and top-management incentives*, *Journal of political economy*, Vol. 98, No. 2, pp. 225-264.
- Jeon, B.N. and Von Furstenberg, G.M., 1990. *Growing international co-movement in stock price index*, *Quarterly Review of Economics and Business*, Vol. 30, No. 3, pp. 15-31.
- Johansen, S. and Juselius, K., 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., 1991. *Estimation and hypothesis testing of cointegration vectors in Gaussian vector autoregressive models*, *Econometrica: journal of the Econometric Society*, pp. 1551-1580.
- Johansen, S., 1998. *Likelihood-based inference in cointegrated vector autoregressive models*, *Econometric Theory*, Vol. 14, No. 4, pp. 517-524.
- Johansson, S., 1996. *Private Saving in Indonesia*, Unpublished. International Monetary Fund Working paper.
- Jorgenson, D.W., 1995. *Productivity: Postwar US economic growth*, Vol. 1, Mit Press.
- Jorgenson, D.W., 2005. *Accounting for growth in the information age*, *Handbook of economic growth*, Vol. 1, pp. 743-815.
- Jung, W.S., 1986. *Financial development and economic growth: international evidence*, *Economic Development and cultural change*, Vol. 34, No. 2, pp. 333-346.
- Kanioura, A. and Turner, P., 2005. *Critical values for an F-test for cointegration in a multivariate model*, *Applied Economics*, Vol. 37, No. 3, pp. 265-270.
- Kapur, B.K., 1976. *Alternative stabilization policies for less-developed economies*, *Journal of Political Economy*, Vol. 84, No. 4, Part 1, pp. 777-795.
- Kargbo, S.M. and Adamu, P.A., 2009. *Financial development and economic growth in Sierra Leone*, *Jornal of Monetry and Economic Integration*, Vol. 9, No.2, pp. 31-61.
- Kashani, H.A. and Obay, L.A., 2010. *An analysis of productivity change: are UAE banks operating efficiently when compared to GCC banks?*, *Academy of Banking Studies Journal*, Vol. 9, pp. 13-38.

- Kemal, A.R., Qayyum, A. and Hanif, M.N., 2004. *Financial development and economic growth: evidence from a heterogeneous panel of high income countries*, The Lahore Journal of Economics, pp. 1-34.
- Khalifa Al-Yousif, Y., 2002. *Financial development and economic growth: another look at the evidence from developing countries*, Review of Financial Economics, Vol. 11, No. 2, pp. 131-150.
- Khan, A., 2001. *Financial development and economic growth*, Macroeconomic dynamics, Vol. 5, No. 3, pp. 413-433.
- Khan, M.M.S. and Semlali, M.A.S., 2000. *Financial development and economic growth: an overview*, No. 0-209, International Monetary Fund.
- Khatkhate, D.R., 1988. *Assessing the impact of interest rates in less developed countries*, World Development, Vol. 16, No. 5, pp.577-588.
- King, M.A. and Wadhvani, S., 1990. *Transmission of volatility between stock markets*, The Review of Financial Studies, Vol. 3, No. 1, pp. 5-33.
- King, R.G. and Levine, R., 1993. *Finance and growth: Schumpeter might be right*, The quarterly journal of economics, Vol. 108, No. 3, pp. 717-737.
- King, R.G. and Levine, R., 1993. *Finance, entrepreneurship and growth*, Journal of Monetary economics, Vol. 32, No. 3, pp. 513-542.
- King, R.G. and Levine, R., 1993. *Finance, entrepreneurship and growth*, Journal of Monetary economics, Vol. 32, No. 3, pp. 513-542.
- Klaus, S.H., 1999. *The Economics of Saving and Growth: Theory, Evidence, and Implications for Policy*, Cambridge University Press.
- La Porta, R., Lopez-de-Silanes, F. and Zamarripa, G., 2003. *Related lending*, The Quarterly Journal of Economics, Vol. 118, No. 1, pp. 231-268.
- Lahiri, A.K., 1989. *Dynamics of Asian savings: the role of growth and age structure*, Staff Papers, Vol. 36, No. 1, pp. 228-261.
- Lamoreaux, N.R., 1996. *Insider lending: Banks, personal connections, and economic development in industrial New England*, Cambridge University Press.
- Laurenceson, J. and Chai, J.C., 2003. *Financial reform and economic development in China*, Edward Elgar Publishing.
- Levine, R. and Zervos, S., 1998. *Stock markets, banks, and economic growth*, American economic review, pp. 537-558.
- Levine, R. and Zervos, S., 1999. *Stock market development and long-run growth*, The World Bank.
- Levine, R. and Zervos, S.J., 1993. *What we have learned about policy and growth from cross-country regressions?*, The American Economic Review, Vol. 83, No. 2, pp. 426-430.

- Levine, R. and Zervos, S.J., 1996. *Stock Market Development and Long Run Growth*. The World Bank Economic Review, Vol. 10, No. 2, pp. 323–339.
- Levine, R., 1991. *Stock markets, growth, and tax policy*, The Journal of Finance, Vol. 46, No. 4, pp. 1445-1465.
- Levine, R., 1998. *The legal environment, banks, and long-run economic growth*, Journal of money, credit and banking, pp. 596-613.
- Levine, R., 1999. *Financial development and economic growth: views and agenda*. The World Bank.
- Levine, R., 2005. *Finance and growth: theory and evidence*, Handbook of economic growth, Vol. 1, pp. 865-934.
- Lewis, W.A., 1954. *Economic development with unlimited supplies of labour*, The manchester school, Vol. 22, No. 2, pp. 139-191.
- Lucas Jr, R.E., 1988. *On the mechanics of economic development*, Journal of monetary economics, Vol. 22, No. 1, pp. 3-42.
- Luintel, K.B. and Khan, M., 1999. *A quantitative reassessment of the finance–growth nexus: evidence from a multivariate VAR*, Journal of development economics, Vol. 60, No. 2, pp. 381-405.
- 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.
- Mamingi, N., 1993. *Savings-investment correlations and capital mobility in developing countries*, Vol. 1211, World Bank Publications.
- Market, D. F., 2017. *Equity market*, Dubai Financial Market, viewed April 2017, <http://www.dfm.ae/products/equity-instruments>
- Mathieson, D.J., 1980. *Financial reform and stabilization policy in a developing economy*. Journal of development economics, Vol. 7, No. 3, pp. 359-395.
- Mayer, C., 1988. *New issues in corporate finance*, European Economic Review, Vol. 32, No. 5, pp. 1167-1183.
- Merton, R.C., 1987. *A simple model of capital market equilibrium with incomplete information*, The journal of finance, Vol. 42, No. 3, pp. 483-510.
- Merton, R.C., 1992. *Financial innovation and economic performance*, Journal of applied corporate finance, Vol. 4, No. 4, pp. 12-22.
- Merton, R.C., 1995. *A functional perspective of financial intermediation*, Financial management, pp. 23-41.
- Miller, M.H., 1998. *Financial markets and economic growth*, Journal of Applied Corporate Finance, Vol. 11, No. 3, pp. 8-15.
- Modigliani, F., 1970. *The life cycle hypothesis of saving and intercountry differences in the saving ratio*, Induction, growth and trade, pp. 197-225.

- Mohamed, S.E. and Sidiropoulos, M., 2008. *Finance-growth nexus in Sudan: empirical assessment based on an application of the autoregressive distributed lag (ARDL) model*, in Third International Student Conference Proceeding, pp. 47-66.
- Mohtadi, H. and Agarwal, S., 2001. *Stock market development and economic growth: evidence from developing countries*. viewed April 2017, Available at: <http://www.uwm.edu/mohadi/PA-4-01.pdf>.
- Molyneux, P. and Iqbal, M., 2016. *Banking and financial systems in the Arab world*, Springer.
- Moore, T., 2010. *A critical appraisal of McKinnon's complementarity hypothesis: Does the real rate of return on money matter for investment in developing countries?*. World Development, Vol. 38, No. 3, pp. 260-269.
- Morales, M.F., 2003. *Financial intermediation in a model of growth through creative destruction*, Macroeconomic Dynamics, Vol. 7, No.3, pp. 363-393.
- Morck, R., Yeung, B. and Yu, W., 2000. *The information content of stock markets: why do emerging markets have synchronous stock price movements?*, Journal of financial economics, Vol. 58, No.1-2, pp. 215-260.
- Moustafa, M.A., 2004. *Testing the weak-form efficiency of the United Arab Emirates stock market*, International journal of business, Vol. 9, No. 3, pp. 311-325.
- Myers, S.C. and Majluf, N.S., 1984. *Corporate financing and investment decisions when firms have information that investors do not have*, Journal of financial economics, Vol. 13, No. 2, pp. 187-221.
- Narayan, P.K. and Narayan, S., 2006. *Savings behaviour in Fiji: an empirical assessment using the ARDL approach to cointegration*. International journal of social economics, Vol. 33, No. 7, pp. 468-480.
- Neaime, S., 2012. *The global financial crisis, financial linkages and correlations in returns and volatilities in emerging MENA stock markets*. Emerging Markets Review, Vol. 13, No. 3, pp. 268-282.
- Obstfeld, M., 1992. *Risk-taking, global diversification, and growth*, No. w4093, National bureau of economic research, pp. 1-39.
- Odhiambo, N.M., 2008. *Financial depth, savings and economic growth in Kenya: A dynamic causal linkage*, Economic Modelling, Vol. 25, No. 4, pp. 704-713.
- Ozcelebi, O. and Yildirim, N., 2017. *Impacts of short-term interest rates on stock returns and exchange rates: Empirical evidence from EAGLE countries*, The Journal of International Trade & Economic Development, Vol. 26, No. 2, pp. 228-255.
- Patrick, H.T., 1966. *Financial development and economic growth in underdeveloped countries*, Economic development and Cultural change, Vol. 14, No. 2, pp. 174-189.
- Pelagidis, T. and Mastrogiannis, T., 2003. *The saving–investment correlation in Greece, 1960–1997: implications for capital mobility*, Journal of Policy Modeling, Vol. 25, No. 6-7, pp. 609-616.

- Pentecost, E.J. and Moore, T., 2006. *Financial liberalization in India and a new test of the complementarity hypothesis*. *Economic Development and Cultural Change*, Vol. 54, No. 2, pp. 487-502.
- Perron, P. and Rodriguez, G., 2012. *Residual test for cointegration with GLS detrended data*, No. w327, Departamento de Economia-Pontificia Universidad Catolica del Peru.
- Pesaran, M.H. and Shin, Y., 1998. *An autoregressive distributed-lag modelling approach to cointegration analysis*, *Econometric Society Monographs*, Vol. 31, pp. 371-413.
- Pesaran, M.H. and Smith, R.P., 1998. *Structural analysis of cointegrating VARs*, *Journal of Economic Surveys*, Vol.12, No. 5, pp. 471-505.
- Pettinger, T., 2013. *Effect of interest rates on savers and economy*. *Economics*, viewed July 2017, <http://www.economicshelp.org/blog/102/interest-rates/effect-of-interest-rates-on-savers-and-economy/>
- Prasad, E.S., Rajan, R.G. and Subramanian, A., 2007. *Foreign capital and economic growth*, No. w13619, National Bureau of Economic Research, pp. 1-62.
- Rajan, R.G. and Zingales, L., 1998. *Which capitalism? Lessons form the east Asian crisis*, *Journal of Applied Corporate Finance*, Vol. 11, No. 3, pp. 40-48.
- Rajan, R.G., 1992. *Insiders and outsiders: The choice between informed and arm's-length debt*, *The Journal of finance*, Vol. 47, No. 4, pp. 1367-1400.
- Ram, R., 1999. *Financial development and economic growth: Additional evidence*, *The Journal of Development Studies*, Vol. 35, No. 4, pp. 164-174.
- Ramakrishnan, U., & Ghosh, A., 2017. *Current account deficits: Is there a problem?* viewed April 2017, <http://www.imf.org/external/pubs/ft/fandd/basics/current.htm>
- Raut, L.K. and Srinivasan, T.N., 1992. *Theories of long-run growth: Old and new*, Department of Economics, University of California.
- Rebelo, S., 1991. *Long-run policy analysis and long-run growth*, *Journal of political Economy*, Vol. 99, No. 3, pp. 500-521.
- Arab Monetary Fund, 2018, *Regulatory Developments and Basel III Implementation in the Arab Region*, Abu Dhabi, No. 86, Arab Committee on Banking Supervision, Available on: <https://www.amf.org.ae/sites/default/files/econ/amdb/%5Bvocab%5D/%5Bterm%5D/86-%20Regulatory%20Developments%20and%20Basel%20III%20%20Implementation%20in%20the%20Arab%20Region.pdf>
- Rehman, H.U. and Gill, A.R., 2005. *A test of Mckinnon's complementarity hypothesis: a case study of Pakistan*, *Pakistan economic and social review*, pp. 21-37.
- Roe, M.J., 1996. *Strong managers, weak owners: The political roots of American corporate finance*, Princeton University Press.
- Romer, P.M., 1986. *Increasing returns and long-run growth*. *Journal of political economy*, Vol. 94, No. 5, pp. 1002-1037.

- Ronald I. McKinnon, 1973. *Money and capital in economic development*, Brookings Institution Press.
- Saint-Paul, G., 1992. *Technological choice, financial markets and economic development*, European Economic Review, Vol. 36, No. 4, pp. 763-781.
- Sala-i-Martin, X., Doppelhofer, G. and Miller, R.I., 2004. *Determinants of long-term growth: A Bayesian averaging of classical estimates (BACE) approach*, American economic review, pp. 813-835.
- Scharfstein, D., 1988. *The disciplinary role of takeovers*, The Review of Economic Studies, Vol. 55, No. 2, pp. 185-199.
- Schmidt-Hebbel, K., Serven, L. and Solimano, A., 1996. *Saving and investment: paradigms, puzzles, policies*, The World Bank Research Observer, Vol.11, No. 1, pp. 87-117.
- Schumpeter, J.A. and Opie, R., 1961. *The theory of economic development: an inquiry into profits, capital, credit, interest, and the business cycle*. Oxford University Press.
- Scott, M.F., 1991. *A new view of economic growth*, Oxford University Press.
- 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, No. 10, pp. 809-813.
- Seetanah, B., Sawkut, R., Sannasee, V. and Seetanah, B., 2010. *Stock market development and economic growth in developing countries: Evidence from Panel VAR framework*, In *CSAE Conference*, pp. 1-25.
- Sfeir, G.N., 1966. *The Central Bank and the Banking Law of Jordan*, Middle East Journal, Vol. 20, No. 3, p.352.
- Shaw, E.S., 1973. *Financial deepening in economic development*, Oxford University Press.
- Shleifer, A. and Vishny, R.W., 1986. *Large shareholders and corporate control*, Journal of political economy, Vol. 94, No. 3, Part 1, pp. 461-488.
- Shleifer, A. and Vishny, R.W., 1997. *A survey of corporate governance*, The journal of finance, Vol. 52, No. 2, pp. 737-783.
- Sidrauski, M., 1967. *Rational choice and patterns of growth in a monetary economy*, The American Economic Review, pp. 534-544.
- Singh, T., 2010. *Does domestic saving cause economic growth? A time-series evidence from India*, Journal of Policy Modeling, Vol. 32, No. 2, pp. 231-253.
- Sinha, D. and Sinha, T., 1998. *Cart before the horse? The saving-growth nexus in Mexico*, Economics Letters, Vol. 61, No.1, pp. 43-47.
- Solow, R.M., 1956. *A contribution to the theory of economic growth*, The quarterly journal of economics, Vol. 70, No.1, pp. 65-94.
- Squalli, J., 2005. Are the uae financial markets efficient. Zayed University, viewed Jun 2017, Available on: www.zu.ac.ae/epru.

Stein, J.C., 1988. *Takeover threats and managerial myopia*, Journal of political economy, Vol. 96, No. 1, pp. 61-80.

Stern, N., 1989. *The economics of development: a survey*, The Economic Journal, Vol. 99, No.397, pp. 597-685.

Stiglitz, J.E. and Weiss, A., 1981. *Credit rationing in markets with imperfect information*, The American economic review, Vol. 71, No. 3, pp. 393-410.

Stiglitz, J.E., 1985. *Credit markets and the control of capital*, Journal of Money, credit and Banking, Vol. 17, No. 2, pp. 133-152.

Stulz, R.M., 1999. *Globalization, corporate finance, and the cost of capital*, Journal of applied corporate finance, Vol. 12, No. 3, pp. 8-25.

Swan, T.W., 1956. *Economic growth and capital accumulation*, Economic record, Vol. 32, No. 2, pp. 334-361.

Temin, P. ed., 2008. *Inside the business enterprise: historical perspectives on the use of information*, University of Chicago Press.

Thimann, M.C. and Dayal-Gulati, M.A., 1997. *Saving in Southeast Asia and Latin America compared: searching for policy lessons*, International Monetary Fund, No. 97-110.

Tobin, J. and Brainard, W.C., 1977. *Asset markets and the cost of capital*, B. Balassa and R. Nelson (eds.) in Economic Progress, Private Values, and Public Policy, pp. 235-262.

Toda, H.Y. and Yamamoto, T., 1995. *Statistical inference in vector autoregressions with possibly integrated processes*, Journal of econometrics, Vol. 66, No. 1-2, pp. 225-250.

Trabelsi, M. and Fadhel, D., 2016. *The Financial Sector: Performance and Issues*, The Economy of Dubai, p.93.

United Nations, 4 November 2010, *40-year trends analysis shows poor countries making faster development gains*, Human development Report 2010, viewed April 2018, <http://hdr.undp.org/sites/default/files/pr1-hdr10-overview-e-rev6.pdf> .

Uzawa, H., 1965. *Optimum technical change in an aggregative model of economic growth*, International economic review, Vol. 6, No. 1, pp. 18-31.

Wafik, G. and Zeynep, K., 2003. *The changing financial landscape: opportunities and challenges for the Middle East and North Africa*, Policy Research Working Paper Series. pp. 1-49

Werner, I.M. and Tesar, L.L., 1997. *The internationalization of securities markets since the 1987 crash*, No. w55, Wharton School Center for Financial Institutions, University of Pennsylvania.

World Trade Organization, 2006. *Trade policy review*, United Arab Emirates, viewed May 2017, https://docs.wto.org/dol2fe/Pages/FE_Search/FE_S_S009DP.aspx?language=E&CatalogueIdList=230395,48445,55924&CurrentCatalogueIdIndex=2&FullTextHash=&HasEnglishRecord=True&HasFrenchRecord=True&HasSpanishRecord=True

Appendices

Annexure 4.1

List of National Banks and Distribution of their Branches in the UAE

(As at 31-12-2013)

Sr. No.	Name of the bank	Head Office	Abu Dhabi	Dubai	Sharjah	Ras Al Khaimah	Ajman	Umm-Al Qaiwain	Fujairah	Al Ain	Total Number of Branches	Pay offices	Electronic Banking Service Units
1	National Bank of Abu Dhabi	Abu Dhabi	42	19	10	2	1	1	3	10	88	45	1
2	Abu Dhabi Commercial Bank	Abu Dhabi	22	11	3	1	1	0	2	6	46	5	2
3	ARBIFT	Abu Dhabi	3	4	1	0	0	0	0	1	9	0	3
4	Union National Bank	Abu Dhabi	20	19	8	2	3	1	1	7	61	7	4
5	Commercial Bank of Dubai	Dubai	4	17	1	1	1	0	1	1	26	5	5
6	Dubai Islamic Bank PJSC	Dubai	11	39	18	4	2	1	2	8	85	0	6
7	Emirates NBD Bank	Dubai	16	86	7	2	1	1	2	4	119	19	7
8	Emirates Islamic Bank	Dubai	6	30	7	1	1	1	1	4	51	1	8
9	Mashreq Bank PSC	Dubai	14	33	9	1	3	1	2	3	66	0	9
10	Sharjah Islamic Bank	Sharjah	2	3	21	0	0	0	1	1	28	1	10
11	Bank of Sharjah PSC	Sharjah	1	2	1	0	0	0	0	1	5	0	11
12	United Arab Bank PJSC	Sharjah	5	8	7	2	1	0	1	1	25	0	12
13	Invest Bank PLC	Sharjah	3	3	5	1	1	0	1	1	15	0	13
14	The National Bank of R.A.K	RAK	7	12	5	7	1	0	0	1	33	1	14
15	Commercial Bank International	Dubai	5	5	2	3	1	1	1	1	19	1	15
16	National Bank of Fujairah PSC	Fujairah	2	3	1	0	1	0	6	1	14	0	16
17	National Bank of U.A.Q PSC	U.A.Q	2	6	2	1	2	3	1	1	18	2	17
18	First Gulf Bank	Abu Dhabi	7	7	2	1	2	0	1	2	22	0	18
19	Abu Dhabi Islamic Bank	Abu Dhabi	34	17	9	3	2	1	3	13	82	0	19
20	Dubai Bank	Dubai	0	1	1	0	0	0	0	0	2	0	20
21	Noor Islamic Bank	Dubai	4	12	1	0	0	0	0	1	18	0	21
22	Al Hilal Bank	Abu Dhabi	10	7	1	1	0	0	0	2	21	0	22
23	Ajman Bank	Ajman	3	2	1	0	4	0	0	1	11	2	23
		Total	223	346	123	33	28	11	29	71	864	89	

Source: Annual Report of UAE 2013

Annexure 4.2

List of Foreign Banks and Distribution of their Branches in the UAE

(As at 31-12-2013)

Sr. No.	Name of the bank	Head Office	Abu Dhabi	Dubai	Sharjah	Ras Al Khaimah	Ajman	Umm-Al Qaiwain	Fujairah	Al Ain	Total Number of Branches	Electronic Banking Service Units/Pay Offices
1	National Bank of Bahrain	Abu Dhabi	1	0	0	0	0	0	0	0	1	0
2	Rafidain Bank	Abu Dhabi	1	0	0	0	0	0	0	0	1	0
3	Arab Bank PLC	Abu Dhabi	1	2	1	1	1	0	1	1	8	0
4	Banque Misr	Abu Dhabi	1	1	1	1	0	0	0	1	5	0
5	El Nilein Bank	Abu Dhabi	1	0	0	0	0	0	0	0	1	0
6	National Bank of Oman	Abu Dhabi	1	1	0	0	0	0	0	0	2	0
7	Credit Agricole - Corporate and Investment Bank	Dubai	1	1	0	0	0	0	0	0	2	0
8	Bank of Baroda	Dubai	1	2	1	1	0	0	0	1	6	9
9	BNP Paribas	Abu Dhabi	1	1	0	0	0	0	0	0	2	1
10	Janata Bank	Abu Dhabi	1	1	1	0	0	0	0	1	4	0
11	HSBC Bank Middle East Limited	Dubai	1	3	1	1	0	0	1	1	8	16
12	Arab African International Bank	Dubai	1	1	0	0	0	0	0	0	2	0
13	Al Khaliji (France) S. A.	Dubai	1	1	1	1	0	0	0	0	4	0
14	Al Ahli Bank of Kuwait	Dubai	1	1	0	0	0	0	0	0	2	0
15	Barclays Bank PLC	Dubai	1	1	0	0	0	0	0	0	2	1
16	Habib Bank Ltd.	Dubai	2	4	1	0	0	0	0	1	8	0
17	Habib Bank A.G Zurich	Dubai	2	5	1	0	0	0	0	0	8	1
18	Standard Chartered Bank	Dubai	2	7	1	0	0	0	0	1	11	6
19	Citi Bank N.A.	Dubai	1	2	1	0	0	0	0	1	5	7
20	Bank Saderat Iran	Dubai	1	3	1	0	1	0	0	1	7	0
21	Bank Meli Iran	Dubai	1	2	1	1	0	0	1	1	7	1
22	Blom Bank France	Dubai	0	1	1	0	0	0	0	0	2	1
23	Lloyds TSB Bank PLC	Dubai	0	1	0	0	0	0	0	0	1	5
24	The Royal Bank of Scotland N.V.	Dubai	1	1	1	0	0	0	0	0	3	3
25	United Bank Ltd.	Dubai	3	3	1	0	0	0	0	1	8	2
26	Doha Bank	Dubai	1	1	0	0	0	0	0	0	2	0
27	Samba Financial Group	Dubai	0	1	0	0	0	0	0	0	1	0
28	National Bank of Kuwait	Dubai	1	1	0	0	0	0	0	0	2	0
		Total	30	48	15	6	2	0	3	11	115	53

Source: Annual Report of UAE 2013

Annexure 4.3

List of Representative Offices in Abu Dhabi

(As at 31-12-2013)

Sr. No.	Name of the Bank	Sr. No.	Name of the Bank
1	Falcon Private Bank Ltd.	26	Societe General Bank & Trust (Middle East)
2	BNP Paribas	27	KFW IPEX – Bank Gmbh
3	Credit Suisse A.G.	28	First Bank of Nigeria Plc
4	Gulf International Bank (B.S.C)	29	Banque Libano – Francaise S.A.L.
5	U.B.S. AG.	30	Kotak Mahindra International Limited
6	The Bank of New York Mellon	31	Credit Agricole (Suisse) SA
7	The Housing Bank for Trade & Finance	32	Perella Weinberg Partners Group LB
8	Unicredit Bank A.G.	33	Clariden Leu Limited
9	Bank Al Falah Limited	34	Bank Sarasin Alpen (ME) Limited
10	Liechtensteinische Landes Bank (Switzerland) Ltd.	35	Mega International Commercial Bank
11	Byblos Bank S.A.L	36	JP Morgan Chase Bank National Association
12	BHF Bank Aktiengesellschaft	37	Bank of America, National Association
13	Bank – Audi SAL, Audi Saradar Group	38	Bank of Montreal
14	Amundi (Credit Agricole Asset Management)	39	Australia & New Zealand Banking Group Ltd. ANZ
15	Bank Julius Bear & Co. Ltd.	40	Axis Bank Ltd.
16	Union Bank of India	41	Banco Bilbao Vizcaya Argentaria S.A
17	Royal Bank of Scotland	42	Intesa Sanpaolo Bank
18	Rothschild Europe B.V.	43	BLC Bank S.A.L
19	Blom Bank	44	HDFC Bank Ltd.
20	Northern Trust Global Services Ltd	45	PineBridge Investments Asia Limited
21	The Federal Bank Limited	46	Korea Development Bank
22	ICICI Bank Ltd.	47	First Energy Bank
23	BBAC – S.A.L	48	Investcorp Bank B.S.C
24	Coutts & Company	49	Banco Santander SA
25	Banque Centrale Populaire		

Source: Annual Report of UAE 2013

Annexure 4.4

List of Representative Offices in Dubai

(As at 31-12-2013)

Sr.No.	Name of the Bank	Sr.No.	Name of the Bank	Sr.No.	Name of the Bank
1	Bank of Singapore Ltd.	25	Andhra Bank	49	Attijari Wafa BLC
2	UBS A.G.	26	Arner Bank Ltd.	50	CIC – Credit Industrial et Commercial
3	Philippine National Bank	27	Bank Julius Baer & Co. Ltd.	51	Indian Overseas Bank
4	State Street Bank and Trust Company	28	National Bank of Egypt	52	Bank of China Limited
5	Oriental Bank of Commerce – New Delhi India	29	First Rand Bank Ltd	53	Orix Corporation
6	Clearstream Banking S.A.	30	Lombard Odier Darier Hentsch & Cie	54	Credit Agricole (Suisse) S.A.
7	Wells Fargo Bank National Association	31	Commercial International Bank (Egypt) S.A.E	55	Bank Al Habib Ltd.
8	Bank of Bahrain and Kuwait (B. S. C)	32	The Hong Kong and Shanghai Banking Corporation Limited	56	Ecobank Transnational Incorporated
9	Union de Banques Arabes et Francaises (UBAF)	33	Antwerp Diamond Bank Asia Pacific Ltd (ADB AP)	57	Caja De Ahorros Y Pensiones De Barcelona “La Caixa ”
10	Bank Muscat (S A O G)	34	BNP Paribas	58	Banque Cantonale de Geneve
11	UTI International (Singapore) Private Ltd	35	MCB Ltd	59	Allied Bank Ltd
12	Natexis Banques - Populaires	36	Pictet & Cie Banquiers	60	SBI Funds Management Private Ltd
13	Union Bancaires Populaires (CBI-TDB)	37	Royal Bank of Scotland	61	Bank of the Philippine Islands
14	Coutts & Co	38	AXIS Bank Ltd	62	Liechtensteinische Landes Bank (Liechtenstein) Ltd
15	Royal Bank of Canada	39	Banque Pasche S A CM-CIC Private Banking	63	ABN Amro Bank NV
16	HSBC Bank International Ltd	40	Banco do Brasil S A	64	Banque Privee Edmond De Rothschild SA
17	FIL Investment International	41	Corporation Bank	65	Lloyds TSB Offshore Ltd
18	Citigroup Global Markets Inc	42	Bank of India , India	66	Swiss quote Bank SA
19	HDFC Bank Ltd	43	International Bank of Azerbaijan-OJSC	67	Housing Development Finance Corporation Limited
20	Korea Exchange Bank	44	State Bank of Travancore	68	Banco Popular Espanol S A
21	Bank of Beirut SAL	45	Falcon Private Bank Ltd	69	Lebanon & Gulf S A L
22	ICICI Bank Limited	46	Ned bank Private Wealth Bank		
23	IndusInd Bank Limited	47	Kotak Mahindra Bank Ltd		
24	Punjab National Bank	48	Banco Sabadell (Corporate Banking)		

Source: Annual Report of UAE 2013

Annexure 4.5

List of Finance Companies

(As at 31-12-2013)

Sr. No.	Name of the Bank
1	Osool "A Finance Company" LLC – Dubai
2	Gulf Finance Corporation – Dubai
3	HSBC Middle East Finance Co Ltd – Dubai
4	Maf Orix Finance PPC – Dubai
5	Finance House PJSC - Abu Dhabi
6	Dubai First PPC – Dubai
7	Reem Finance PJSC - Abu Dhabi
8	Majid Al Futtaim JCB Finance LLC – Dubai
9	Al Futtaim GE Finance PPC – Dubai
10	Dunia Finance LLC - Abu Dhabi
11	Abu Dhabi Finance PPC - Abu Dhabi
12	AMLAK Finance PJSC – Dubai
13	Tamweel PJSC – Dubai
14	Al Wifaq Finance Company PPC - Abu Dhabi
15	Mashreq Al Islami Finance Co PPC-Dubai
16	Islamic Finance Co PPC – Dubai
17	Aseel Finance "Aseel" PPC - Abu Dhabi
18	Mawarid Finance PPC – Dubai
19	Abu Dhabi National Islamic Finance PJSC - Abu Dhabi
20	Islamic Finance House - Abu Dhabi
21	Emirates Money Consumer Finance – Dubai
22	Abu Dhabi Commercial Islamic Finance Company PPC - Abu Dhabi
23	Siraj finance Company PPC - Abu Dhabi
24	AMEX (Middle East) BSC – Dubai
25	RAK Islamic Finance Co PPC – RAK

Source: Annual Report of UAE 2013

Annexure 4.6

List of Financial Investment Companies

(As at 31-12-2013)

Sr. No.	Name of the bank
1	Oman & Emirates Investment Holding Co - Abu Dhabi
2	Merill Lynch International & Co CV – Dubai
3	Emirates Financial Services - Dubai
4	Shuaa Capital - PSC Dubai
5	The National Investor - Abu Dhabi
6	Islamic Investment Co PJSC - Dubai
7	Abu Dhabi Investment House PJS - Abu Dhabi
8	Al Mal Capital PSC - Dubai
9	Injaz Mena Investment Company PSC - Abu Dhabi
10	National Bonds Corporation PSC - Dubai
11	Noor Capital PSC - Abu Dhabi
12	Unifund Capital Financial Investment PSC - Abu Dhabi
13	Daman Investment PSC – Dubai
14	Allied Investment Partners PJSC - Abu Dhabi
15	Gulf Capital PSC - Abu Dhabi
16	CAP M Investment PSC - Abu Dhabi
17	Royal Capital PPC - Abu Dhabi
18	Al Bashayer Investment Company LLC - Abu Dhabi
19	Dubai Commodity Asset Management LLC – Dubai
20	ADIC Investment Management PPC - Abu Dhabi
21	ADS Securities – LLC - Abu Dhabi
22	Masdar Investment – LLC - Abu Dhabi
23	Mesirow Investment Management Partners PPC-Abu Dhabi
24	Mubadala Pramerica Realstate Investors
25	Waha Investment (PPC)

Source: Annual Report of UAE 2013

Annexure 5.1

Summary of the results of estimations of ARDL model (Reverse model)

Autoregressive Distributed Lag Estimates with LM2Y as Dependent Variable				
ARDL (1,1,0,0) selected based on Schwarz Bayesian Criterion				
Dependent variable is LM2Y				
Regressor	Coefficient	Standard Error	T-Ratio [Prob]	
LM2Y (-1)	.71766	.11203	6.4060[.000]	
LDC	.50848	.17057	2.9810[.006]	
LDC (-1)	-.29082	.13024	-2.2329[.034]	
L_RPCI	-.043584	.015017	-2.9023[.007]	
LBANK_BR	.41836	.13124	3.1878[.004]	
CONSTANT	-.93602	.56813	-1.6476[.111]	
TREND	.021043	.0060281	3.4908[.002]	
R-Squared	.98231	R-Bar-Squared	.97823	
S.E. of Regression	.098395	F-Stat.	F (6,26)	240.6886[.000]
Mean of Dependent Variable	2.8729	S.D. of Dependent Variable	.66692	
Residual Sum of Squares	.25172	Equation Log-likelihood	33.6282	
Akaike Info. Criterion	26.6282	Schwarz Bayesian Criterion	21.3904	
DW-statistic	1.2956	Durbin's h-statistic	2.6434[.008]	
Testing for existence of a level relationship among the variables in the ARDL model				
F-statistic	95% Lower Bound	95% Upper Bound	90% Lower Bound	90% Upper Bound
1.1517	4.5632	5.8107	3.8098	4.9425
DW-statistic	95% Lower Bound	95% Upper Bound	90% Lower Bound	90% Upper Bound
4.6067	18.2527	23.2429	15.2394	19.7700
If the statistic lies between the bounds, the test is inconclusive. If it is above the upper bound, the null hypothesis of no level effect is rejected. If it is below the lower bound, the null hypothesis of no level effect can't be rejected. The critical value bounds are computed by stochastic simulations using 20000 replications.				
Diagnostic Tests				
Test Statistics *	LM Version	*	F Version	
* A: Serial Correlation	*CHSQ (1) = 6.3300[.012]	F (1,25)	=	5.9336[.022] *
* B: Functional Form	*CHSQ (1) = 5.6661[.017]	*F (1,25)	=	5.1823[.032] *
* C: Normality	*CHSQ (2) = .28862[.866]	*	Not applicable	
* D: Heteroscedasticity	*CHSQ (1) = .019824[.888]	* F (1,31)	=	.018634[.892] *

A: Lagrange multiplier test of residual serial correlation
 B: Ramsey's RESET test using the square of the fitted values
 C: Based on a test of skewness and kurtosis of residuals
 D: Based on the regression of squared residuals on squared fitted values