DISSERTATION

CAUSALITY BETWEEN FINANCIAL DEVELOPMENT AND ECONOMIC GROWTH: THE CASES OF KUWAIT, OMAN, AND SAUDI ARABIA

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ABSTRACT OF DISSERTATION

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In an attempt to determine what causes economic growth, economists have studied various influences, among them is the role of the financial system in economic growth. Some argue that financial and monetary factors do not have any effect on real variables such as GDP growth. However, a large body of empirical research has found a robust relationship between financial development and economic development.

Using two different models and three alternative financial development indicators, this study investigates the short-run and the long-run relationship and causality between financial development and economic growth in Kuwait, Oman, and Saudi Arabia, using OLS estimation, Johansen multivariate cointegration technique, and short-run and long-run Granger causality within the error-correction mechanism (ECM).

The results of the OLS regressions reveal that in case of Kuwait the relationship between financial development indicators and economic growth is negative. While in the case of Oman and Saudi Arabia, the results reveal that there is a positive relationship between the financial development indicators and economic growth.

The results of the cointegration test reveal that there is a long-run relationship between the financial development indicators and economic growth indicating that the two variables move together in the long-run for all three countries. However, this long-run relationship is negative in the case of Kuwait.

The results of the error-correction model suggest that in the case of Kuwait, the causality is, in general, running from economic growth to financial development. While in the case of Oman and Saudi Arabia, the results, in general, suggest that the short-run causality runs from financial development to economic growth, while in the long-run the causality is from economic growth to financial development.

In the case of Oman and Saudi Arabia, the results suggest that policies designed to encourage further investments in the financial and banking systems would be beneficial for promoting economic growth. While in the case of Kuwait, the results suggest that some problems exist. One hypothesis is that the financial system in Kuwait seems to be suffering from the regional crises that resulted from the Iraqi invasion of Kuwait in 1990.

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To my Parents

And

To the Memory of my Aunt, may Allah have mercy on her

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CHAPTER ONE

INTRODUCTION

1.1 Overview:

Economic growth has been the ultimate objective of most, if not all, economies and has been the main subject of a large body of economic studies. In an attempt to discover the determinants of economic growth, economists have studied various influences, among them is the role of the financial system in economic growth.

The role of financial intermediation in the process of economic development had been ignored in the Nineteenth Century Classical literature until Bagehot (1873) argued that the financial system and the money market played a significant role in igniting industrialization in England by allowing capital to flow across England in search of the projects with the highest rate of return.

It was not until Schumpeter (1911) when financial intermediation was explicitly presented. He argued that the financial system has a major role in economic development. This important role was played, according to Schumpeter, by bankers who played the role of intermediaries between those who have the production means (i.e. money) and those who wish to form new combinations (i.e. new products).

The role played by financial intermediation in the development of the real activities of the economy and the causality between them is still debated in the field of economic development. The new classical view is that financial and monetary factors do

not have any effect on real variables such as GDP growth and money is neutral. Robert Lucas (1988) does not think that the financial system has any significant role in economic development: *"... I believe that the importance of financial matters is very badly over-stressed in popular and even much professional discussion..."* (Lucas, 1988).

Economic development literature, represented by the work of the pioneers of economic development (Baur, Clark, Lewis, Rostow), simply ignore the linkages between finance and development. None of these pioneers mentions or lists the financial system as a contributor to the process of economic growth (Chandavarkar, 1992).

Empirically, the issue of causality between financial development and economic growth has been, in recent years, the subject of a growing body of economic research in the field of economic development. Most of these studies find a strong relationship between financial variables and economic development. For example, King and Levine (1993b,c) have shown in their studies that financial intermediation does in fact have a positive and robust effect on economic growth.

1.2 Problem Statement:

The purpose of this study is to investigate the short-run and the long-run relationship and causality between financial development and economic growth in three of the Gulf Cooperation Council (GCC) countries, namely, Kuwait, Oman, and Saudi Arabia. The countries were chosen for the similarities between them, economically, geographically, and culturally. All three countries are oil-exporting developing countries and all of them share membership in the GCC. The choice of countries in this study was affected by the availability of the data. The original choice was to perform this study

using all six GCC countries as case studies, however, due to the lack of data for the desired time period for this study for Bahrain, Qatar, and United Arab Emirates, this study was limited only to three GCC countries; Kuwait, Oman, and Saudi Arabia. These three countries can be considered to be quite representative of the rest of the GCC countries since all six countries have similar economic, cultural, geographical features.

This study will attempt to investigate and analyze the relationship and causality between financial development and economic growth in the three countries. In order to examine the economic growth of these countries and determine the effect of financial development on economic growth, this study will empirically investigate the relationship between these variables. This study will use OLS techniques, Johansen (1988) multivariate cointegration technique, and the short-run and long-run Granger causality within the error-correction mechanism (ECM) to answer the following questions regarding this relationship:

1. Using Kuwait, Oman, and Saudi Arabia as case studies, does financial development cause economic growth? Or is it economic growth that causes financial development? Or is the causality a two-way flow? Or is there no causality at all?
2. What is the importance of financial development for economic growth?
3. Is there a short-run relationship between financial development and economic growth?
4. Is there a long-run relationship between financial development and economic growth?

1.3 Significance of the Study:

In an attempt to add to the growing body of empirical studies on the role of financial development in promoting economic growth and to answer the question of whether or not the causality between financial development and economic growth is supported in the case of Kuwait, Oman, and Saudi Arabia, this study will use recently developed econometric techniques to empirically investigate these questions.

Most empirical studies that have investigated this role of financial development have excluded some countries from the empirical work for various reasons. Countries in which oil exports account for more than 20 percent of GDP are excluded in most studies for the reason that it would involve performing pooled time series or cross-section analysis in which an assumption of similar economic conditions can not be satisfied. This study will not need to be limited by this assumption since it will not be using pooled or cross-section analysis but will be using time series analysis instead. This study will use these oil-exporting countries as a case study for investigating the relationship between finance and economic growth.

Based on the results of this study, the importance of finance to economic growth will provide policy makers in these countries a better understanding of the role played by the financial system in economic growth and based on the results of this study, policy makers may see a reason to improve or reform the financial system in an attempt to achieve higher levels of economic growth.

Finally, this study will attempt to use OLS techniques, Cointegration test, Vector Error Correction Methodology (VECM), and Granger-Causality test on three alternative

proxies for financial development to test for the existence of the relationship between these financial development proxies and economic growth.

1.4 Organization of the Study:

Following the introductory chapter, the structure of this study will be as follows: Chapter Two will review the literature on the role of financial intermediation and financial development in economic growth and the causal relationship between them, and the empirical work on this issue.

Chapter Three will provide and review the models and econometric techniques used to measure the relationship between the two economic variables. This chapter will go over and review the different econometric techniques that are necessary to test the hypotheses presented by this study; is there a relationship between financial development and economic growth in Kuwait, Oman, and Saudi Arabia?

Chapter Four will review and briefly discuss the major features and economic indicators of the countries included in this study. In addition, this chapter will provide a description of the structure of financial systems of Kuwait, Oman, and Saudi Arabia. Furthermore, the financial development indicators of the three countries will be compared within the three countries and with other countries in the region.

Chapter Five will provide the analysis and properties of the data and present the empirical results of the tests used to study the role of financial development in economic growth.

Chapter Six will present, based on test results, the summary and conclusion of this study and will also provide the implications of this study.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

In the literature, the positive role played by financial intermediation (i.e., financial development) in economic growth is a debatable subject. Those who don't believe in the existence of such a role argue that the financial and monetary systems have no long-run role in determining the economic growth of an economy. Financial intermediation is not thought to be a determinant of growth and in fact they argue that it follows rather than leads the growth process of a country. Robert Lucas (1988) for example, argues that "financial matters" do not have any role in economic growth and this alleged role is "over-stressed" in the literature. Joan Robinson (1954) asserts that finance always follows economic growth and that the general tendency is that the supply of finance moves with the demand for it: "*by and large, it seems to be the case that where enterprise leads, finance follows.*" (Robinson, p.86). According to Robinson's view, financial development is a result of economic growth and the demand for financial services is caused by economic growth with causality running from growth to finance.

On the other hand, those who do believe in the existence of a positive role of financial intermediation in promoting economic growth argue that the financial system plays a critical role in reallocating resources to the most productive projects that will in

turn lead to higher economic growth. This view is recently supported by a large body of empirical evidence which shows that finance does matter and does have a positive effect on the process of economic growth (see King and Levine, 1993).

This chapter will review the literature on the relationship between financial development and economic growth. The chapter is divided into two main sections; the first section will review the theoretical work done on the subject of economic growth reviewing the work of The Solow Model, Endogenous Growth Theory, The Financial Structuralists School, and The Financial Repressionists School. The second section will review the empirical evidence concerning the causality between finance and economic growth.

2.2 Theoretical literature:

In economic theory, it was thought that financial markets had no relevant role in promoting economic growth. What was thought to matter as determinants of economic growth were only technological progress and population growth (Solow, 1956). But with the development of the endogenous growth theory this thought has changed. According to the endogenous growth theory, investment in the development of physical and human capital is the main contributor to economic growth and policies that improve these factors have a positive role in promoting economic growth.

Even though, a large body of empirical studies has found evidence that financial development does have a positive effect on the process of economic growth, this role is not modeled in growth theories. In these growth theories the assumption is that markets clear, which means that the surplus of savers is transferred to borrowers who need the

funds. However, in reality this is not true; markets do not always clear. In reality, funds are channeled through financial intermediaries across a country from savers to investors increasing the economy's efficiency by allowing the development of long-term high return projects and by allowing risk sharing by savers.

2.2.1 Theories of Economic Growth:

The main purpose of the macroeconomic theories of economic growth is to explain why per capita income grows over time and across countries, and why some economies grow faster than others (Mankiw, 2000). Theories of economic growth attempt to analyze and explain economic growth in a macroeconomic framework where there is a link between investment, savings, and production. These theories moved from the belief that economic growth is exogenously determined with no role for policies and government intervention, to the view that economic growth is determined endogenously with a potential role for policies and government intervention to improve the quality of factors affecting economic growth.

This section will review two of the most important theories regarding this issue, the Solow Growth Model and the Endogenous Growth Model.

2.2.1.1 Solow Growth Model:

In a neo-classical framework, Robert Solow (1956) developed one of the first models of economic growth that attempted to explain the process and the causes of economic growth. This model is known as *The Solow Growth Model* or *The Exogenous*

Growth Model. In this model, economic growth is approximated by the aggregate production function and it is that of a Cobb-Douglas type:

$$Y_t = A\, K_t^{\alpha} L_t^{\beta} \tag{2.1}$$

Where Y is aggregate production, A is a parameter that measures the productivity of available technology ($A > 0$), K is capital, L is labor, and α, β are constants that measure capital and labor share of income respectively, and they are assumed to be less than one to satisfy the assumption of diminishing returns to a single factor. In addition, the production function is assumed to exhibit constant return to scale ($\alpha+\beta=1$). The subscript t denotes the time period.

The focus here is on the effects on output over time of changes in labor, capital, and technology. Accordingly, the production function is expressed in terms of per capita variables by dividing both sides of equation (2.1) by L and rearranging to get the following:

$$Y_t/L_t = A\,(K_t/L_t)^{\alpha}$$

or

$$y_t = A\, k_t^{\alpha} \tag{2.2}$$

Here, output per capita (i.e., per worker) depends only on capital per worker and according to Solow, the increase in output can come from one of three factors:

- An increase in labor (L), however, this would lead to a reduction in output per capita (y) in equation (2.2) due to the assumption of diminishing returns to scale.
- An increase in capital (K), which would also increase output per capita (y).
- An increase in the technology (A), which would increase output per capita (y).

As do other growth models, this model tries to explain and analyze the behavior of output in the long-run. In this model it is assumed that the economy is closed and that in the long-run all prices adjust to clear all markets (i.e., supply and demand are equalized) including the equalization of investment and domestic savings. Changes in capital depend on net investment (the difference between gross investment and replacement investment); capital will only grow if net investment is positive. Changes in the labor growth rate are only brought by changes in the population growth rate.

As for the growth of per capita capital and per capita output respectively, they are described as:

$$g_k = sAk^{\alpha-1} - n \qquad \text{and} \qquad g_y = \alpha\, g_k \tag{2.3}$$

where n is the rate of growth of population and s is the saving rate.

In the short run, capital grows faster than labor causing capital per worker and output per capita to grow temporally. However, in the long run, capital and output growth rates are equal to zero, and saving is just enough to provide for new workers. Accordingly, the saving rate has no role in determining the growth rate of output; therefore, there is no role for financial intermediation in raising the growth rate of output.

Finally, in this model, only exogenous shocks coming from technological changes can generate sustained economic growth.

2.2.1.2 Endogenous Growth Theory:

In the Solow model, economic growth occurs only through exogenous technological changes; economic growth comes only from technological progress, and this technological progress is assumed to be exogenous (Mankiw, 2000). A review of the endogenous growth theory literature suggests that the assumption of exogenous technological progress should be revisited. According to this theory, the assumption of exogeneuity in the Solow model is questioned because under this assumption there is no role for policy promotion that would generate or accelerate economic growth.

According to the endogenous growth economists, enhancements in productivity can lead to a faster pace of innovation and extra investment in human capital. In addition, they stress the importance of government and private sector institutions and markets that promote innovations, and provide incentives for individuals to be inventive. From this point of view, financial intermediation that promotes and allocates resources to the development of new innovations may have a positive role in promoting long-run economic growth. Accordingly, if this link between financial intermediation and economic growth is established then there should be a role for policies that would develop the financial system in an attempt to achieve higher economic growth.

There are two basic models of endogenous growth. The first model is the AK-Model (see Rebelo, 1991) and the second model is the Human Capital Model (see Barro and Sala-i-Martin, 1995). Both models introduce the potential positive externalities and

spill-over effects from the development of knowledge which is able to develop and maintain economic growth. Both approaches introduce the "quality" of inputs, capital through research and development and labor through the investment in human capital as having positive effects on economic growth. The main element of both approaches is that they, unlike the Solow Growth Model, endogenize the growth rate and accordingly argue that policy measures can have an impact on the long-run growth rate of an economy.

Finally, the theories of endogenous growth argue that the assumption of diminishing return to capital is not reliable when introducing both physical and human capital in the production function, and they instead favor an assumption of constant returns to capital (Mankiw, 2000).

2.2.1.2.1 The AK-Model:

This model hypothesizes that the diminishing marginal productivity of capital in the Solow model is compensated for by an increase in the quality of capital through research and development.

According to this model, the production function is expressed as:

$$y_t = A\, k_t \tag{2.4}$$

The steady state rate of growth of capital per worker is:

$$g_y = g_k = sA - n \tag{2.5}$$

This means that, for a constant saving rate (s) and a constant population growth rate (n), as long as the fraction of sA is greater than the population growth rate then capital per worker will grow Accordingly, an increase in the savings rate would increase the growth rate of capital per worker and output per worker (see Romer 1986, 1987; Lucas, 1988; Rebelo, 1991).

2.2.1.2.2 The Human Capital Model:

This theory is based on the existence of externalities. One of these externalities concerns the labor input in production when households can invest their savings in both physical and human capital. This model emphasizes the importance of "knowledge" in determining economic growth. Labor here is not determined exogenously by the growth of population as proposed by the Solow model; instead it is determined by the accumulation of skills that are a result of investment by households in human capital (see Mankiw, Romer and Weil, 1992).

According to this model, the production function is expressed as:

$$y_t = k_t^{\alpha} h_t^{\beta} \tag{2.6}$$

where y is output per capita, k is capital per capita, h is human capital per capita, and α, β are constants that measure physical capital and human capital share of income respectively ($\alpha+\beta = 1$). In this model, the growth rate of output per capita and capital per capita are as follows:

$$g_y = g_k = s^{\alpha} z^{\beta} \tag{2.7}$$

where s is fraction of savings channeled to capital accumulation and z is the fraction of savings channeled to human capital accumulation ($s + z = 1$). One important implication of this model, as mentioned before, is that economic growth is endogenously determined by the decision of households to save and invest in physical and human capital giving a role for policies that could promote a more efficient allocation of savings.

2.2.2 Financial Schools of Thoughts:

There are two main schools of thoughts regarding the debate over how financial development encourages economic growth: (1) the financial repressionists school and; (2) the financial structuralists school. Both schools advocate a highly developed and liberalized financial system.

2.2.2.1 Financial Repressionists School

This school's main argument is that liberalization of the financial system is an important step in encouraging financial development and economic growth and the government should have no control over interest rates. Specifically, the government should not control or impose ceilings for interest rates. According to this school, freeing interest rates would stimulate and encourage financial development and financial deepening through the increase in savings that would be transferred to productive activities which in turn would translate into higher levels of economic growth.

Two of the pioneers of the financial repressionists who advocate "financial liberalization" are Shaw (1973) and McKinnon (1973). Both of them emphasize the importance of interest rates in financial development and the importance of the

elimination of distortions in the prices of financial services. Accordingly, they call for the liberalization of the financial system and for less government intervention in controlling and imposing ceilings to interest rates.

McKinnon (1973) stresses the importance of high rates of interest in encouraging technical improvement:

> "high rates of interest for both lenders and borrowers introduce the dynamism that one wants in development, calling forth new net saving and diverting investment from inferior uses so as to encourage technical improvement. In contrast, the common policy of maintaining low or negative rates of interest on financial assets and limited loan availability may accomplish neither." (pp. 15)

In addition, McKinnon argues that "full liberalization" in developing countries requires a more costly monetary system to entirely utilize and attract savings and also argues that the low returns to depositors is a result of the failure of banks to earn high equilibrium rates of returns, which, in real terms, could be negative in the presence of inflation. An interest rate ceiling causes a situation in which desired investment exceeds desired savings. According to McKinnon, imposing interest rate ceilings would prevent small-scale lending because of the difficulty of covering the administrative costs and default risks associated with small-scale lending and this in turn would increase informal market lending. The interest rate ceiling causes a situation in which desired investment exceeds desired savings.

McKinnon use the example of Ethiopia, where the government imposed a ceiling of 12 percent on nominal interest rate offered by banks. This low interest rate ceiling prevented the investment market from clearing and lead to inefficiencies in loan allocation in the investment market. In an attempt to protect the manufacturing industry and the real estate business, the government imposed a nominal interest rate of between 6 and 8 percent which lead to excessive investment and in turn to poor returns in these

sectors. This lead to a situation where small-scale lending were reduced and farmers were not able to obtain loans from banks to finance there business. Accordingly, moneylenders were given the opportunity to charge farmers an interest rate between 100 to 200 percent.

Shaw (1973) gives four reasons for financial repression in what he calls "lagged economies" (i.e., less developed countries):

1. The prohibition of usury that is widespread in lagging economies in the form of custom, statute, and moral law that prohibit high rates of interest.
2. Inefficiencies in controlling nominal money by the monetary authority. Financial development and deepening occurs only when "*nominal money is under effective constraint or inflation effects of money indiscipline are compensated by changes in relative prices including interest rates.*" Shaw (1973,p.95)
3. Inefficiencies in planning and implementing financial policies. It is easer for governments to follow the policy of financial repression rather than the commitment to financial deepening.
4. The view that other solutions of capital scarcity are more superior to financial deepening. This view claims that financial repression is more appropriate than financial deepening for developing countries and the opposite is true only in late stages of economic maturity.

As for the effect of financial repression on economic growth, Shaw asserts that imposing ceilings on interest rates is an impediment to exploring new opportunities:

> "Effective low ceilings on real loan rates intensify risk aversion and liquidity preference on the part of intermediaries. Banks and others keep a privileged place in their portfolios for established borrowers, especially trading firms with a long record of stability. They have little incentive to explore new and less certain lending opportunities."(p. 86)

Moreover, and according to Shaw, since savings are mobile, imposing ceilings on interest rates in less developed countries causes capital flight from depressed lagged economies to foreign markets.

In addition to financial liberalization, Shaw also calls for financial development: *"liberalization and deepening of finance contribute to the stability of growth in output and employment"* (Shaw 1973, pp.11). He asserts that financial deepening would prevent capital flight, reduce dependency on foreign savings, and reduce the velocity of circulation.

2.2.2.2 Financial Structuralists School

The main argument of this school is that the expansion of financial intermediation tends to increase savings which in turn increases the amount of funds available for investment. In addition, proponents of this school of thought argue that the expansion of well developed financial institutions and their activities would have a positive role in directing savings to profitable investments and this in turn will stimulate economic growth (Gerschenkron, 1962; Goldsmith, 1969; Patrick, 1966)

In his title essay on "*Economic Backwardness in Historical Perspective*", Gerschenkron (1962) was the first to point out the structuralists view. In his analysis of the early stages of European industrialization he emphasized the role played by banks in the formation of capital and economic growth arguing that the role played by banks in capital formation has been relatively small in both advance and extremely backward countries and relatively great in the case of moderate backwardness. He calls for government intervention to stimulate economic growth asserting that the greater the

degree of backwardness of a country, the more intervention is required in the economy to channel capital to promising industries. Furthermore, the greater the backwardness, the more comprehensive measures are required to reduce domestic consumption and promote savings.

Goldsmith (1969) developed a financial indicator that measures financial development which he called a financial interrelation ratio (FIR), this is the total financial assets over national wealth. This financial interrelation ratio is usually at a lower level in less developed countries than in developed countries, and can be traced back to factors such as the distribution of wealth, the concentration of production, the propensity to save, and the incentive to invest.

According to Goldsmith, as a country's level of economic "development" rises, the financial interrelation ratio also rises until it reaches a certain value and then this ratio tends to stabilize. With the creation of the banking system, financial development starts to evolve and, at first, both the ratio of currency to national wealth and the ratio of bank money to national wealth increase, but, later, theses ratios level off or decrease as a country's financial system develop. In addition, and as economic development progresses, the banking system's share in the assets of all financial institutions decreases. Finally, Goldsmith argued that in most countries, it can be observed that as real income and wealth increase, the size and sophistication of the financial "superstructure" also grows (i.e., financial development). However, the direction and causality of this relationship is not firmly established.

Patrick (1966) discussed the relationship between the financial system and economic growth. In particular, he tries to address the question of whether financial

development is a result of economic growth (i.e., demand- following phenomenon) or the alternative of economic growth being a result of financial development (i.e., supply-following phenomenon). Patrick's view is that financial intermediation plays a significant role in igniting economic growth when a country is in the first stages of economic growth:

> "It can not be said that supply-leading finance is a necessary condition or precondition for inaugurating self-sustained economic development. Rather, it presents an opportunity to induce real growth by financial means. It thus is likely to play a more significant role at the beginning of the growth process than later." (pp. 176).

According to this statement and according to Patrick, in "actual practice" it is likely that demand-following phenomena and supply-following phenomena interact; in early stages of development financial development leads to economic growth and after the process of economic growth has occurred then economic growth leads to more financial development.

2.3 Empirical Literature:

This section will review and survey the empirical literature on the role of financial development in economic growth. This section will include three subsections: The first subsection is a review of studies related to the contemporaneous correlation between the two variables. The second subsection is a review of studies related to the causality between the two variables. The third subsection is a review of studies related to the long-run relationship between the two variables; the cointegration between the two variables.

2.3.1 Contemporaneous Correlation:

Raymond Goldsmith (1969) was the first to examine and investigate the relationship between finance and growth in his seminal book *Financial Structure and Development*. In his investigation, Goldsmith examined 35 countries over the period from 1860 to 1963, using the value of financial intermediary assets (i.e. size of financial intermediaries) relative to GNP as a measure of financial development, he found, without using other factors that could have a role in determining economic growth, some evidence of a positive correlation between the financial development indicator, as measured by the ratio of the value of financial intermediary assets to GNP, and economic growth as measured by the level of real per capita GNP.

In a series of cross-country studies and using seventy-seven countries during thirty years (1960-1989), King and Levine (1993b,c) used four different measures for financial deepening and four different measures for economic growth to examine the role of financial development on long-run economic growth.

These measures of financial deepening used in their study are: (1) *the ratio of liquid liabilities of the financial system to GDP*, (2) *domestic assets in deposit money banks divided by domestic assets of deposit money banks and central bank*, (3) *the ratio of claims on the non-financial private sector to total domestic credit*, (4) *the ratio of claims on the non-financial private sector to GDP*.

The measures of economic growth are: (1) *the average growth rate of per capita real GDP*, (2) *the average growth rate of physical capital*, (3) *the ratio of domestic investment to GDP*, (4) *a proxy of productivity improvement.*

Controlling for factors such as education, political stability, trade, monetary and fiscal policy, King and Levine found that there is a positive and significant correlation between all the different indicators of financial deepening and the measures of economic growth.

Levine (1998) examined the relationship and link between the legal system and the development of the banking sector and its impact on long run rates of growth, capital stock and productivity growth. The findings in his paper were that there is a strong relationship between the legal system and banking development. Specifically, Levine found that countries with legal systems that emphasize "creditor's rights" have a more developed banking system, as measured by bank credit to the private sector divided by GDP, than countries that do not have such rights to creditors. In addition, Levine found that countries that have legal systems that strictly enforce laws and contracts have a more developed banking system than countries that lack such enforcement. One implication of this paper is that improvements to the legal system that leads to enhancements in the enforcement mechanism is positively related to economic growth.

Levine and Zervos (1998) studied the relationship between measures of stock market development, banking development and long-run economic growth for forty-seven countries from 1976-1993. They found that stock market liquidity and banking development are both positively and strongly correlated with current and future rates of economic growth even after controlling for a variety of other important factors such as, openness to trade, education, political stability, and fiscal policy.

Using an endogenous growth model with multiple assets, Bencivenga and Smith (1991) developed an overlapping generations model in which agents face random future

liquidity needs and accumulate capital and an unproductive liquid asset. They then introduced financial intermediation into their model to study the effects of the financial sector on steady state growth rates. In their model, they demonstrate how financial intermediation reduces the fraction of savings held in the form of unproductive liquid assets in the economy. In addition, they show the positive role played by financial intermediation in preventing misallocation of financial resources due to liquidity needs.

Using annual data for seventy-one countries and using the annual growth rate of real GDP, labor force growth, investment-GDP ratio, real export growth, and financial depth (i.e. liquid liabilities), Odedokum (1996) attempted to measure the effects of financial intermediation on the growth of real GDP in less developed countries. His estimating technique was to use OLS to come up with three different types of estimates: (a) Pooled time series data for all the countries combined. (b) Division of the countries in the study into different regional groups. (c) Estimates for each country individually. The results obtained by Odedokum are (a) Financial intermediation positively effects economic growth in eighty-fife percent of the countries included in the study. (b) The positive effect of financial intermediation on economic growth is more predominant in low-income countries than in high-income countries. (c) The positive effect of financial intermediation on economic growth is constant across countries and regions.

Using monetary ratios, currency ratios, and other financial ratios, Albatel (1993) used three OLS regressions to test the hypothesis that financial development has a positive role on savings, private investment, and economic growth in Saudi Arabia during the period from 1964 to 1989. The results show that some of the financial development

ratios used in this study did have a positive and significant impact on savings, private investment, and income growth.

Allen and Nidkumana (2000) used a panel data approach and used different indicators of financial development to study the impact of financial intermediation on economic growth for members of the Southern African Development Community (SADC) while controlling for other explanatory variables such as inflation, government consumption, openness, and debt services. The findings of Allen and Nidkumana provide some support for the view that financial intermediation and economic growth are positively correlated especially in regressions that use pooled data compared with those using annual data.

Using eight alternative measures of financial development, Nourzad (2002) employed a stochastic production frontier for panel data to investigate the effect of financial development on productive efficiency. Three panels of a number of countries in different stages of development were used. The results indicate that the more developed the financial intermediaries sector and equity markets, the higher the productive efficiency; financial deepening reduces productive inefficiency in both developed and developing countries and this positive effect is larger in developed countries.

On the issue of banking restrictions and its effect on economic growth, Jayratne and Strahan (1996) empirically argued that the financial market can positively affect economic growth through the relaxation of bank branch restrictions in the United States. Specifically, they found that real per capita growth of income and output considerably increased after intrastate branch reforms. In addition, they argue that improvements in the

quality of bank lending rather than the volume of bank lending are the cause of economic growth.

2.3.2 Causality:

Even though a large body of research has empirically and theoretically found a positive relationship between financial development and economic growth, the use of Granger-causality techniques to study the relationship between these two variables are few and far between.

The first to mention, indirectly, the issue of causality between finance and economic growth was Robinson (1952) who argued that financial services are entailed by growth performances:" *by and large, it seems to be the case that where enterprise leads, finance follows* " (Robinson, 1952). According to this argument, financial development is seen to be more caused by economic growth.

However, the issue of causality between financial intermediation and economic growth remains, theoretically and empirically, controversial. Providing evidence on the direction and magnitude of the causality between the two variables is crucial to both, economists in understanding the role of financial development, and for policy makers in implementing the optimal decisions and policies that would promote both financial development and economic growth. For example, if causality can be established from financial development to economic growth then this could have direct policy implications.

The causality problem was initially identified by Patrick (1966) who suggested that the causality runs in a two-way direction, from finance to economic growth during

early stages of development (i.e. 'supply leading'), while running from economic growth to finance during later stages of development (i.e. 'demand following').

This causality issue was further developed by Goldsmith (1969) who acknowledged that it is hard to make predictions about causality:

> "There is no possibility, however, of establishing with confidence the direction of the causal mechanism, i.e. of deciding whether financial factors were responsible for the acceleration of economic development or whether financial development reflected economic growth whose mainsprings must be sought elsewhere" (Goldsmith, 1969: 48).

Accordingly, Goldsmith was unable to determine the causality direction between finance and economic growth.

Al-Jasser (1986) studied the role of financial development on economic development in Saudi Arabia, during the period from 1965 to 1984, using financial ratios such as currency ratios, monetary ratios, and broad financial ratios. The non-oil private sector GDP was used as a proxy for economic development. He applied both a simple correlation test and a bivariate Granger-Sims causality test. The result reached by the study is that financial development in Saudi Arabia was positively correlated with economic development. In addition, the results of the causality test revealed that the causality is a one way causality from financial development to economic development as measured by the non-oil private sector GDP.

Levine, Loayza and Beck (2000) addressed the issue of causality between financial intermediary development and economic growth using two econometric approaches: (1) pure cross-sectional estimator of 71 countries, and (2) panel dataset with data averaged over seven five-year intervals using two Generalized Method of Moments (GMM) dynamic panel estimators. The results of the two approaches support the view

that financial intermediary development has a significant role and causal impact on economic growth.

Graff (2002) investigated the causal links between financial activity and economic growth for ninety-three countries across four five-year intervals form 1970 to 1990. Using a proxy for financial development and a proxy for economic growth, Graff employed a path analysis with panel data to investigate direction of causality between the two variables. In this study, Graff found that , from an overall perspective, there is strong evidence in support of unidirectional causation from financial development to economic growth; however, the period of 1975-1980 showed that financial growth was harmful (i.e. negative) to economic growth.

2.3.3 Cointegration:

The use of cointegration techniques in studying the issue of causality and the long-run relationship between financial intermediation and economic growth are few and far between in the literature studying the relationship between financial intermediation and economic growth. In this subsection, we review the empirical work preformed on this subject using cointegration.

Using quarterly data for the period from 1979 to 1990, Murinde and Eng (1994) used Singapore as a case study to empirically test the "*supply-leading*" and the "*demand-following*" hypotheses employing cointegration and unit root techniques within a bivariate *VAR* (*BVAR*) framework. The conclusion reached by the authors is that the evidence is in favour of the supply-leading hypothesis only when broad monetary aggregates and monetization variables are used as indicators of financial development. The evidence

largely supports a unidirectional causality from financial development to economic growth. This finding is, according to Murinde and Eng, consistent with the Government's effort in developing the banking system and intermediaries and the effort of enhancing monetization of the economy.

Demetriades and Hussein (1996) analyzed the relationship between financial development and real GDP for sixteen countries using both causality tests and cointegration techniques. Their study provides little support for the argument that finance is a leading sector in the process of economic development, but they found bidirectional and reverse causality between the two variables. As for cointegration, the authors found that for thirteen out of sixteen countries there is some evidence of a stable relationship between at least one indicator of financial development (i.e. ratio of bank deposit to nominal GDP) and real GDP per capita. According to Demetriades and Hussein, their finding demonstrate that causality results vary across countries which emphasize the risk of statistical inference based on cross-section country studies which treat different economies as if they had the same initial conditions.

In an attempt to empirically test the "demand-following" and the "supply-leading" hypotheses, Chang and Ho (2001) used a multivariate VAR model for South Korea over the period 1953 to 1999. In their model, they used Johansen cointegration test to test the long-run relationship between financial development, as represented by quasi-money, and economic growth, as represented by real GDP per capita, while controlling for the degree of openness. In addition, a multivariate error correction based causality test was preformed on the three variables. The results found by the authors are that there exists a

one cointegrated vector among the three variables and a unidirectional causality running from financial development to economic growth.

Using quarterly data for the period from 1987 to 1999, Chang (2002) employed a Johansen cointegration test using a multivariate VAR approach to test both the "demand-following" and "supply-following" hypotheses for Mainland China. The results show that there exists one cointegrated vector between GDP, financial development, and the degree of openness. As for the multivariate error correction based causality test, the evidence show that there is no causality between economic growth and financial development, accordingly, both the "demand-following" and the "supply-following" hypotheses are not supported.

Siddiki (2002) employed an endogenous growth model with annual data to empirically measure and analyze the joint impact of financial and trade liberalization on economic growth in Bangladesh for the period from 1975 to 1995. The variables used were real per capita income, financial development indicators, real interest rates, openness to trade, the unofficial exchange rate premiums, and investment in physical and human capital. The author applied both the cointegration analysis of Engle and Granger (EG) (1987) and the fully modified least squares (FMLS) method of Phillips and Hansen (1990) and found that financial liberalization had, relatively, a higher impact on economic growth than trade liberalization.

CHAPTER THREE

METHODOLOGY OF THE STUDY

This chapter will develop and review the econometric techniques used to measure the relationship between the two economic variables; financial development indicators and economic growth. This chapter will go over and review the different econometric techniques that are necessary to test the hypotheses presented by this study.

3.1 Micro-Level vs. Macro-Level Financial Development:

The studies concerning the relationship between financial intermediation and economic growth have two aspects; micro level studies and macro level studies. The micro level studies are concerned with the link between the financial system and the performance of individual firms; it studies the affect of the availability of external finance on firms' investment decisions. The macro levels studies are concerned with the link between the financial intermediation development and economic growth on the country level. This study is only concerned with the macro aspect of the relationship between financial development and economic growth.

3.2 The Theory of Financial Intermediation:

Theoretically, there is considerable debate about the role of financial intermediation and financial development in economic growth. In addition, there is still a

considerable debate about how financial development effects economic growth if such a relation exists. Furthermore, the large literature on the finance and economic growth nexus does not offer a thorough and reasonable theoretical clarification of this relationship (Bencivenga, 1991).

The theoretical contribution foundation of the importance of financial intermediation can be traced back to Bagehot (1873) who argued that the financial system played a critical role in igniting industrialization in England. This theoretical contribution can also be traced to Schumpeter (1912) who explicitly stated the role played by bankers (i.e. financial intermediaries) in economic development.

This theoretical contribution was continued by Gurley and Shaw (1955) and Patrick (1966). However, the seminal contribution in this subject was that of Goldsmith (1969) who offered a more consistent contribution to the debate, by defining with more accuracy the role of financial institutions.

A review of the literature reveals that nearly all the existing empirical studies on the role of finance on economic growth have no framework with standard theoretical underpinnings. Instead, they generally estimate equations of the following form (Odedokun, 1996):

$$\text{Economic Growth} = f(\text{Financial Development})$$

The estimated equation uses some variables (i.e. GDP, real per capita GDP, or GNP) as proxies for economic growth on the left hand side of the equation as a function of various proxies of financial development. In some cases, they include other additional

non-financial variables on the right hand of the equation (i.e. explanatory variables). Such variables could include: the labor force, fixed capital formation as a proxy for capital, the sum of exports and imports as a ratio of GDP as a proxy for the degree of openness of a country to international trade, a human capital proxy, government consumption expenditure, inflation, exchange rate, interest rate, government debt, legal system etc.

3.3 The Functions of Financial Intermediation:

As a result of market frictions such as information costs and transaction costs, Levine (1997) identifies five basic functions of financial intermediaries (summarized here in four points):

1. Mobilization of Savings:

Mobilization of savings is an important function of financial intermediaries. Banks have an important role in making credit available for investment through facilitating and channeling savings from individual savers to productive investment leading to capital accumulation, productivity, and economic growth (Bencivenga and Smith, 1991).

2. Risk management:

Most productive projects require long-term capital commitment, while individuals, in general, require their savings to be available upon request. By pooling individual savings, banks are able to avert liquidity risk and provide long-term credit, since that not all individuals will request their savings at the same time (Bencivenga and Smith, 1991). In addition, banks are more able to diversify their risk by providing credit to a wide range of projects.

3. Acquiring information, Resource Allocation, and Monitoring Projects:

Because of the high cost associated with collecting and processing information on different borrowers, projects, and markets conditions, individuals are unable to decide on the best destination for their savings. Financial intermediaries are more capable of acquiring information on borrowers and projects; accordingly, they are more capable of channeling savings into the most productive projects. In addition, and given the cost associated with it, financial intermediaries are more capable of monitoring the performance of borrowers and projects.

4. Facilitating Exchange of goods and services locally and internationally:

Financial intermediaries and the financial sector in general play an important role in facilitating exchange and transactions within the economy and with other economies. The financial sector provides the mechanisms to make and receive payments and reduces transaction and information costs.

3.4 The Link between Financial Intermediation and Economic Growth:

The development of the endogenous growth theory has ignited and renewed the interest in the link between financial development and economic growth. This new development in the endogenous growth theory has raised the possibility of an influence of institutional arrangements on growth rates.

The link between finance and economic growth may run through several transmission channels. Financial development might (1) reduce the loss of resources required to allocate capital; (2) increase the savings ratio; and (3) raise capital productivity. A theoretical link between financial development and growth can be

established using the AK-model which assumes only one type of goods (Y_t), which is produced with capital (K_t) as the only input factor: (Trabelsi, 2002; and Pagano, 1993).

$$Y_t = f(K_t) \tag{3.1}$$

K_t is the aggregate capital stock including physical and human capital.

Total differentiation of equation (3.1) with respect to time gives:

$$\frac{dY_t}{dt} = \frac{\partial f}{\partial K_t}\frac{dK_t}{dt} \tag{3.2}$$

Dividing the two sides of equation (3.2) by Y_t gives the growth rate of the economy as follows:

$$g_y = \frac{(dy/dt)}{Y_t} = \frac{(\partial f/\partial K_t)(dK_t/dt)}{Y_t} = g_k \tag{3.3}$$

Here, the growth rate is equal to the product of the marginal productivity of capital, $f'(K_t)$, and the investment rate which is equal to:

$$\frac{(dK_t/dt)}{Y_t} = \frac{I_t}{Y_t} \tag{3.4}$$

where $dK_t/dt = I_t$

This is a closed economy and the financial market equilibrium is assumed to equate savings to investment. However, with the introduction of financial intermediation

it is assumed that a fraction (1-φ) of saving is lost, accordingly, only a fraction (φ) of total saving (S_t) is channeled to investment (I_t):

$$\varphi S_t = I_t = \varphi s Y_t \tag{3.5}$$

where s is the saving rate which is equal to S_t / Y_t.

Combining equation (3.3) and (3.4) with equation (3.5) we get the following equation:

$$g_y = \frac{\partial f'(K_t)}{Y_t} \quad \phi \quad (St / Yt) \tag{3.6}$$

From equation (3.6), financial intermediation could have an effect on economic growth via three channels:

- The improvement of capital productivity as presented by an increase in $f'(K_t)$.
- The increase in savings channeled to investment as presented by an increase φ.
- The increase of the saving rate (S_t / Y_t).

3.5 Methodology:

There are two methodologies employed in this study. The first methodology is the OLS technique using the model used by Odedokum (1996). The second methodology is the Johansen cointegration technique and the error correction based causality using the model used by King and Levine (1993b,c).

The main difference between the two methodologies is that: (1) The first methodology uses the OLS technique, while the second methodology uses the Johansen

cointegration technique with the associated error correction model. The OLS techniques and the Johansen cointegration techniques both measure the long-run relationship between the variables. The difference is that the Johansen cointegration test provides, in addition to the long-run relationships, the short-run relationships. (2) In the first methodology we use non-oil GDP as the dependent variable, while the second methodology we use real GDP, and (3) In the first methodology we include labor and capital in our variables, while in the second methodology we exclude labor and capital.

The reason for using two different methodologies is to see whether or not the results are consistent when using two different methodologies with two different dependent variables; Non-oil GDP and GDP. Since the three countries in this study are considered to be oil-exporting countries, in which oil exports account for more than 20 percent of GDP, it is valid to investigate the relationship between non-oil GDP and financial development and compare the results of the two methodologies and see whether or not they give different results.

3.5.1 Methodology (1):

The Methodology used here is that of Odedokum (1996), which is based on the standard neo-classical one sector aggregate production function in which financial development enters into the production function as an input. In this model, the production function differs from the standard production function only in introducing a representative for the financial sector as a factor affecting output.

$$Y_t = f(L_t, K_t, F_t, Z_t) \tag{3.7}$$

where Y is real output or real GDP, L is labor force, K is physical capital, F is a measure of the level of financial development, and Z represents other factors that are considered to effect economic growth. The subscript t denotes the time period.

Other factors that are known to have an impact on economic growth can be added to equation (3.6), such variables could include openness to international trade which is proxied by the sum of exports and imports as a ratio of GDP (King and Levine, 1993b; Odedokun, 1996). Another variable that could be included is the government size which can be proxied by the government consumption expenditure as a ratio of GDP (King and Levine, 1993b). Oman, Kuwait, and Saudi Arabia, are countries that are open to international trade and the government has an important role in the economy, accordingly, it should be valid to include openness and government size as explanatory variables in our model. A third variable that can be added to the model is the Consumer Price Index (CPI) which measures the effect of inflation on economic growth.

Accordingly, our model is as follows:

$$\dot{NOGDP}_t = k + a\dot{LAB} + b\dot{CAP}_t + c\dot{FI}_{t-i} + d\dot{OPEN}_t + h\dot{GOV} + k\dot{CPI}_t + u_t \qquad (3.8)$$

where $i=1,2,....,n$ and a dot on top of a variable indicates that the variable is in a growth rate form. *NOGDP* is real non-oil GDP, *LAB* is labor force, *CAP* is physical capital, *FI* is the financial development indicator, *OPEN* is the degree of openness, *GOV* is government consumption expenditure, and *CPI* is the consumer price index. This model is the same as that used by Odedokun (1996) with the addition of a two variables that

were not used by Odedokun, government consumption expenditure and the consumer price index. The estimation is carried out using the Ordinary Least Square (OLS) Method for each country in our study separately (i.e. individually).

3.5.2 Methodology (2):

This methodology utilizes the Augmented Dickey-Fuller (ADF) unit root test, the Johansen cointegration technique, and the error correction based causality tests using the equation used by King and Levine (1993b,c).

3.5.2.2 Stationary and Nonstationary Series:

Most macroeconomic data such as income, price level, exports, imports, exchange rates, consumption, money demand, and financial variables are known to be nonstationary (i.e. they contain a unit root) or contain a stochastic trend (Greene, 2000).

Using cointegration techniques requires, as a first step, to perform a unit root test to test the property of the data, specifically to determine whether or not the data are stationary.

Stationary time series, as can be seen in Figure 3.1, are series which are characterized by containing a constant mean and variance over time (Gujarati, 1995). If a time series is not stationary, as can be seen in Figure 3.2, then it is called a "*nonstationary*" time series (i.e. it does not have a constant mean and variance over time).

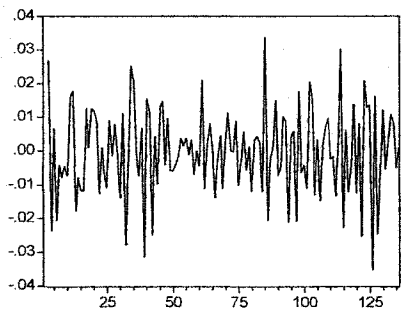


Figure 3.1: Stationary Series
Source: Greene, 2000.

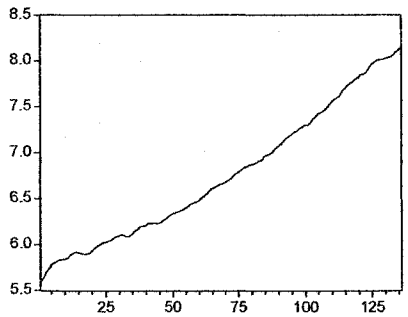


Figure 3.2: Nonstationary Series

According to Enders (1995), if we assume that we have the following regression:

$$y_t = a_0 + a_1 z_t + e_t \tag{3.9}$$

the assumption of the classical regression requires that both y_t and z_t be stationary and the errors have a zero mean and finite variance. The presence of nonstationary variables, could lead to a ***spurious regression*** (Enders, 1995). Accordingly, if y_t or z_t or both are nonstationary then the previous regression *may* lead to misleading results and conclusions.

There are several ways to test whether or not the series are stationary. One way is based on the Correlogram which is performing a sample autocorrelation function (ACF) which uses a graph to show stationary variables. Another way is a test based on the Q-statistic test that tests the joint hypothesis that all the autocorrelation coefficients are simultaneously equal to zero. A third way is to perform what is well known as the "*unit root test*", which can be preformed via two alternatives, the Augmented Dickey-Fuller (ADF) test and the Phillips-Perron (PP) test.

The ADF unit root test is based on the following equation containing a random walk and constant:

$$\Delta Y_t = \mu + \beta Y_{t-1} - \sum_{j=1}^{p} \alpha_t \Delta Y_{t-j} + \varepsilon_t \qquad (3.10)$$

Both tests, ADF and PP, are achieved under the assumption that a unit root exists (i.e. the series are nonstationary); the null hypothesis states that the series are nonstationary *(H_0: $\beta = 0$)* and the alternative hypothesis states that the series are stationary *(H_a: $\beta < 0$)*. If the calculated statistic is higher than the critical value then we do not reject H_0 and the considered variable is nonstationary, if the null hypothesis is rejected then the variable is considered to be stationary.

3.5.2.3 Cointegration Test:

If two variables or more are found to be nonstationary, containing a unit root, then we can say that a linear combination of these variables *may* be stationary, or equivalently, a vector of variables which all achieve stationarity after differencing, could have linear combinations which are stationary in levels (Engle and Granger, 1987). This stationary linear combination is known as the cointegrating equation and may be interpreted as a long-run equilibrium relationship among the variables.

There are two alternative techniques for performing cointegration tests: (1) The Engle-Granger (1987) two-step test, and (2) The maximum likelihood method developed by Johansen (1991, 1995a).

The Johansen cointegration technique is preferred to the Engle-Granger technique because its ability to perform the cointegration test when more than two time series are involved since it can determine the number of cointegration vectors. In addition, since the Johansen technique requires only one step unlike the Engle-Granger technique which requires two steps, which generates less error.

We thus choose to use the Johansen cointegration technique developed by Johansen (1991, 1995a). If we consider a general Vector Autoregression (VAR) of order p:

$$y_t = A_1 y_{t-1} + ... + A_p y_{t-p} + Bx_t + \varepsilon_t \tag{3.11}$$

where y_t is a k-vector of nonstationary I(1) variables, x_t is a d-vector of deterministic variables, and ε_t is a vector of innovations (i.e. error term).

The previous VAR can be rewritten as:

$$\Delta y_t = \prod y_{t-1} + \sum_{i=1}^{p-1} \Gamma_i \Delta y_{t-i} + Bx_t + \varepsilon_t \tag{3.12}$$

where

$$\prod = \sum_{i-1}^{p} A_i - I \qquad \text{and} \quad \Gamma_i = -\sum_{j=i+1}^{p} A_j \tag{3.13}$$

If the coefficient matrix Π has reduced rank $r < k$, then there exist $k \times r$ matrices α and β each with rank r such that $\Pi = \alpha \beta$ and βy_t is I(0), r is the number of cointegrating relations (the rank) and each column of β is the cointegration vector.

The Johansen methodology uses two likelihood ratios (LR) test statistics to determine the unique cointegration vectors for equation 3.12. The first test statistic is the Trace test:

$$Trace = -T \sum_{i=r+1}^{n} \ln(1 - \lambda_i) \tag{3.14}$$

This statistic evaluates the null hypothesis of at most r cointegrating vectors against the general hypothesis of p cointegrating vectors. The second test statistic is the maximum eigenvalue test:

$$\lambda_{\max} = -T \ln(1 - \lambda_i) \tag{3.15}$$

This statistic evaluates the null hypothesis of r cointegrating vectors against alternative hypothesis of $r+1$ cointegrating vectors.

3.5.2.3 The Model:

The model used in this methodology is based on that of King and Levine (1993b), which is in turn based on the following general model:

$$GY_t = f(IF_t, Z_t) \tag{3.16}$$

where GY_t is the growth indicator (real GDP, real per capita GDP growth rate, average growth rate of real per capita capital stock, or the ratio of average investment to GDP). IF is the financial indicator and Z_t is a vector of other explanatory variables including log

of initial income, log of initial secondary school enrollment rate, initial ratio of government expenditure to GDP, initial inflation rate, initial ratio of exports plus imports to GDP.

In this study the estimated cointegration vector corresponds to the following equation:

$$GDP_t = \alpha_0 + \alpha_1 FI_t + \alpha_2 OPEN_t + \alpha_3 GOV_t + \alpha_4 CPI_t + \varepsilon_t \qquad (3.17)$$

where GDP_t is real Gross Domestic Product, $OPEN_t$ *is* the sum of exports plus imports as a ratio of GDP, GOV_t is the government consumption expenditure as a ratio of GDP, CPI_t is the Consumer Price Index as a measurement of inflation, and FI_t is the financial indicator represented by the ratio of the broad money stock to GDP (M_2Y), commercial bank claims on the private sector as a ratio of GDP (CPY), or bank deposit liabilities as a ratio of GDP (BDY).

The Johansen cointegration method will be applied to our cointegration vector to answer the question of whether or not there is a long-run relationship between financial development and economic growth; whether or not they are cointegrated.

Using the Johansen test the null hypothesis of r cointegrating vectors is tested against the alternative of $r + 1$ cointegrating vectors. Therefore, and according to equation 3.17, if the variables are found to be nonstatioiary, then the cointegration vector will include five nonstationary variables (i.e. $k = 5$) implying that the null hypothesis $r = 0$ is tested against the alternative $r = 1$, the null hypothesis $r = 1$ against the alternative $r = 2$, the null hypothesis $r = 2$ against the alternative $r = 3$, and the null hypothesis $r = 3$ against the alternative $r = 4$ (i.e. $r = k-1$).

3.5.2.4 Granger Causality Test:

Granger Causality is a test intended to check for the dynamic relationship between time series variables. Specifically, this test it is heavily employed in economic literature to test the direction and magnitude of the relationship between two variables, for example the relationship between GDP and other macroeconomic variables including government expenditure, exports, inflation, money supply, financial variables.

The standard Granger (1969) approach is to test the relationship between two stationary variables *X* and *Y*. Specifically, it is to check how much of the current *Y* can be explained by past values of *Y* and how lagged values of *X* can improve the explanation. Accordingly, the definition of Granger-Causality is: *X Granger-Causes Y,* if past values (i.e. lagged values) of *X* can explain or predict variations in *Y*.

The test is preformed using the following bivariate regressions for variables *X* and *Y*:

$$Y_t = \beta_1 + \sum_{i=1}^{p} \alpha_i Y_{t-i} + \sum_{i=1}^{p} \mu_i X_{t-i} + \varepsilon_{1t} \tag{3.18}$$

$$X_t = \beta_1 + \sum_{i=1}^{p} \alpha_i X_{t-i} + \sum_{i=1}^{p} \mu_i Y_{t-i} + \varepsilon_{2t} \tag{3.19}$$

For equation (3.18), the null hypothesis that *X does not Granger-Cause Y* (H_0: $\mu_1 = \mu_2 = \ldots = \mu_p = 0$) is tested against the alternative hypothesis that *X does Granger-Cause Y* (H_a: *at least one* $\mu_i \neq 0$). Accordingly, if the null hypothesis of no causality is rejected, then we can say that *X does Granger-Cause Y*. The same procedure is performed for equation (3.19).

According to Engle and Granger (1987), if a number of variables are found to be cointegrated, then there exists a corresponding error-correction representation in which changes in the dependent variable are a function of both, the level of disequilibrium in the cointegration relationship captured by the error correction term, and changes in the independent variables.

If the variables are found to be nonstationary and cointegrated then the error correction based causality can be performed since the vector error correction model can be derived from the long-run cointegration vectors. A vector error correction (VEC) model is a restricted VAR that include cointegration relations between nonstationary variables into it. In this VEC, the variables are restricted to their long-run relationship while allowing for short-run adjustments.

The difference between the standard Granger causality test and the error correction based causality test is that the ECM introduces an additional channel for Granger casualty to emerge since the error term it self is a function of x_{t-1} and y_{t-1}.

According to Granger (1988), if the series are found to be nonstationary and cointegrated, standard Granger-causality tests are mis-specified and biased, and error-correction models (ECM) should be used instead.

The error correction based causality is presented in the following equations:

$$\Delta Y_t = \beta_1 + \sum_{i=1}^{p} \alpha_i \Delta Y_{t-i} + \sum_{i-1}^{p} \mu_i \Delta X_{t-i} + \lambda_1 ECT_{t-1} + \varepsilon_{1t} \qquad (3.20)$$

$$\Delta X_t = \beta_1 + \sum_{i=1}^{p} \alpha_i \Delta Y_{t-i} + \sum_{i-1}^{p} \mu_i \Delta X_{t-i} + \lambda_1 ECT_{t-1} + \varepsilon_{12} \qquad (3.21)$$

where p is the lag length and ECT_{t-1} is the error correction term. The coefficient of ECT_{t-1} contains information about whether the past values of the variables affect the current values of the dependent variable. In addition, the coefficient of ECT_{t-1} measures the tendency of the each variable to return to the long-run equilibrium.

In sum, our methodology of cointegration and error correction based causality test will follow these steps:

1. Test the properties of the data; specifically to check whether or not the series are nonstationary. This is a necessary step for the cointegration test to be valid.
2. To check through the Johansen cointegration test whether or not the series are cointegrated and have the correct signs. If the series are cointegrated and a long-run equilibrium relationship is established, then the next step is to perform the causality test based on the error correction representation of Engle and Granger (1987). If the series are not cointegrated then the standard Granger causality test will be performed on the first difference of the variables.
3. Test the null hypotheses that $\mu i = \lambda i = 0$ in equation 3.20 and $\alpha i = \lambda i = 0$ in equation 3.21 for all i. If the null hypothesis is accepted, then there is no causality from both the short-run (i.e. the α_i and μ_i) and the long-run (i.e. the λ_i) If the null hypothesis is rejected, then we move to the next step to determine whether the source of causality is short-run of long-run. The causality may occur either through the level of disequilibrium in the cointegration relationships captured by the coefficients of the ECTs (i.e. the λs) and/or the coefficients of the independent variables (i.e. the αi and μi).
4. Investigate the direction of the λs to check if they suggest any long-run causality.

5. Test the α_i and μ_i in the error correction equations to check if they suggest and short-run causality.

From equation (3.20) and (3.21), four possible cases can occur:

1. Unidirectional causality from Y to X.
2. Unidirectional causality from X to Y.
3. Bidirectional (Bilateral) causality; two way causality.
4. No causality (Y and X are independent).

CHAPTER FOUR

THE FINANCIAL SYSTEM OF KUWAIT, OMAN, AND SAUDI ARABIA

4.1 Introduction:

In this chapter a description of the financial systems of Kuwait, Oman, and Saudi Arabia will be provided. The second section will provide a brief review of the economic structure and main economic indicators of the three countries. The third section will provide a description of the financial systems in the three countries. The fourth section will compare and analyze the financial development, as measured by the three alternative financial development indicators (i.e. M2Y, CPY, and BDY), of the three countries and compare them with other countries in the region. The fifth section will conclude this chapter.

4.2 Main Economic Features:

Kuwait, Oman, and Saudi Arabia are members of the Gulf Corporation Council (GCC); in addition, Kuwait and Saudi Arabia are members of the Organization of the Petroleum Exporting Countries (OPEC). These three countries are characterized by being oil-based economies with total petroleum reserves of about 37 percent of the word's proven reserves (10 percent, 0.6 percent, and 26 percent for Kuwait, Oman, and Saudi Arabia respectively). Total oil production of the three countries is 11 million barrels per

day which accounts for about 14 percent of world's production. The average share of the oil sector GDP in total GDP is about 50 percent, 45 percent, and 40 percent for Kuwait, Oman, and Saudi Arabia respectively. In addition, the share of oil exports in total exports is about 78 percent, 75 percent, and 85 percent for Kuwait, Oman, and Saudi Arabia respectively. The share of oil revenues in total government revenue is about 78 percent, 72 percent, and 75 percent in Kuwait, Oman, and Saudi Arabia respectively.

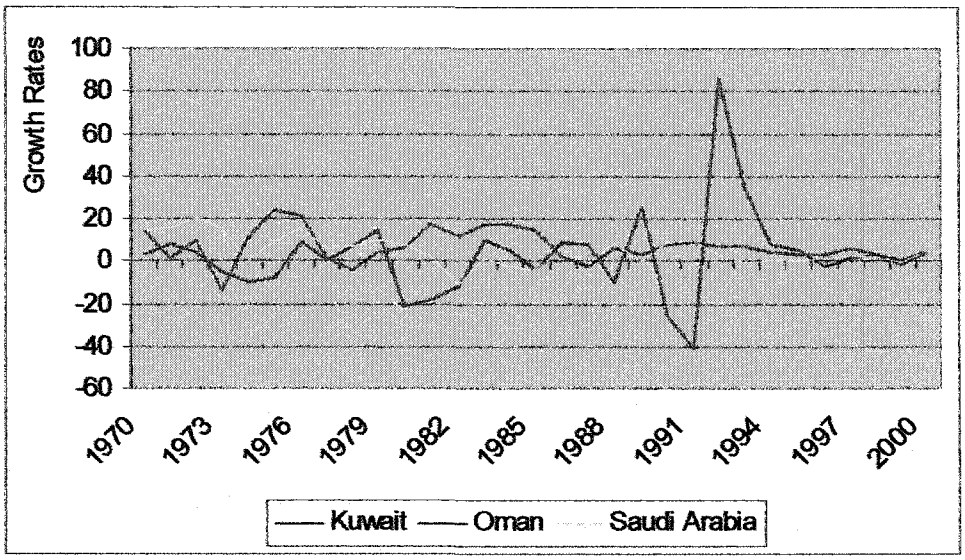
Figure 4.1 depicts the growth rate of GDP for Kuwait, Oman, and Saudi Arabia. During the period from 1970 to 2000, GDP has averaged about 3 percent for Kuwait, 7 percent for Oman, and 5 percent for Saudi Arabia. As shown in the figure, the growth rate of GDP for Kuwait has declined by 26 percent and 41 percent during the Iraqi invasion in 1990-1991 while it increased by 85 percent after the liberalization of the country in 1992.

GDP per capita for Kuwait has increased four fold from US 3,862 in 1970 to US 18,056 in 2000. GDP per capita for Oman has increased twenty three fold from US 355 in 1970 to US 8,226 in 2000. As for Saudi Arabia, GDP per capita has increased ten from US 887 in 1970 to US 9,107 in 2000. The behavior of real per capita GDP on a five-year average is represented in Figure 4.2. It can be seen that the three countries experienced their highest per capita GDP in the first half of the 1980s. In general, Kuwait has enjoyed the highest per capita GDP followed by Saudi Arabia then Oman.

The government, through the public sector, plays a key role in the economic activity in the three countries. However, the decline in oil prices and the massive expenditures due to the Second Gulf War in 1990 have lead these countries to seek other

Figure 4.1

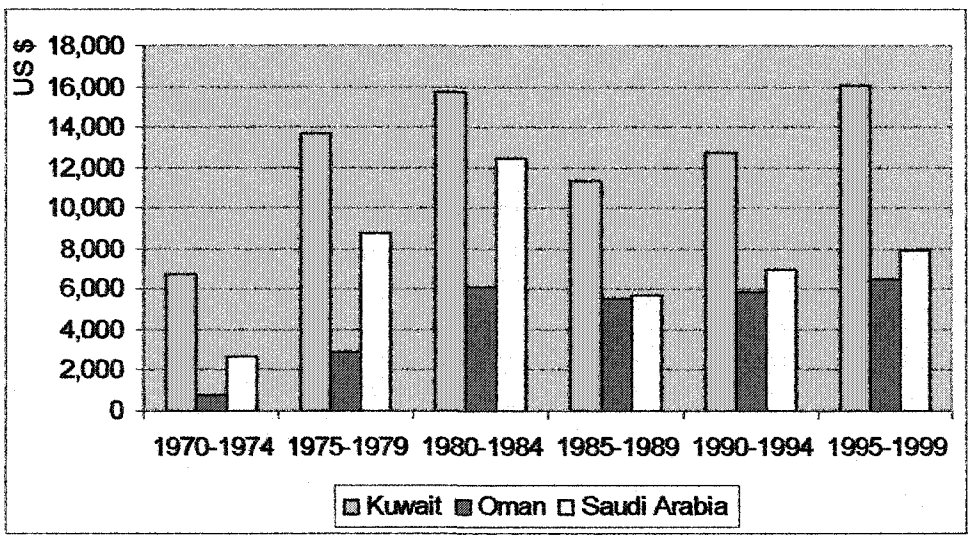
Real GDP Growth Rates for Kuwait, Oman, and Saudi Arabia



Source: International Monetary Fund's International Financial Statistics 2003

Figure 4.2

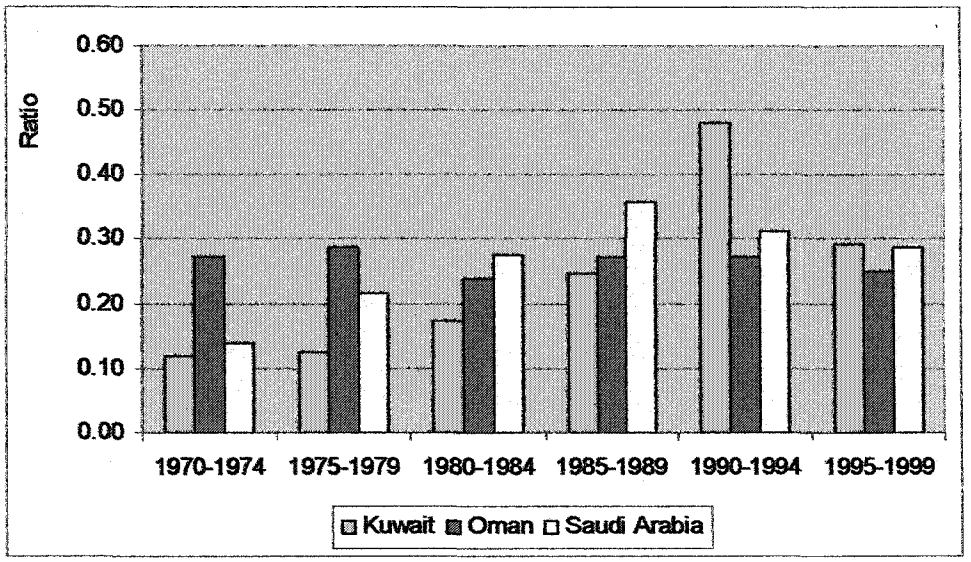
GDP Per Capita for Kuwait, Oman, and Saudi Arabia



Source: International Monetary Fund's International Financial Statistics 2003

Figure 4.3

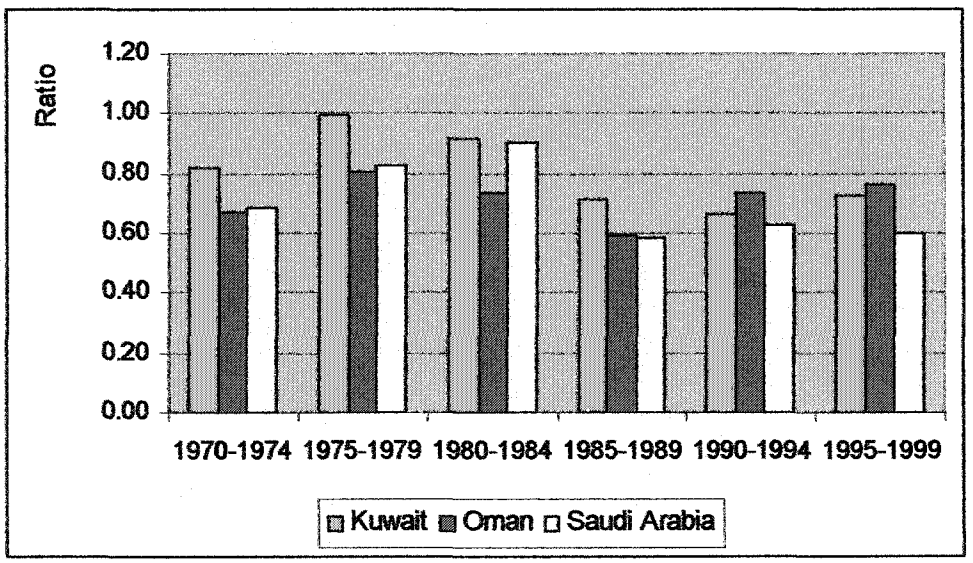
Government Consumption/GDP Ratio for Kuwait, Oman, and Saudi Arabia



Source: International Monetary Fund's International Financial Statistics 2003

Figure 4.4

Exports plus imports "Openness"/GDP Ratio for Kuwait, Oman, and Saudi Arabia



Source: International Monetary Fund's International Financial Statistics 2003

alternatives to diversify government revenue and reduce government spending. Figure 4.3 depicts government consumption expenditure as a ratio of GDP for the three countries on a five-year average base. The figure shows that for Kuwait, the ratio increased steadily during the 1970s and 1980s, while in the first half of the 1990s the ratio almost doubled due to Iraqi invasion and the First Gulf War. The ratio in Saudi Arabia increased steadily until it reached its highest point in the second half of the 1980s then it decreased in the following ten years.

Crude oil abundance in the three countries has caused oil to be a large component of their exports. Accordingly, Kuwait, Oman, and Saudi Arabia are considered to be highly open economies since they depend on oil exports. Figure 4.4 depicts the degree of openness, the sum of exports and imports as a ratio of GDP, of the three countries on a five-year average basis. The figure shows that in the second half of the 1970s and the first half of the 1980s, the degree of openness reached its highest points as a result of high oil prices. During the period from 1970 to 2000, the ratio of openness to GDP averaged about 0.84, 0.74, and 0.73 for Kuwait, Oman, and Saudi Arabia respectively.

The dependence of the economies of Kuwait, Oman, and Saudi Arabia on the oil sector and on crude oil exports has made these economies vulnerable to oil price fluctuations and shocks in the world market. These fluctuations and shocks in oil prices have lead to attempts to diversify these economies to reduce their dependency on the oil sector and to develop the non-oil sector. The economic diversification process in these countries includes the creation of large petrochemical projects, developing basic manufacturing industries, developing the agriculture and service sector including the banking sector, encouraging foreign direct investments (FDI), privatization of public

enterprises, and development of the human capital through education and training. Kuwait has followed, in addition to the above, a diversification strategy based on increasing asset acquisitions in other countries (Fasano and Iqbal, 2003). Oman and Saudi Arabia implemented five-year development plans to encourage the private sector to play a major role in achieving economic diversification. These strategies have lead to a steady acceleration of the non-oil sector and the private sector's role in the economies of these countries.

4.3 The Structure of the Financial System of Kuwait, Oman, and Saudi Arabia:

This section will provide a description of the financial systems in the three countries, Kuwait, Oman, and Saudi Arabia.

4.3.1 The Structure of the Financial System in Kuwait:

Before the independence of Kuwait in 1961 the financial system in Kuwait was not developed. Foreign currency circulated in the country such as the Indian rupee. After independence a currency board was created to issue currency, the Kuwaiti Dinar, and to maintain reserves. The functions of the currency board were given later to the Central Bank of Kuwait (CBK) after its establishment in 1968.

Figure 4.5 describes the structure of the financial system in Kuwait. At the top of the financial structure is the Central Bank of Kuwait (CBK) which sets the monetary policy of the country and supervises and regulates the banking system. In addition to the CBK, the financial system in Kuwait is comprised of eight commercial banks, three

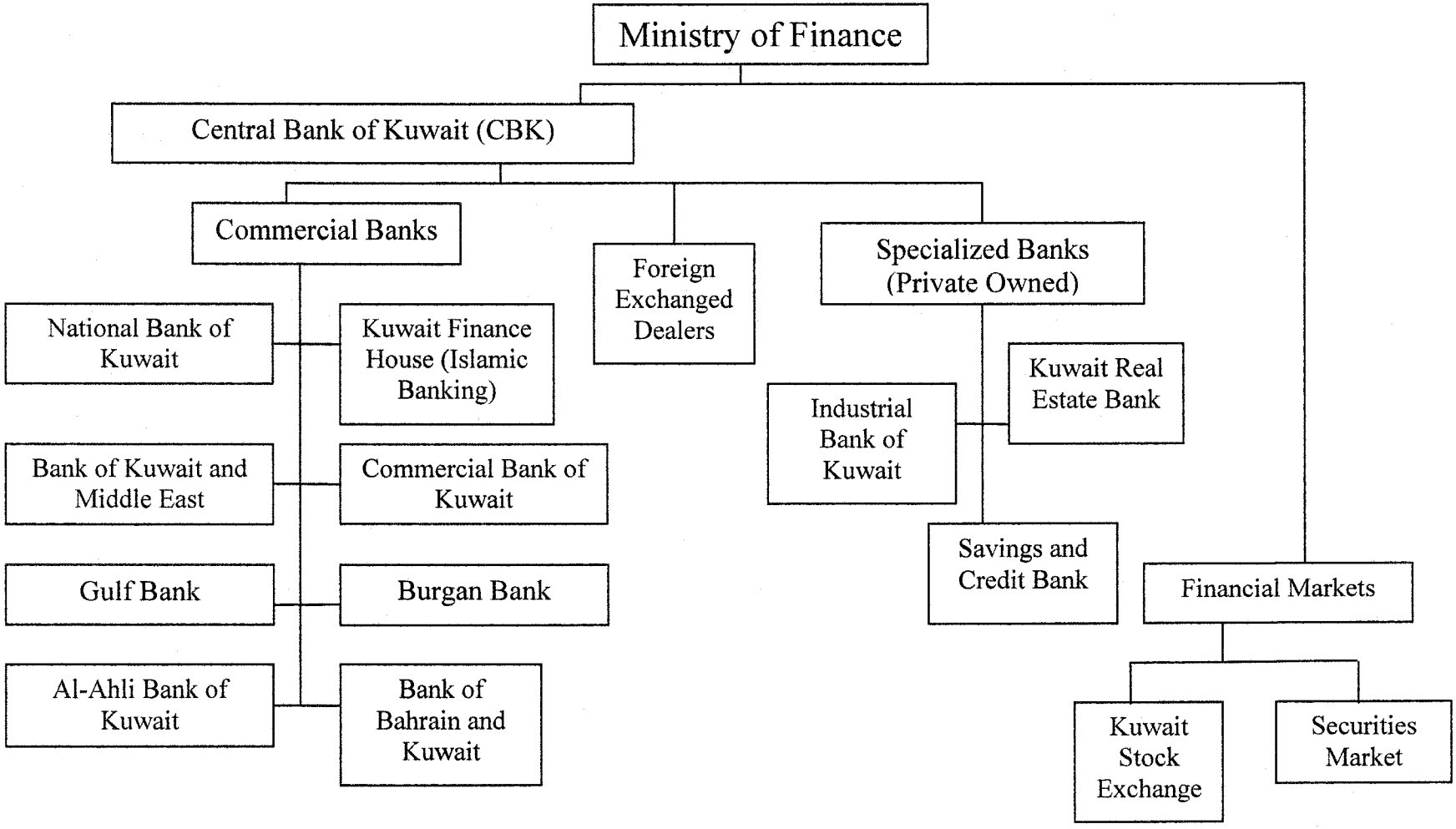


Figure 4.5: The Structure of Kuwait's Financial System (constructed based on the Central Bank of Kuwait and other various sources)

private owned specialized banks, the financial markets; the stock market and securities market.

4.3.1.1 Central Bank of Kuwait (CBK):

The Central Bank of Kuwait (CBK) was established in 1968 with the following objectives:

- The issuing of the national currency, the Kuwaiti Dinar, and insuring its stability.
- To serve and act as a banker to the government, and to provide financial advice to the government.
- The control of credit and monetary policy to promote social and economic development and increase the national income.
- The supervision of the banking system.

4.3.1.2 Commercial Banks:

Before independence there were only two banks operating in Kuwait, a British bank which was established in 1942 and the National Bank of Kuwait which was established in 1952. The number of banks has increased from that time to reach eight banks as of 2004. Domestic bank branches in Kuwait have increased from 138 in 1999 to 158 in 2002. Foreign bank branches in Kuwait have increased from 5 in 1999 to 8 in 2002. The number of ATMs in Kuwait has increased from 212 in 1999 to reach 255 in 2002.

Total assets of commercial banks increased from KD 11052.94 million in 1999 to KD 14631 million in 2002. Bank deposits increased from KD 8992.58 million to 11615 in 2002. The banking sector in Kuwait is dominated by two banks, the National Bank of Kuwait and the Kuwait Finance House, together the two banks account for over 50 percent of total bank deposits in the country.

Islamic banking in Kuwait started in 1977 when the first Islamic bank, the Kuwait Finance House (KFH), was established. The KFH has 29 branches operating in Kuwait all of which operate according to Islamic principles in banking. In 2003 the Islamic Banking Law was introduced as the start of the official start of Islamic banking in the country bringing the KFH under the supervision of the Central Bank of Kuwait and allowing the creation of new Islamic banks. With this law, Kuwait was the fourth GCC country to implement an Islamic banking law (Oman and Saudi Arabia are the only two countries with no Islamic banking laws).

4.3.1.3 Specialized Banks (Private Owned):

4.3.1.3.1 Kuwait Real Estate Bank (KREB):

The KREB is a private bank that was created in 1973 to provide short, medium, and long-term loans for construction purposes.

4.3.1.3.2 Industrial Bank of Kuwait (IBK):

The Industrial Bank of Kuwait was established in 1973 as a joint venture between the Ministry of Finance, the Central Bank, commercial banks, and insurance companies. The main purpose of this bank was to promote industrial development in Kuwait. The

functioning of (IBK) includes providing medium and long-term loans to new promising industrial projects and existing industrial projects, bringing new technologies to through foreign partners.

4.3.1.3.3 Savings and Credit Bank (SCB):

The SCB was established in 1965 by the government to provide short, medium, and long-term loans to domestic projects in the industrial, agricultural, and housing sectors.

4.3.1.4 Financial Markets:

4.3.1.4.1 Kuwait Stock Exchange:

Share trading started in Kuwait in 1952, before independence, when the National Bank of Kuwait was established as the first shareholding company. In 1962 the first law regarding share issuing and subscription was introduced. The development of the stock market was accelerated again in 1970 when the government introduced a new law regulating the stock trading in shareholding companies. This law gave the Ministry of Commerce and Industry the authority to regulate and supervise the stock market (Azzam, 1997).

In 1977 the stock market faced a minor crash caused by low liquidity (Azzam, 1997) forcing the government to intervene in the market. This collapse led to a series of governmental resolutions aimed at organizing and regulating the stock market. In 1982 the share market faced a serious and great collapse in the unofficial market known as "Souk Al-Manakh" leading the government to intervene and establish the official stock market, Kuwait Stock Exchange (KSE), in 1983.

In 1988 Kuwait allowed citizens of the GCC countries to buy shares in the Kuwait Stock Exchange, and in 2000 the Foreign Investment Law allowed foreigners from other countries to buy and invest in the Market.

As for the use of technology, KSE was the first stock market to use an Arabic Automated System called the Kuwait Automated Trading System (KATS) in 1996. The system increased the efficiency of the market by allowing for faster transactions and providing information to brokers and buyers instantaneously.

Currently, the Kuwait Stock Exchange, with a capitalization of KD 17 billions, is the second largest in the Arab World after the Saudi Stock Market. The number of companies listed in the stock market as of 2004 is 114.

4.3.1.4.2 Securities Market:

The Central Bank of Kuwait (CBK) started issuing treasury bills and bonds in 1987. The value of treasury bills increased from KD 1776.1 Million in 1998 to reach 3460 in 2002. The total value of treasury bonds increased from KD 1010 in 1998 to reached KD 1600 in 1999 and then decreased to reach KD 910 in 2002 (CBK, 2003). According to CBK economic report, in the fiscal year 2002/03 there was thirty seven issues of treasury bill with a total value of KD 3535 million (CBK, 2003).

4.3.2 Financial Development Indicators for Kuwait:

Table 4.1 shows the behavior of financial development indicators for Kuwait during the sample period. The three financial development indicators in this table are: (1) M2Y which is the broad money stock (M2) as a ratio of GDP, which captures the overall

Table 4.1

Financial Development Indicators for Kuwait

Year	M2/GDP (M2Y)	CP/GDP (CPY)	BD/GDP (BDY)
1965	0.29	0.10	0.25
1966	0.36	0.10	0.27
1967	0.33	0.10	0.10
1968	0.41	0.14	0.14
1969	0.38	0.14	0.29
1970	0.36	0.13	0.31
1971	0.30	0.11	0.27
1972	0.34	0.12	0.30
1973	0.33	0.15	0.29
1974	0.18	0.09	0.16
1975	0.26	0.14	0.23
1976	0.32	0.24	0.28
1977	0.39	0.30	0.35
1978	0.46	0.36	0.42
1979	0.33	0.30	0.30
1980	0.37	0.34	0.34
1981	0.57	0.52	0.53
1982	0.73	0.72	0.68
1983	0.81	0.72	0.75
1984	0.8	0.72	0.75
1985	0.79	0.73	0.74
1986	0.98	0.94	0.92
1987	0.84	0.83	0.79
1988	0.97	0.91	0.91
1989	0.82	0.74	0.77
1990	1.12	0.14	0.76
1991	1.92	0.27	1.78
1992	1.04	0.18	0.97
1993	0.88	0.17	0.84
1994	0.91	0.23	0.87
1995	0.93	0.31	0.89
1996	0.79	0.34	0.75
1997	0.84	0.47	0.80
1998	0.98	0.62	0.93
1999	0.85	0.56	0.80
2000	0.70	0.45	0.67

Source: International Monetary Fund's International Financial Statistics 2003

size of the formal financial intermediary sector (see King and Levine, 1993); (2) CPY which is bank claims on the private sector as a ratio of GDP, which excludes both the loans issued to governments and public enterprises and credits issued by the central bank. The significance of this measure is that it represents the share of credit channeled through the private sector; (3) BDY which is the ratio of bank deposit liabilities to GDP. This measure is used as a quality proxy for financial development (Demetriades and Hussein, 1996; Luintel and Khan, 1999).

According to Table 4.1 the three financial development indicators M2Y, CPY, and BDY have increased during the period of our study, 1965-2000. The table shows that M2Y has increased tremendously from 0.29 in 1965 to reach 0.70 in 2000. The largest increase of M2Y was in 1991 when the ratio increased by 0.80 to reach 1.92 compared to 1.12 in 1990. After 1991 the ratio decreased until it reached 0.70 in 2000.

As for CPY, Table 4.1 shows that from 1965 to 2000 the ratio has increased from 0.10 to 0.45. The largest increase in CPY was in 1986 when the ratio increased from 0.79 in 1985 to 0.94 in 1986. The largest decline in the ratio was in 1990 when the ratio declined by 0.60 from 0.74 in 1989 to 0.14 in 1990. From 1992 to 2000 the ratio increased until it reached 0.45 in 2000.

BDY has increased from 0.25 in 1965 to 0.31 in 1970, and then declined to reach 0.16 in 1974. From 1975 the ratio increased until it reached its highest point of 1.78 in 1991 before declining again until it reached a ratio of 0.67 in 2000.

4.3.3 The Structure of the Financial System in Oman:

Before 1970 there was no formal financial and banking system in Oman and the financial and banking activities were limited. In 1970 the Muscat Currency Authority was established followed by the establishment of the Oman Currency Board in 1972. These two events were followed by the Banking Law and the establishment of the Central Bank of Oman (CBO) in 1974.

Figure 4.6 describes the structure of the financial system in Oman which is comprised of the Central Bank of Oman (CBO), fourteen commercial banks, four specialized banks, the financial markets; the stock market and securities market.

4.3.3.1 Central Bank of Oman (CBO):

The Central Bank of Oman (CBO) was established via the Banking Law in 1974. The main objectives and functions of CBO are:

- Issuing the national currency.
- Formulating and implementing monetary policy.
- Acting as the depository agency for the Government.
- Making advance payments to the Government in case of temporary shortages in revenues.
- Managing loans on behalf of the Government.
- Acting as an advisor to the Government in economic, monetary, and financial matters.
- Maintaining part of the country's foreign assets reserves.

4.3.3.2 Commercial Banks:

The banking sector in Oman is considered to be the smallest in the Gulf Cooperation Council (GCC). The creation of the Muscat Currency Authority, the Oman Currency Board, and the launching of the Banking Law has lead the way for the creation and development of the formal banking sector in Oman. As of 2003, there were fourteen commercial banks in Oman, six are Omani banks and eight are branches of foreign banks. The first bank to be established in Oman was the National Bank of Oman in 1973.

Total assets of commercial banks increased from OR 2047.5 million in 1995 to OR 4362.7 million in 2002. In terms of both assets and capital, the Omani banking sector is dominated by three local commercial banks: Bank Muscat, National Bank of Oman and Oman International Bank which together account for 69 percent of total assets, 65 percent of total deposits and 70 percent of total credit as of end 2002 (CBO, 2002).

Bank branches in Oman have increased from 276 in 1995 to 330 in 2002 (CBO, 1999-2002). Commercial bank deposits have increased from OR 1417.8 million in 1995 to reached OR 2777.2 million in 2002.

In an attempt to compete with foreign banks after joining the WTO and to be prepared for expected competition coming from stronger GCC banks with the implementation of the GCC Common Market by the end of 2007, several bank mergers and acquisitions occurred in Oman to take advantage of economies of scale. The most recent bank acquisition is Bank Muscat's acquisition of both the Commercial Bank of Oman and the Industrial Bank of Oman in 2000 as well as the merger of Mejan International Bank and Bank Dhofar in 2003.

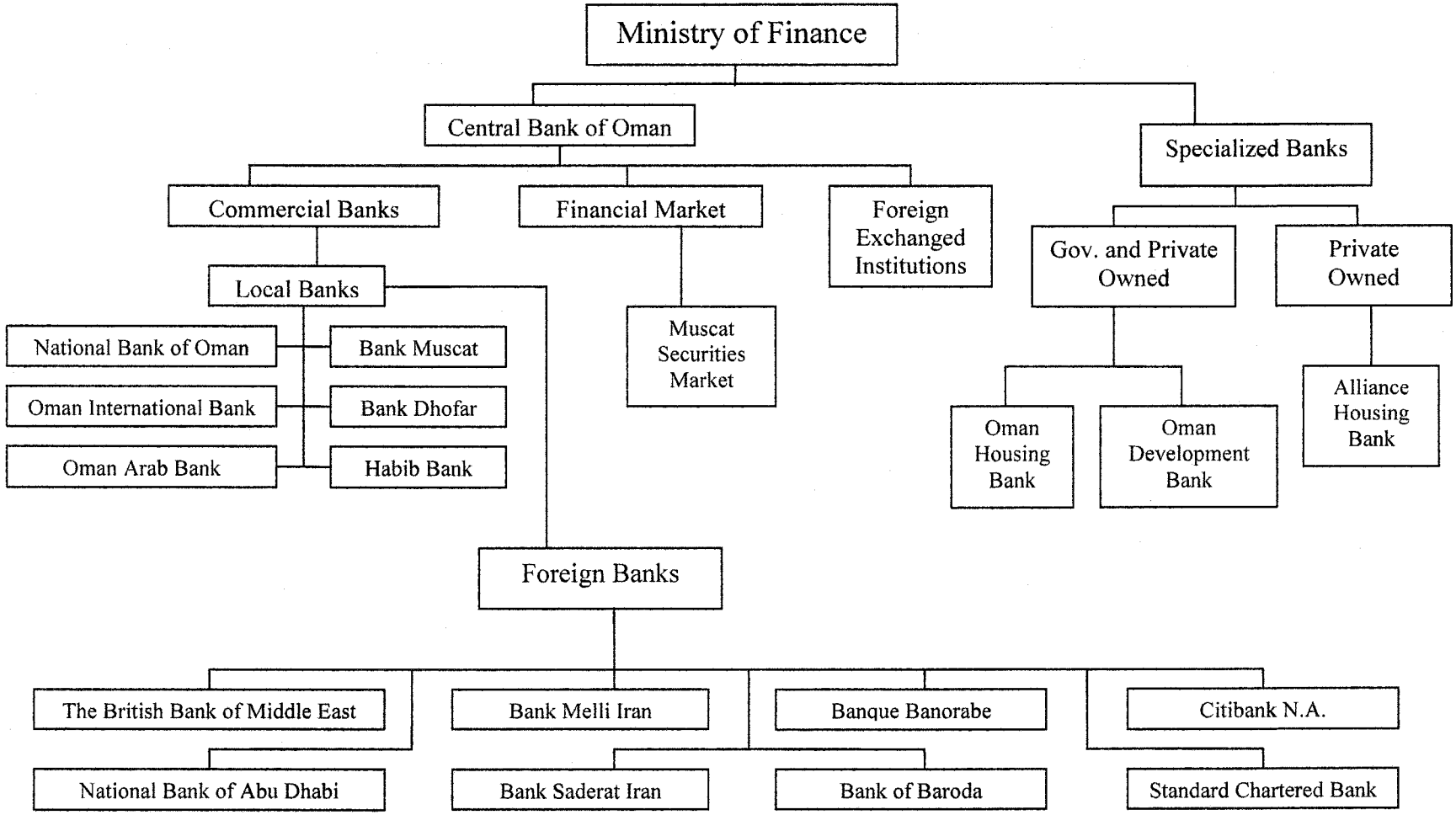


Figure 4.6: The Structure of Oman's Financial System (constructed based on the Central Bank of Oman and other various sources)

4.3.3.3 Specialized Banks (Government and Private Owned):

There are four specialized banks in Oman. Two of these banks are government banks; Oman Housing Bank (OHB) and Oman Development Bank (ODB) which has absorbed the former agriculture and fisheries bank in 1997. The third bank is Alliance Housing Bank which is a private-owned bank. There was a fourth bank, the Industrial Bank of Oman which merged with Bank Muscat in 2002 under the name of Bank Muscat (CBO, 2001).

4.3.3.3.1 Oman Housing Bank (OHB):

The OHB was established in 1977 to provide low interest loans to individuals for private house construction and purchase. The bank is a joint venture between the government, Kuwait's Ministry of Finance, and the Oman Development Bank.

4.3.3.3.2 Oman Development Bank (ODB):

The ODB was established in 1977. The bank provides medium and long term loans, from 3 to 8 years, to small and medium Omani projects in many fields such as agriculture, fisheries, animal resources, industry, petroleum and mining etc. The total investment cost of a project requesting a loan should not exceed OR 250,000.

4.3.3.3.3 Alliance Housing Bank:

This bank was establishes in 1997 as private owned housing bank. The bank offers long-term residential, housing and land, mortgages to Omani and GCC nationals for housing and residential properties in Oman.

4.3.3.4 Financial Market (Muscat Securities Market):

The Muscat Securities Market (MSM) was established 1988 to regulate and control the Omani securities market. And in 1998 the new Capital Market Law was introduced to restructure the Muscat Securities Market (MSM) and to introduce the Capital Market Authority (CMA) as a regulatory and supervisory for the market.

The MSM started with 68 joint-stock companies (Azzam, 1997), as of 2003, the number of listed companies reached 149 with a total capitalization of OR 2.789.8 million.

Finally, in 1998 MSM was advanced and further developed by the introduction of a new electronic trading system that allows instantaneous online trading.

4.3.4 Financial Development Indicators for Oman:

Table 4.2 shows that the behavior of M2Y is quite volatile; from 1970 to 1974 it declined from 0.38 to 0.0.15. After that the ratio increased until it reached 0.24 in 1978, and then declined to reach 0.16 in 1980. In 1981 the ratio increased to 0.18 and continued to increase until it reached 0.30 in 1989, and then the ratio declined again to 0.27 in 1991 and 1992. Form 1993 the ratio increased steadily to reach 0.41 in 2000.

According to Table 4.2, CPY has shown, in general, an upward trend over the sample period from 1970 to 2000. The ratio increased from 0.05 in 1970 to 0.47 in 2000. From 1970 to 1978 the ratio increased until it reached 0.21, and then the ratio declined to reach 0.13 in 1981. After 1981, the ratio increased again to reach 0.24 in 1988, and later declined again to 0.21 in 1990 and 1991. From 1992 to 2000, the ratio increased steadily

Table 4.2

Financial Development Indicators for Oman

Year	M2/GDP (M2Y)	CP/GDP (CPY)	BD/GDP (BDY)
1970	0.38	0.05	0.25
1971	0.34	0.05	0.23
1972	0.32	0.05	0.23
1973	0.28	0.11	0.19
1974	0.15	0.12	0.10
1975	0.16	0.12	0.11
1976	0.19	0.14	0.13
1977	0.22	0.18	0.16
1978	0.24	0.21	0.18
1979	0.19	0.17	0.13
1980	0.16	0.14	0.11
1981	0.18	0.13	0.13
1982	0.22	0.14	0.17
1983	0.24	0.16	0.19
1984	0.24	0.18	0.19
1985	0.26	0.19	0.21
1986	0.28	0.21	0.22
1987	0.28	0.21	0.22
1988	0.30	0.24	0.25
1989	0.30	0.23	0.24
1990	0.26	0.21	0.21
1991	0.28	0.21	0.23
1992	0.27	0.22	0.22
1993	0.27	0.23	0.23
1994	0.28	0.25	0.23
1995	0.28	0.26	0.24
1996	0.28	0.27	0.24
1997	0.33	0.36	0.29
1998	0.39	0.47	0.35
1999	0.39	0.47	0.34
2000	0.41	0.47	0.35

Source: International Monetary Fund's International Financial Statistics 2003

until it reached 0.47 in 2000. The largest increase in CPY was in 1998 when the ratio increased from 0.36 in 1997 to 0.47 in 1998.

As for BDY, the table shows that the ratio has increased from 0.25 in 1970 to 0.35 in 2000. From 1970 to 1974, the ratio showed decline from 0.25 to 0.10, and then the ratio increased from 0.11 in 1975 to 0.18 in 1978. During the period from 1979 to 2000 the ratio increased, in general, to reach 0.35 in 2000.

4.3.5 The Structure of the Financial System in Saudi Arabia:

Before the 1950s, Saudi Arabia had no formal financial or banking systems. Saudi silver coins and foreign gold coins were the only medium of exchange in the country (Al-Jasser, 2002). The first currency to be issued in Saudi Arabia was the Pilgrim Receipts which were issued after the establishment of the Saudi Arabian Monetary Agency (SAMA), in 1952, to facilitate the transactions of pilgrims during the Hajj season. In 1953, the National Commercial Bank was the first Saudi bank to be established followed by the establishment of Riyadh Bank in 1956.

Figure 4.7 depicts the structure of the financial system in Saudi Arabia. At the apex of the financial system in Saudi Arabia is the Saudi Arabian Monetary Agency (SAMA), the central bank, which sets the country's overall monetary policy. In addition, the financial system includes eleven commercial banks, five specialized banks, foreign exchange dealers, and the financial markets which include the securities and stock markets.

4.3.5.1 Saudi Arabian Monetary Agency (SAMA):

Saudi Arabian Monetary Agency, which was founded in 1952, is the Central Bank of Saudi Arabia. According to its charter, the functions and goals of SAMA are as follows:

- Issuing and supporting the value of the national currency, the Saudi Riyal.
- Acting as a banker to the government.
- Supervision and encouragement of the development of both the banking system and financial markets, and ensuring the soundness of the financial system.
- Managing the countries foreign exchange reserves.
- Conducting monetary policy for promoting price and exchange rate stability.

The Banking Control Law of 1966 has given SAMA broad supervisory and regulatory powers over the banking system, giving SAMA the ability to setup requirements related to commercial banking such as capital adequacy and minimum reserve requirements (Presley and Westaway, 1989) and to ensure the soundness of the banking system.

4.3.5.2 Commercial Banks:

Before 1952, when SAMA was created, there were no Saudi banks in Saudi Arabia. Only local money changers and branches of foreign banks operated in the

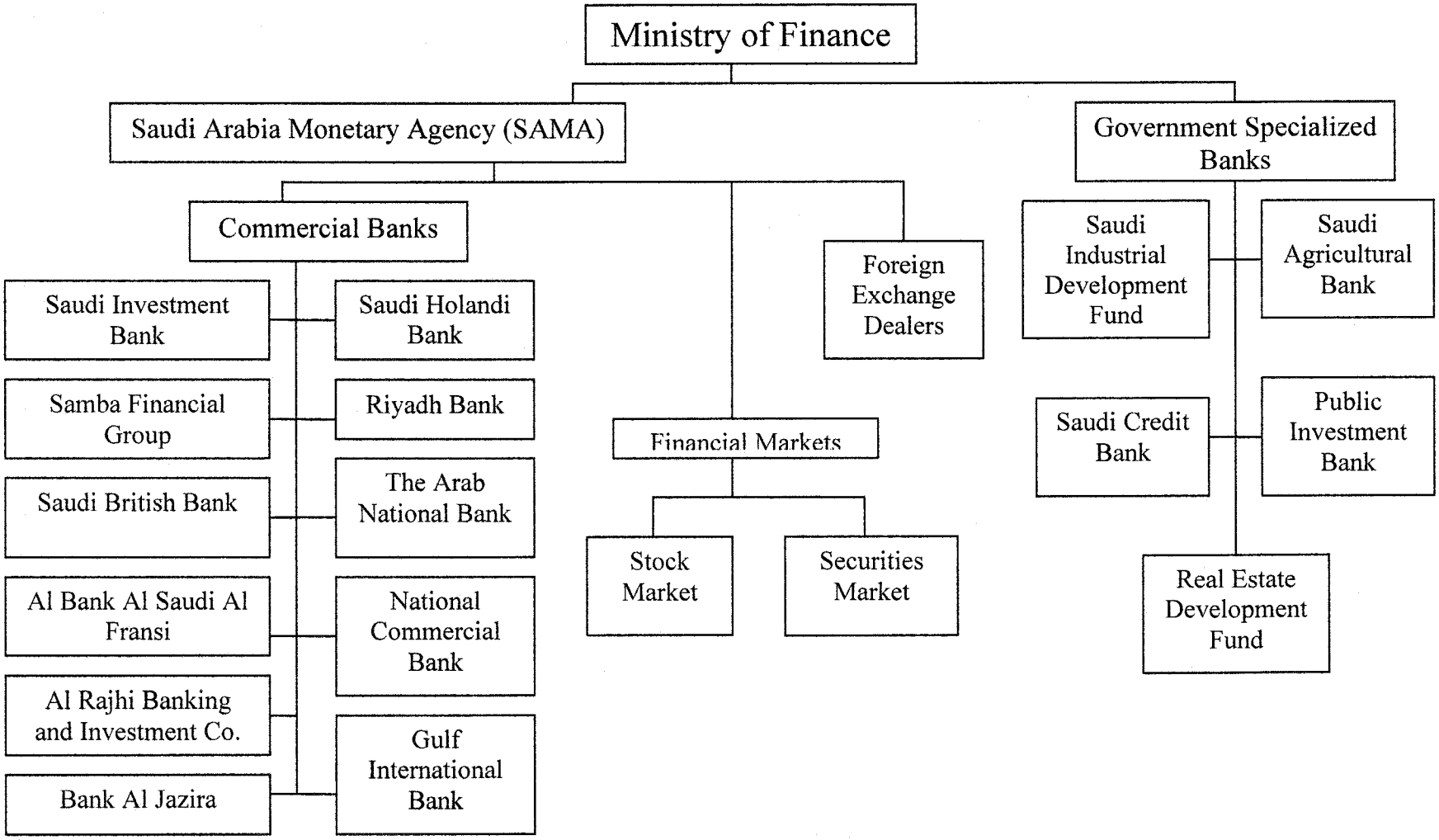


Figure 4.7: The Structure of Saudi Arabia's Financial System (constructed based on Saudi Arabia Monetary Agency and other various sources)

country at that time such as Algemene Bank, the Arab Bank, the British Bank of Middle East, the Indo-Chine Bank, and the National Bank of Pakistan.

As shown in Figure 4.7, the number of banks in the country has increased to ten Saudi banks and one foreign bank, Gulf International Bank, with a total of 1203 branches as of the year 2002 (SAMA, 2003). Recently, in May 2004, the government permitted three foreign banks to operate in the country; BNP Paribas, Deutsche Bank, and JP Morgan Chase (Saudi Press Agency, 2004). In 2003 the total number of bank branches was 1,209 braches compared to 1,214 branches in 1994 (SAMA, 2003).

Total assets of commercial banks increased from SR. 1.6 billion in 1965 to SR. 508 billion in 2002. Capital of banks increased from SR 144 million in 1965 to SR 47.2 billion in 2002. Bank deposits increased from SR 1 billion in 1965 to SR. 328 billion in 2002 (SAMA, 2003).

Electronic banking has developed rapidly in Saudi Arabia. In 1990 the Saudi Payment Network (SPAN) was created to support the Automatic Teller Machines (ATMs) and the Point of Sale network (POS). This development lead to the rapid spread of ATM's all across the country. The number of ATM's in Saudi Arabia has increased from 462 ATM's in 1991 to 3120 in the year 2002. The latest development in electronic banking was in 1997 when the Saudi Arabia Riyal Inter-bank express (SARIE), an advanced electronic funds transfer system, was created to link the Automated Clearing Houses (ACH), SPAN and the Electronic Stocks Trading System (Tadawul), providing instant settlement of net positions of clearing operations.

One important issue concerning the banking sector in Saudi Arabia is the Saudization of the sector's employment. For this reason, SAMA established the

"Institution of Banking Training" in 1965 and later, in 1989, the name was changed to "The Institute of Banking". The main goal of this institution is to provide training and to develop Saudi employees in technology and business related to banking. According to SAMA, Saudi employment in the banking system constitutes more than 72 percent of total employees.

E-banking in Saudi Arabia has developed rapidly since the introduction of the internet in the country in 1997. All Saudi banks have established their own web sites, and 80 percent of these sites have full banking services and the other 20 percent are only informational sites in which the site only provides information such location of branches, contact information, bank's news, and promotions. The efficiency of Internet Banking in Saudi Arabia has not reached its potential; more has to be done to fully take advantage of the features provided by internet banking such as lowering costs and gaining more costumers.

4.3.5.3 Government Specialized Banks:

In order to assist the private sector and to assist in their development, the government has created five specialized credit institutions, the Real Estate Development Fund (REDF), the Saudi Industrial Development Fund (SIDF), The Saudi Arabian Agricultural Bank (SAAB), the Saudi Credit Bank (SCB), and the Public Investment Fund (PIF). These banks provide loans to the private and public sectors for the purpose of construction, agriculture, industry, and special investment projects.

4.3.5.3.1 The Real Estate Development Fund (REDF):

The fund was established in 1974 to provide medium and long-term interest-free loans to both, individuals in need of resources for building their own homes and organizations for commercial real estate investments. The REDF started its operation with a capital of SR 250 million and it was increased later to SR 73,675 million (Ministry of Finance, REDF). Since its establishment and up to the year 2000, the REDF has granted loans resulting in the construction of 555,866 residential units with a total value of SR 120 billion.

4.3.5.3.2 Saudi Industrial Development Fund (SIDF):

In an attempt to diversify and develop the country's industrial base, the government established the SIDF in 1974 to support the private industrial sector in the country by providing medium and long-term interest-free loans up to 50% of the total capital required for the project. The fund grants loans to new industrial projects and grants loans to development existing industrial projects. In addition, the SIDF performs other tasks such as the evaluation of the risks of industrial projects and provides consultation and assistance through its experts. Since its establishment and up to the year 2001, the total loans granted by SIDF for industrial projects amounted to SR 42 billion.

4.3.5.3.3 The Saudi Arabian Agricultural Bank (SAAB):

This bank was established, by the government, in 1964 to provide short, medium, and long-term interest free loans to both individual farmers and large scale agricultural projects to finance the purchase of machinery, irrigation pumps, agricultural equipment,

livestock and fish farming equipment etc. The bank has provided since its creation and up to the year of 2001 about SR 34 billion in loans in addition to SR 12 billion in the form of aid to workers in agricultural production.

4.3.5.3.4 The Saudi Credit Bank (SCB):

The SCB was created by the government in 1971 to provide interest-free loans to individuals in need of financial resources. The loans are provided to individuals with annual income of less than SR 36,000 for purposes such as home repairs, vocational pursuits, marriage, medical treatment, and other social purposes. From its establishment until the end of the year 2000, the value of loans provided by SCB was SR 6.7 billion.

4.3.5.3.5 Public Investment Fund (PIF):

The PIF was created in 1971 for the purpose of providing interest-free loans to certain productive projects characterized by being important to the development of the national economy. The loans are granted to commercial public projects in which the private sector lacks the capability to under take such as iron and steel factories, petroleum products storage tanks, fertilizer factories Aircraft purchase for the Saudi Arabian Airlines Public Corporation (SAUDIA) etc. The total value of loans provided by PIF since its establishment until the end of the year 2001 was SR 64 billion.

4.3.5.4 Financial Markets:

4.3.5.4.1 The Stock Market:

The Saudi Stock Market is considered to be the largest in the Arab World with a market capitalization of SR 540 billion in 2003. The first joint stock company was the Arab Automobile Company which was established in 1935 followed by the Arabian Cement Company which became public in 1954 (Azzam, 1997).

Before 1985 the stock market was informal and was run by unregulated and unlicensed brokers. In an attempt to develop the stock market, a new trading system supervised by SAMA was introduced in 1985 allowing only commercial banks to act as brokers. Since 1985 the Saudi Stock Market has developed rapidly, the number of companies listed in the stock market increased from 48 in 1985 to 81 in 2004.

The latest development in the stock market was the introduction of the Internet-based Electronic Stocks Trading System (Tadawul) in 2001 which is a new online high-tech service for instantaneous share trading, clearance and settlement of transactions.

Another important development in the stock market aimed at advancing and developing the stock and securities markets was the approval, by the government, of the new Capital Markets Law in 2003 which will take effect in 2004. Based on this law, an independent private company, the Saudi Arabian Stock Exchange, will be established and an independent regulatory commission will be appointed to supervision it. Based on this new law, the private sector will have an important role in this market.

4.3.5.4.2 The Securities Market

The securities market in Saudi Arabia started in 1982 when the government, through SAMA, introduced the Bankers Securities Deposit Accounts (BSDA's), which was later followed by the issuing of the Government Development Bonds (GDBs) in 1988. In 1991, Treasury Bills (T-bills) were introduced with maturities ranging from 4 to 52 weeks. This was followed by the floating rate notes (FRNs) with maturities from 3 to 7 years (SAMA, Capital Market).

4.3.5.5 Other Financial and Non-Financial Institutions:

The financial system of Saudi Arabia includes other financial and non-financial institutions that include money exchangers, insurance companies, and investment companies. In 2004, the Council of Ministers approved the launch of an Islamic bank, Al-Bilad Bank, which is a result of the merger of eight money exchangers (Saudi Press Agency, 2004).

4.3.6 Financial Development Indicators for Saudi Arabia:

Table 4.3 shows that M2Y has shown, in general, a steady increase from 0.17 in 1965 to 0.57 in 2000. The ratio increased from 0.17 in 1965 to 0.19 in 1968 and 1969, and then the declined to reach 0.07 in 1974 before increasing again to reach 0.23 in 1978. From 1979 to 2000 the ratio showed a steady increase until it reached 0.57 in 2000. The largest increase in M2Y was in 1986 when the ratio increase by 0.12, from 0.47 in 1985 to 0.59 in 1986.

Table 4.3

Financial Development Indicators for Saudi Arabia

Year	M2/GDP (M2Y)	CP/GDP (CPY)	BD/GDP (BDY)
1965	0.17	0.10	0.08
1966	0.18	0.10	0.08
1967	0.18	0.09	0.09
1968	0.19	0.09	0.09
1969	0.19	0.10	0.09
1970	0.18	0.10	0.08
1971	0.13	0.06	0.07
1972	0.12	0.04	0.06
1973	0.07	0.02	0.04
1974	0.07	0.03	0.04
1975	0.11	0.04	0.06
1976	0.14	0.05	0.09
1977	0.20	0.05	0.12
1978	0.23	0.06	0.15
1979	0.17	0.07	0.10
1980	0.15	0.07	0.09
1981	0.20	0.08	0.12
1982	0.30	0.12	0.19
1983	0.37	0.15	0.22
1984	0.41	0.17	0.26
1985	0.47	0.19	0.29
1986	0.59	0.22	0.34
1987	0.61	0.21	0.35
1988	0.62	0.25	0.36
1989	0.58	0.24	0.34
1990	0.48	0.17	0.26
1991	0.49	0.17	0.28
1992	0.48	0.19	0.29
1993	0.51	0.23	0.31
1994	0.52	0.25	0.31
1995	0.50	0.25	0.32
1996	0.49	0.23	0.32
1997	0.50	0.24	0.33
1998	0.59	0.33	0.39
1999	0.58	0.31	0.38
2000	0.57	0.30	0.37

Source: International Monetary Fund's International Financial Statistics 2003

According to Table 4.3, CPY has declined from 0.10 in 1965 to 0.02 in 1973, and then increased in 1974 to 0.03 and continued to increase until it reached 0.24 in 1989 before declining again to 0.17 in 1990 and 1991. From 1992 to 2000 the ratio increased steadily until it reached 0.30 in 2000.

As for BDY, Table 4.3 shows that from 1965 to 1974 the ratio increased from 0.08 to 0.09 in 1969, and then declined to 0.04 in 1974. Form 1975 to 1988 the ratio increased to 0.15 in 1978 before declining again to 0.09 in 1980, and then increasing again to reach 0.36 in 1988. The ratio declined in 1989 and 1990, and then increased steadily until it reached 0.39 in 1998, however, the ratio decline again in 1999 and 2000.

4.4 Comparing the Financial Development Ratios of the three countries:

In this section the behavior of the ratio of the broad money stock (M_2) to GDP (M2Y), the ratio of commercial banks claims on the private sector to GDP (CPY), and the ratio of bank deposits to GDP (BDY) in Kuwait, Oman, and Saudi Arabia will be compared to each other and to other countries in the region.

Figures 4.8, 4.9, and 4.10 depict the ratio of the broad money stock to GDP (M2Y), the ratio of the claims on the private sector to GDP (CPY), and the ratio of bank deposits to GDP (BDY) for Kuwait, Oman, and Saudi Arabia based on a five-year average during the period from 1970 to 1999. According to Figure 4.8, the ratio of M2 to GDP in Kuwait was higher than both Oman and Saudi Arabia during the whole period; it had been increasing until it reached a ratio of more than 1.1 (or 110%) in the first half of the 1990s before decreasing in the second half of the 1990s to about 0.90 (or 90%). M2Y in Saudi Arabia was lower than that for Kuwait and Oman in the 1970s; however, after

the 1970s the ratio was higher for Saudi Arabia than for Oman reaching its peak of more than 0.50 (or 50%) in the second half of the 1980s. M2Y for Oman reached its highest point of more than 0.30 in the second half of 1990s. During the period from 1970 to 2000, M2Y for Kuwait registered an average annual growth of 5.7 percent, rising from 0.36 in 1970 to 0.70 in 2000. M2Y in Oman registered an average annual growth of 1.3 percent, rising from 0.38 in 1970 to 0.40 in 2000. Saudi Arabia registered and average annual growth of 5.8 percent, rising from 0.18 in 1970 to 0.49 in 2000.

Figure 4.9 depicts the ratio of commercial banks claims on the private sector to GDP (CPY) on a five-year average during the period from 1970 to 1999 for the three countries in our study. Kuwait shows a higher CPY compared to Oman and Saudi Arabia, however this ratio decreased tremendously in the first part of the 1990s, due to the Iraqi invasion and the First Gulf War, to reach a ratio of 0.20 (or 20 percent) compared to a ratio of more than 0.80 before the invasion. For Oman and Saudi Arabia, the highest point for CPY was in the second half of 1990s were it reached more than 0.35 for Oman and 0.25 for Saudi Arabia. During the period from 1970 to 2000, CPY for Kuwait registered an average annual growth of 11.4 percent, rising from 0.13 in 1970 to 0.45 in 2000. CPY in Oman registered an average annual growth of 10 percent, rising from 0.05 in 1970 to 0.47 in 2000. Saudi Arabia registered an average annual growth of 5.8 percent, rising from 0.10 in 1970 to 0.27 in 2000.

Finally, Figure 4.10 depicts the ratio of bank deposits to GDP (BDY) for the three countries. BDY was higher for Kuwait followed by Oman during the 1970s, and then in the 1980s and 1990s it fell for Oman below Saudi Arabia. BDY for Kuwait declined in the second part of the 1990s to about 0.81 compared to it's highest point of more than 1

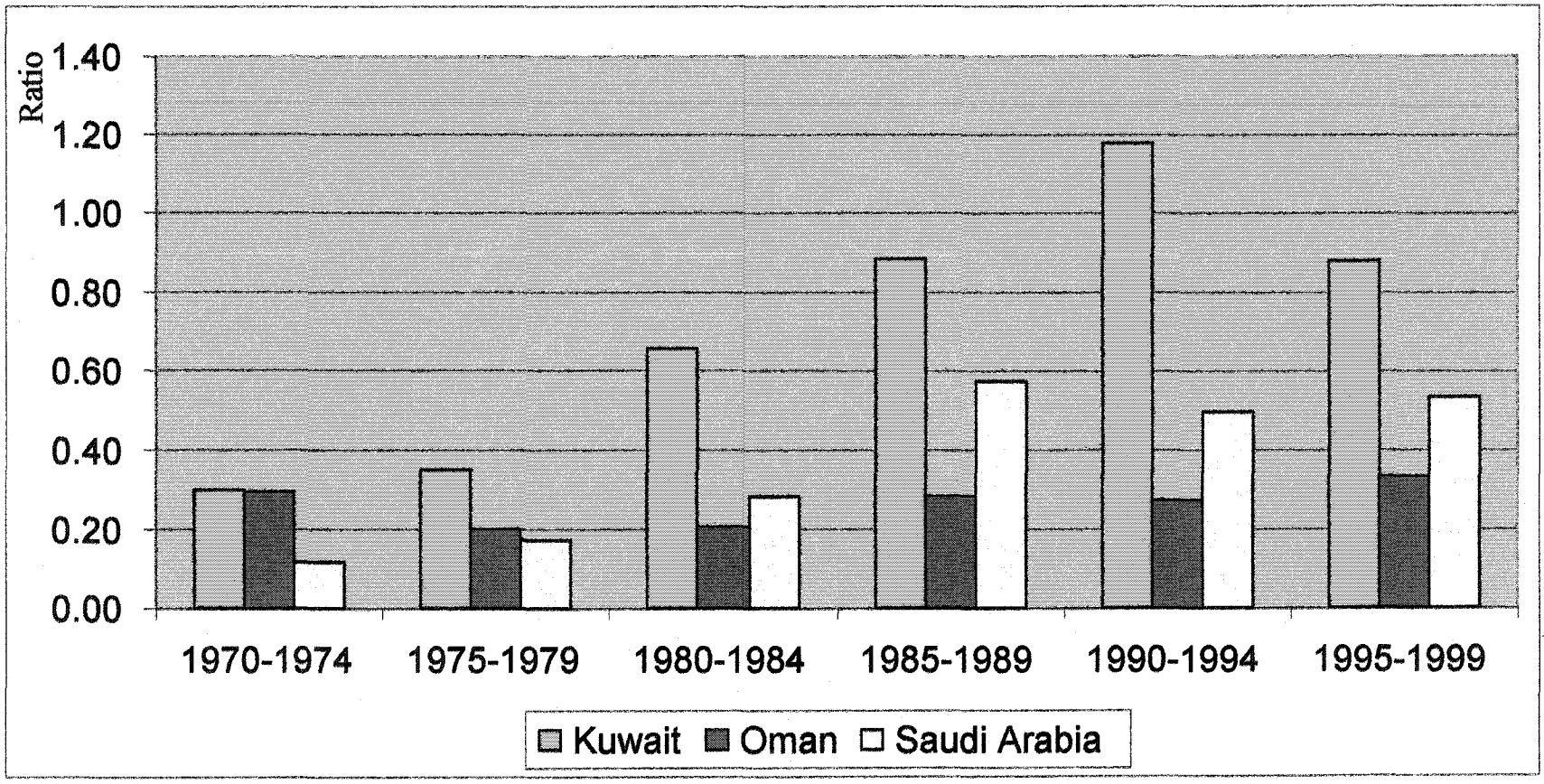


Figure 4.8: Five-Year Average of the Ratio of Broad Money Stock (M2) to GDP (M2Y) for Kuwait, Oman, and Saudi Arabia (constructed based on the International Monetary Fund's International Financial Statistics 2003).

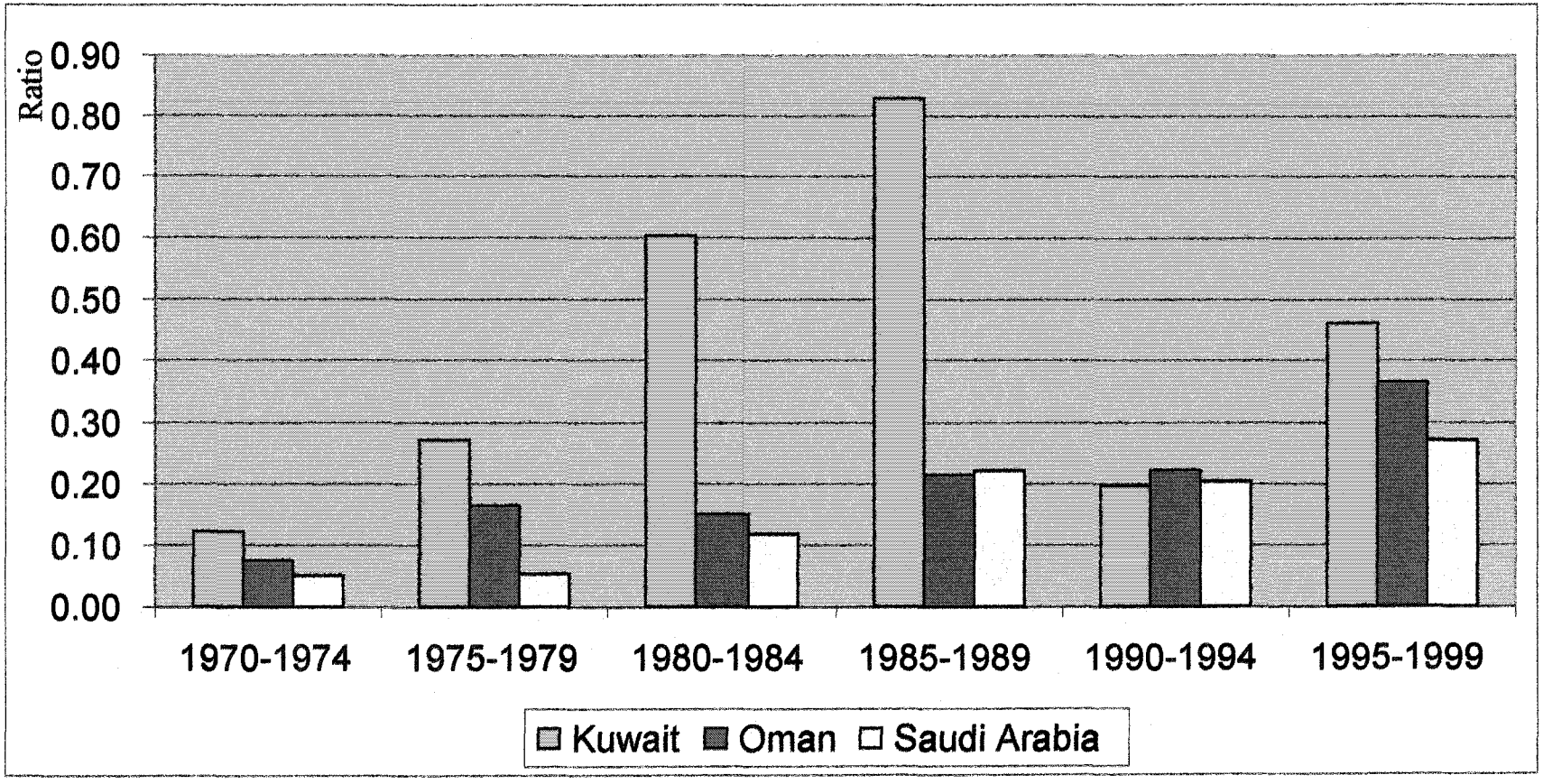


Figure 4.9: Five-Year Average of the Ratio of Commercial Banks Claims on the Private Sector to GDP (CPY) for Kuwait, Oman, and Saudi Arabia (constructed based on the International Monetary Fund's International Financial Statistics 2003).

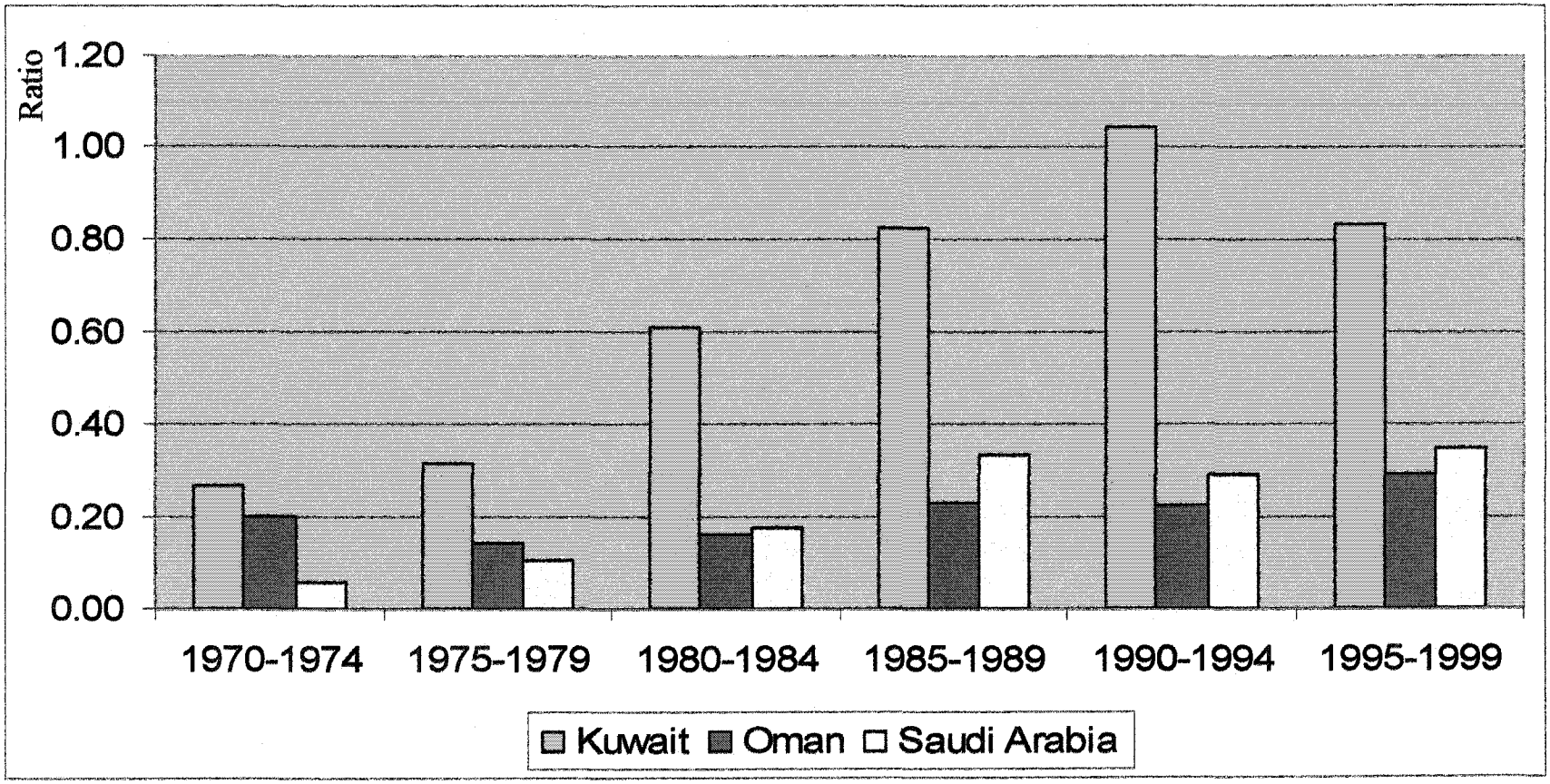


Figure 4.10: Five-Year Average of the Ratio of Bank Deposits to GDP (BDY) for Kuwait, Oman, and Saudi Arabia (constructed based on the International Monetary Fund's International Financial Statistics 2003).

(or 100%) in the first part of the 1990s. For Oman and Saudi Arabia, the highest point for BDY was in the second half of 1990s were it reached more than 0.29 for Oman and 0.35 for Saudi Arabia. During the period from 1970 to 2000, BDY for Kuwait registered an average annual growth of 6.8 percent, rising from 0.31 in 1970 to 0.66 in 2000. BDY in Oman registered an average annual growth of 2.5 percent, rising from 0.25 in 1970 to 0.35 in 2000. Saudi Arabia registered and average annual growth of 7.3 percent, rising from 0.08 in 1970 to 0.33 in 2000.

In sum, Figure 4.8, Figure 4.9, and Figure 4.10 reveal that, in general, M2Y, CPY, and BDY have been higher in Kuwait compared to both Saudi Arabia and Oman and, in general, these ratios are higher for Oman compared to Saudi Arabia.

A recent paper by Creane et al. (2004) divided the MENA countries into three levels of financial development, high, medium, and low. The paper developed a comprehensive index to rank MENA countries according to their level of financial development. The index is based on qualitative and quantitative data that ranged from 0 to 10, with 10 being the highest level of financial development. Kuwait, Oman, and Saudi Arabia were ranked, along with five other countries, in the high level of financial development. The paper also compares the financial development of the MENA region to other regions of the world using an index constructed on a combination of four variables, the ratio of M2 to GDP, the ratio of the assets of deposit money banks to the total assets of the central bank and deposit money banks, the reserve ratio, and the ratio of credit to the private sector by deposit money banks to GDP. Figure 4.11 shows, based on the paper, the level of financial development of the MENA countries compared to the rest of the world based on a ten-year average. According to the figure, MENA countries rank

below the industrial countries in financial development and above most other developing country regions, however, in the 1980s and 1990s, MENA countries ranked below both the industrial countries and East Asia countries.

In addition to the paper by Creane et al. (2004), this study uses the ratio of M2 to GDP (M2Y), the ratio of commercial banks claims on the private sector to GDP (CPY), and the ratio of bank deposits to GDP (BDY) to compare between the three countries in our study and three other countries in the region, Egypt, Morocco, and Jordan. Figures 4.12, 4.13, and 4.14 shows the comparison between the six countries based on a five-year average. Figure 4.12 shows that, in general, the 1970s, 1980s, and 1990s M2Y was higher for Jordan compared to the other countries followed by Egypt, Morocco, Kuwait, Oman and Saudi Arabia respectively, however, in the second half of the 1980s and the 1990s, Kuwait ranked second, after Jordan, in the ratio of credit provided to the private sector. In general, Jordan, Kuwait, and Egypt showed a ratio of more than 60% during the 1980s and 1990s. During the period from 1970 to 2000, Saudi Arabia had the highest average annual growth rate of M2Y, 5.8 percent, followed by Kuwait, Morocco, Egypt, Jordan, and Oman with an average annual growth rate of 5.6 percent, 3.6 percent, 2.8 percent, 2.4 percent, and 1.3 percent respectively. As for the ratio of commercial bank claims on the private sector as a ratio of GDP (CPY), Figure 4.13 shows that in the 1970s and 1990s Jordan had the highest ratio while in the 1980s Kuwait had the highest ratio. In general, Oman and Saudi Arabia had the lowest ratios. During the period from 1970 to 2000, Kuwait had the highest average annual growth rate of CPY, 11.4 percent, followed by Oman, Morocco, Egypt, Saudi Arabia, and Jordan with an average annual growth rate of 10 percent, 6.4 percent, 6 percent, 5.8 percent, and 4.6 percent respectively.

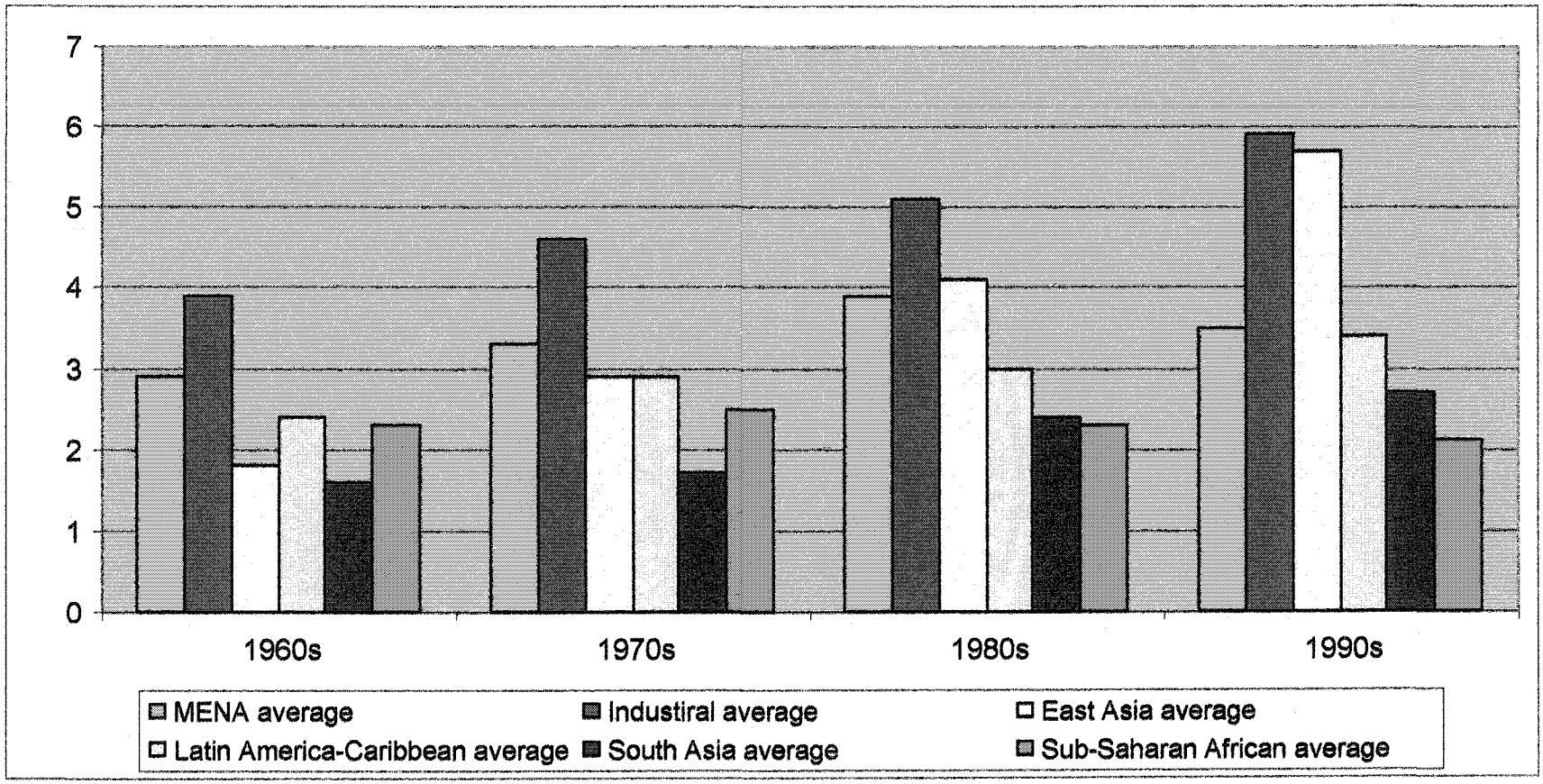


Figure 4.11: Financial Development index for the MENA Countries Compared to the rest of the World on a Ten-Year Average.

Source: Creane, Goyal, Mobarak, and Sab, 2003.

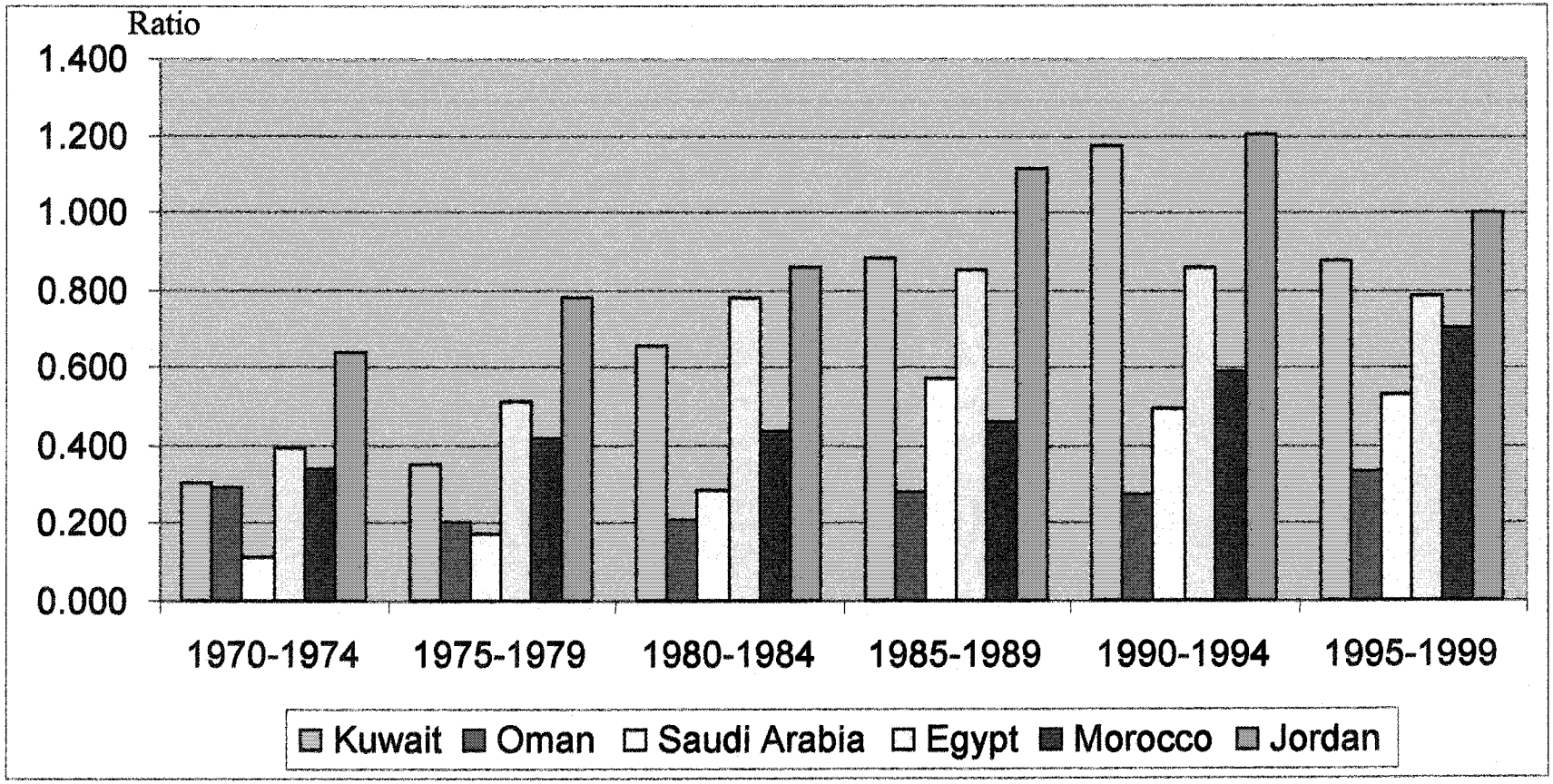


Figure 4.12: Five-Year Average of the Ratio of Broad Money Stock (M2) to GDP (M2Y) for Kuwait, Oman, Saudi Arabia, Egypt, Morocco, and Jordan (constructed based on the International Monetary Fund's International Financial Statistics 2003).

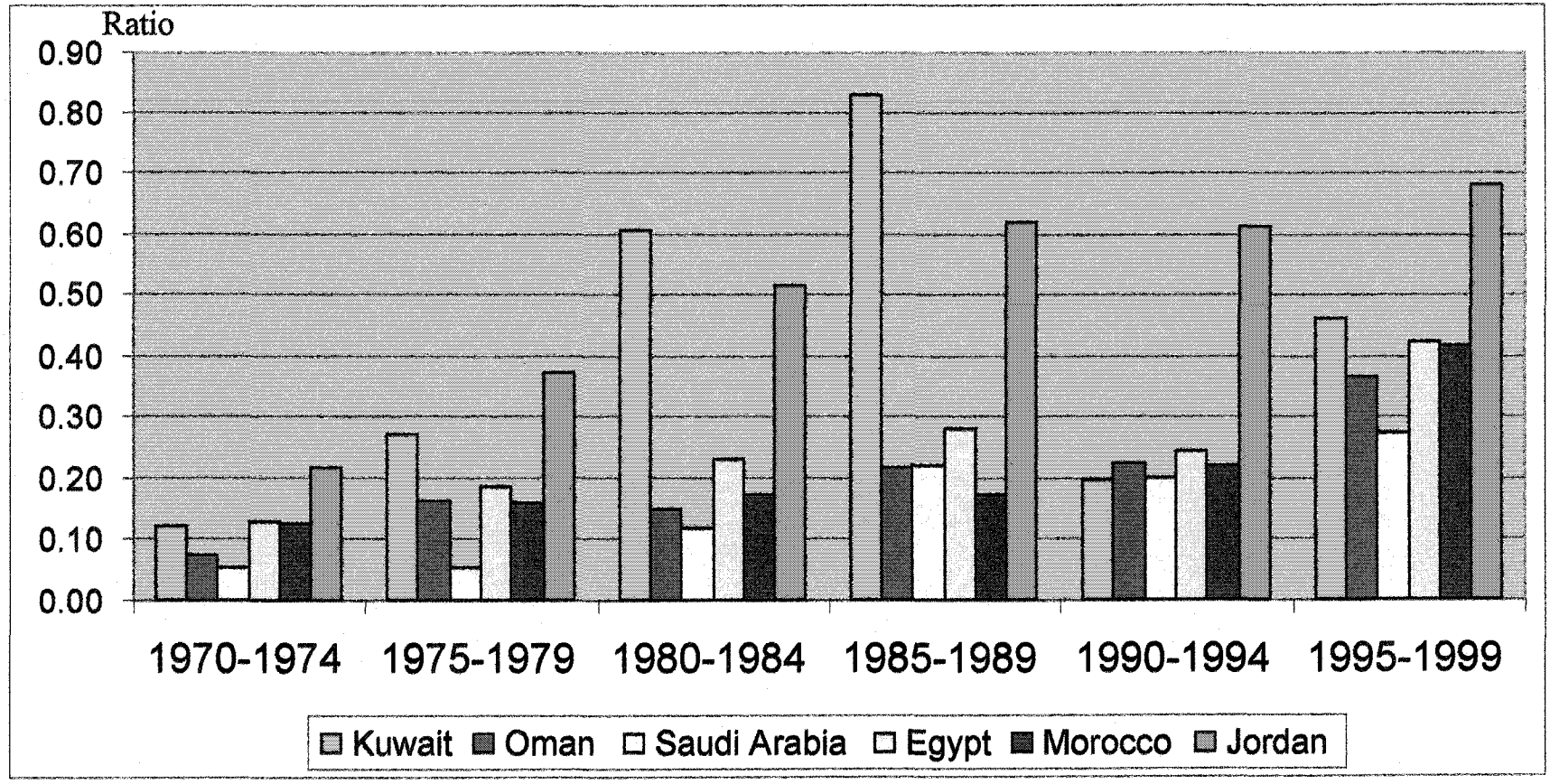


Figure 4.13: Five-Year Average of the Ratio of Commercial Banks Claims on the Private Sector to GDP (CPY) for Kuwait, Oman, Saudi Arabia, Egypt, Morocco, and Jordan (constructed based on the International Monetary Fund's International Financial Statistics 2003).

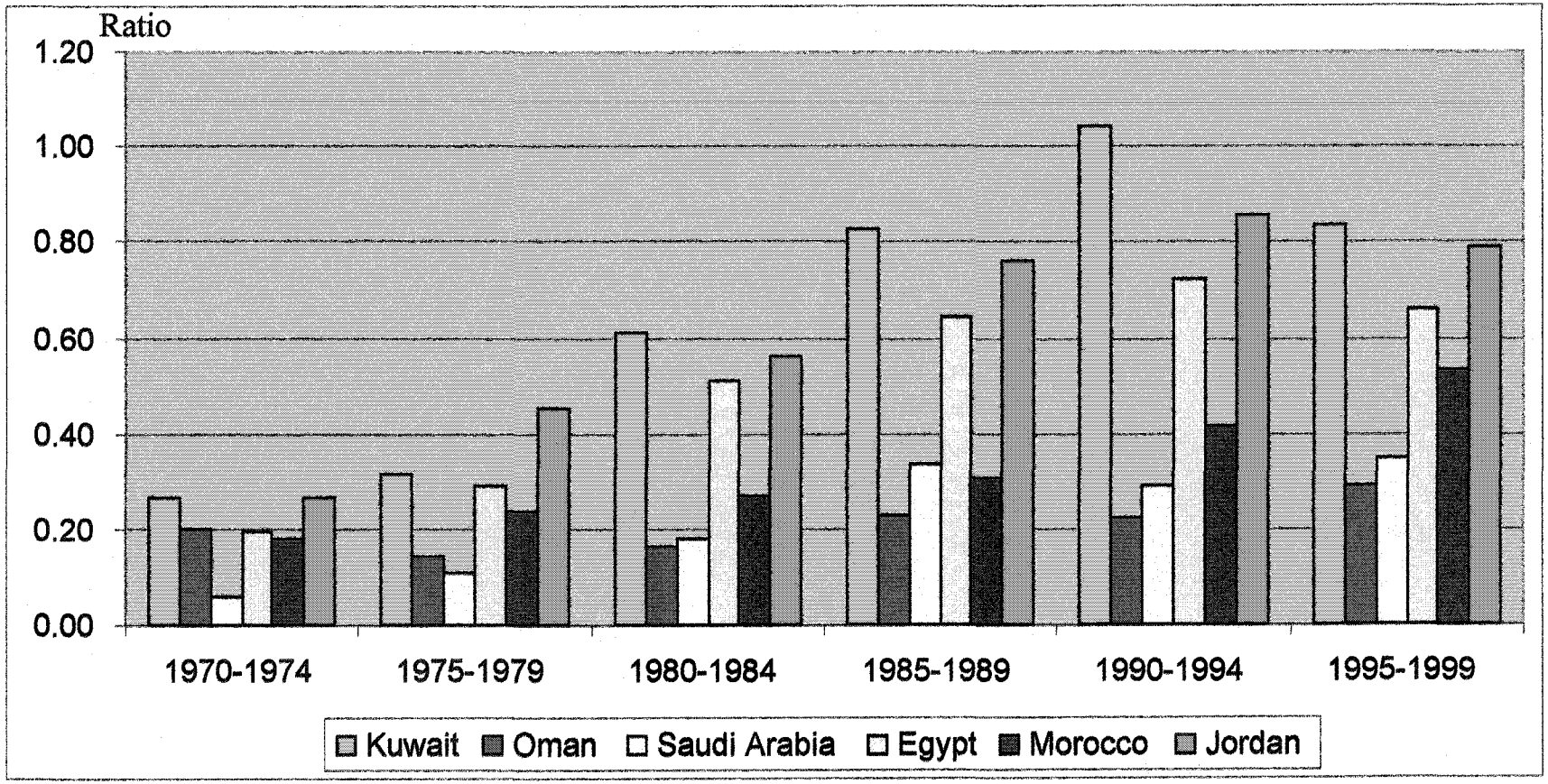


Figure 4.14: Five-Year Average of the Ratio of Bank Deposits to GDP (BDY) for Kuwait, Oman, Saudi Arabia, Egypt, Morocco, and Jordan (constructed based on the International Monetary Fund's International Financial Statistics 2003).

Figure 4.14 depicts a five-year average of the ratio of bank deposits to GDP (BDY) for the six countries. It can be seen that during the 1970s Jordan had the highest ratio and Saudi Arabia had the lowest ratio while during the 1980s and the 1990s Kuwait had the highest ratio and Oman had the lowest ratio. During the period from 1970 to 2000, Saudi Arabia had the highest average annual growth rate of CPY, 7.3 percent, followed by Kuwait, Jordan, Morocco, Egypt, and Oman with an average annual growth rate of 6.9 percent, 5.3 percent, 5.2 percent, 4.7 percent, and 2.5 percent respectively.

In general Figure 4.12, 4.13, and 4.14 shows that the M2Y, CPY, and BDY are higher for Kuwait and Jordan during the whole period while, in general, Oman and Saudi Arabia have had the lowest ratios. The reason for this in the case of, for example, Saudi Arabia is that even though the level of the broad money stock (M2), commercial bank claims on the private sector, and the bank deposits are the highest for Saudi Arabia, as seen in Figure 4.15, 4.16, and 4.17, the nominal GDP for Saudi Arabia, as seen in Figure 4.18, is more than double the level of GDP for the other countries making the ratios smaller for Saudi Arabia.

4.5 Conclusion:

From the description of the financial system structure of Kuwait, Oman, and Saudi Arabia, it is clear that the Central Bank of Saudi Arabia, Saudi Arabian Monetary Agency (SAMA), was established ten years before the Central Bank of Kuwait and twenty two years before the Central Banks of Oman indicating that the formal development of the financial system began in Saudi Arabia before both Kuwait and Oman. The central bank in all three countries has played a leadership role in the

development of the financial system. The central bank in each country strongly regulates and supervises the banking system and issues guidelines relating to capital adequacy, liquidity, lending limits, credit, and market risk, in addition to performing corrective actions when required.

The description of the financial structure in the three countries reveals that Kuwait and Oman have a reasonable number of commercial with a wide network of branches. Kuwait has 8 commercial banks with a total of 166 branches and Oman has 14 commercial banks with a total of 330 branches. Saudi Arabia has 11 banks with a total of 1209 branches. As of 2002, total assets of commercial banks in Saudi Arabia were at $ 135,493 million compared to $ 37,696 and $ 5,332 for Oman and Kuwait. The financial system in the three countries has suffered from the decrease in oil prices and the slowdown in these economies from 1983 to 1987. In addition, these financial systems, in particular Kuwait and Saudi Arabia, faced a great challenge in 1990 when Iraq invaded Kuwait. For example, customer withdrawals of domestic deposits during the first month of the invasion were about 11% of total customer deposits in Saudi Arabia (Saudi Arabian Monetary Agency, 1999). After the resolution of the crisis caused by the Iraqi invasion, Saudi Arabia's financial system recovered and the banking sector emerged stronger as a result of both the increased confidence in the financial system and a moderate boom in the economy in which there was a rise in bank deposits, domestic loans, and profits (Saudi Arabian Monetary Agency, 1999). In Kuwait, the financial system in general and the banking system particularly have been challenged by both the collapse of the unofficial stock market "Souk Al-Manakh" in 1982 and the Iraqi invasion

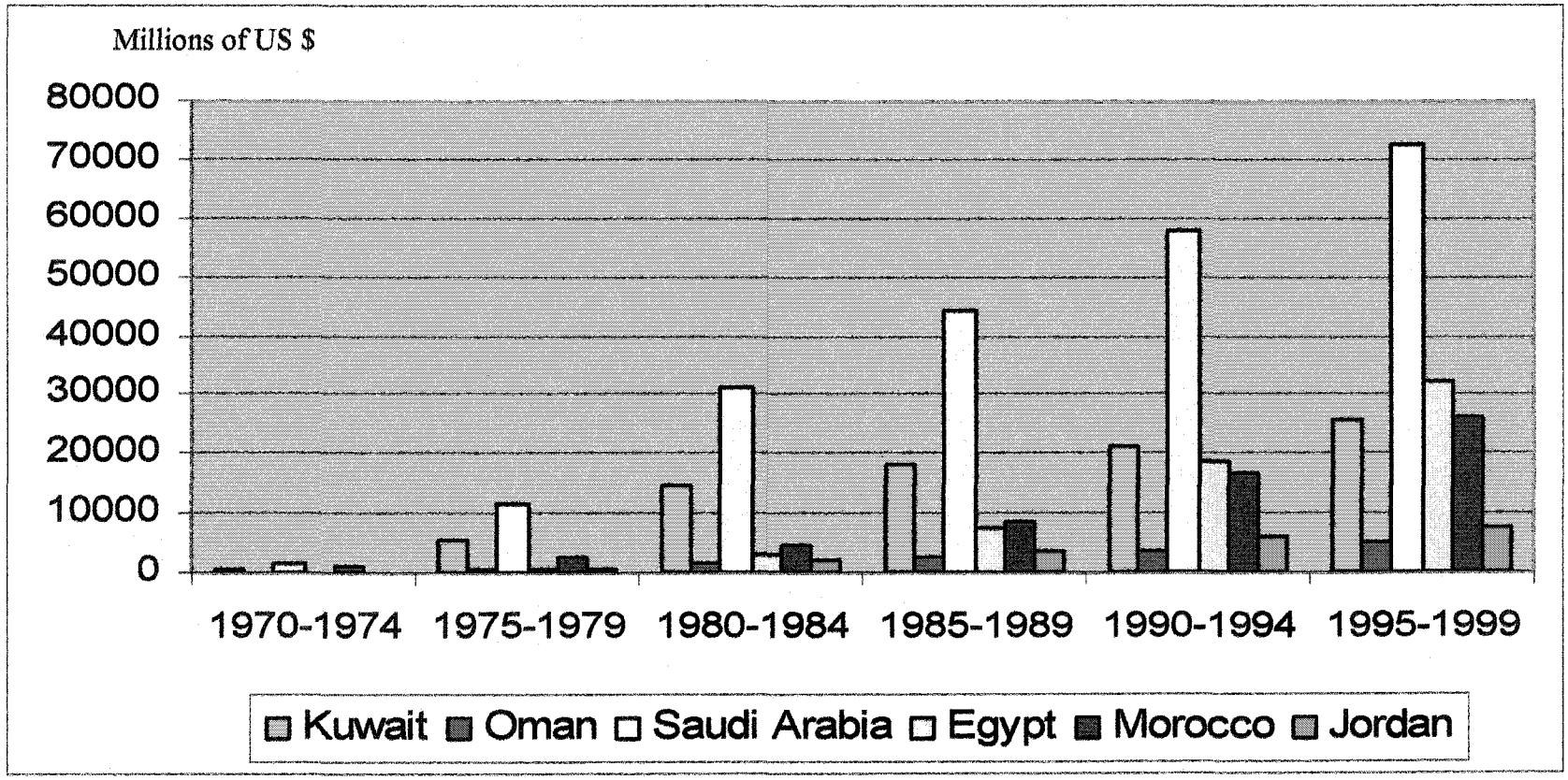


Figure 4.15: Five-Year Average of the Broad Money Stock (M2) for Kuwait, Oman, Saudi Arabia, Egypt, Morocco, and Jordan.

Source: International Monetary Fund's International Financial Statistics 2003.

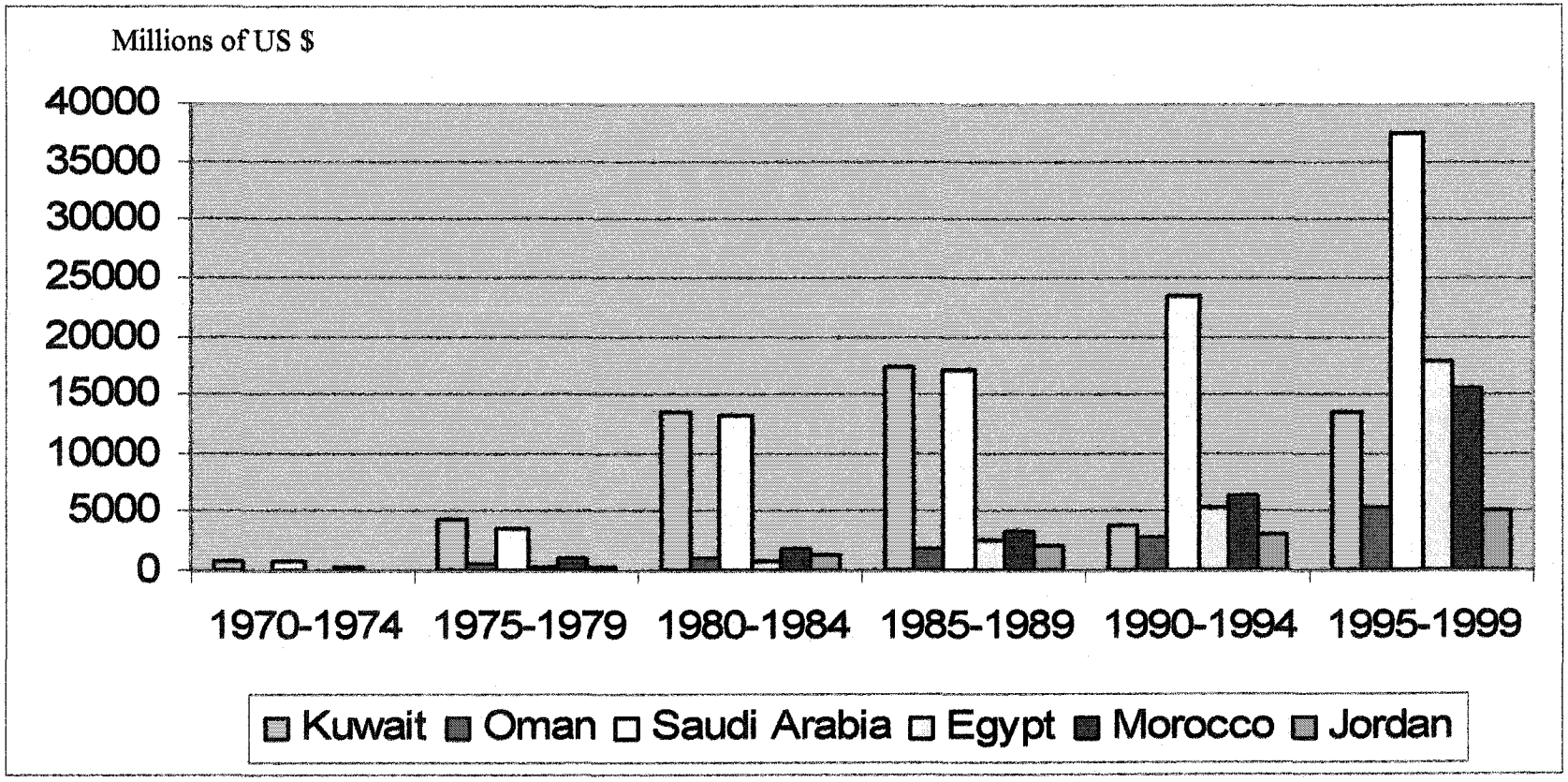


Figure 4.16: Five-Year Average of Bank Claims on the Private Sector for Kuwait, Oman, Saudi Arabia, Egypt, Morocco, and Jordan.

Source: International Monetary Fund's International Financial Statistics 2003.

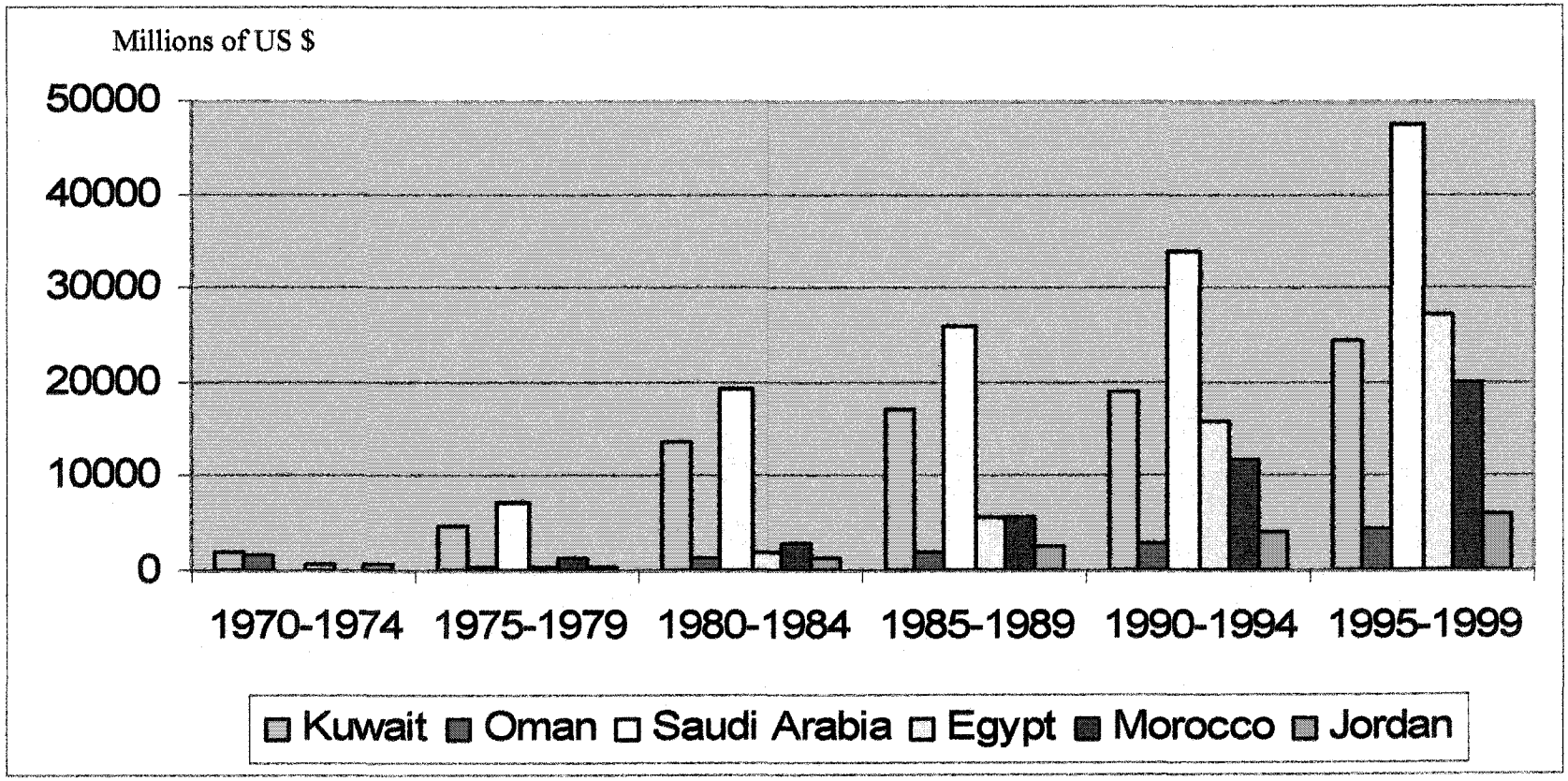


Figure 4.17: Five-Year Average of Bank Deposits for Kuwait, Oman, Saudi Arabia, Egypt, Morocco, and Jordan.

Source: International Monetary Fund's International Financial Statistics 2003.

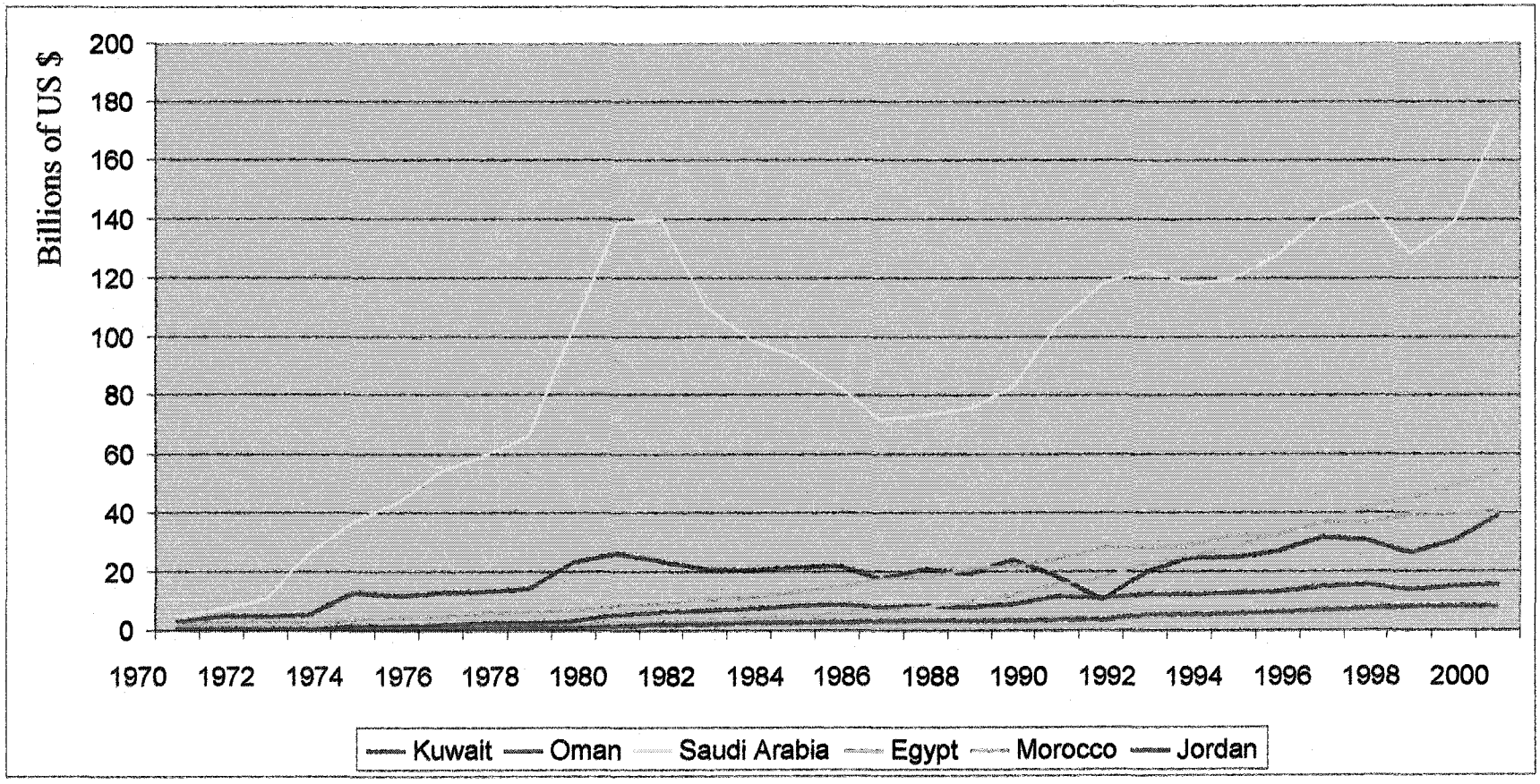


Figure 4.18: Nominal GDP in US Dollars for Kuwait, Oman, Saudi Arabia, Egypt, Morocco, and Jordan.

Source: International Monetary Fund's International Financial Statistics 2003.

in the 1990. Both have had a profound impact on the financial system that lasted for years.

The measure of financial deepening, the ratio of M2 to GDP, shows that the three countries are well monetized. The ratio is has increased in the 1980s and 1990s relative to the 1970s. In addition to the ratio of M2 to GDP, the ratio of M1 to M2 can be an indicator of the development, deepening, and the degree of sophistication of the financial system over time and the pace at which the financial sector is developing. A high ratio is an indicator of a low level of financial development and a low ratio is an indicator that more funds are channeled to long-term banking services. Figure 4.19 depicts the ratio of M1 to M2 for Kuwait, Oman, and Saudi Arabia. The ratio shows a decline in the three countries during the period from 1970 to 2000, which indicates that the financial sector in these countries have deepened and developed over time. Both, the high ratio of M2 to GDP and the low ratio of M1 to M2, are indicators of the depth, development of the financial and the confidence in the banking sector.

The ratio of commercial bank credit to the private sector has been increasing in the three countries, particularly in the case of Kuwait were the ratio was significantly higher before falling down in 1990 when the country was invaded by Iraq. In general, all three countries show an upward trend in the ratio of commercial bank credit to the private sector indicating.

All three countries have shown, in general, an upward trend in the ratio of bank deposits with Kuwait showing the highest bank deposits-GDP ratio during the whole period from 1970 to 2000, which indicates a high level of financial intermediation and the availability of funds for investment.

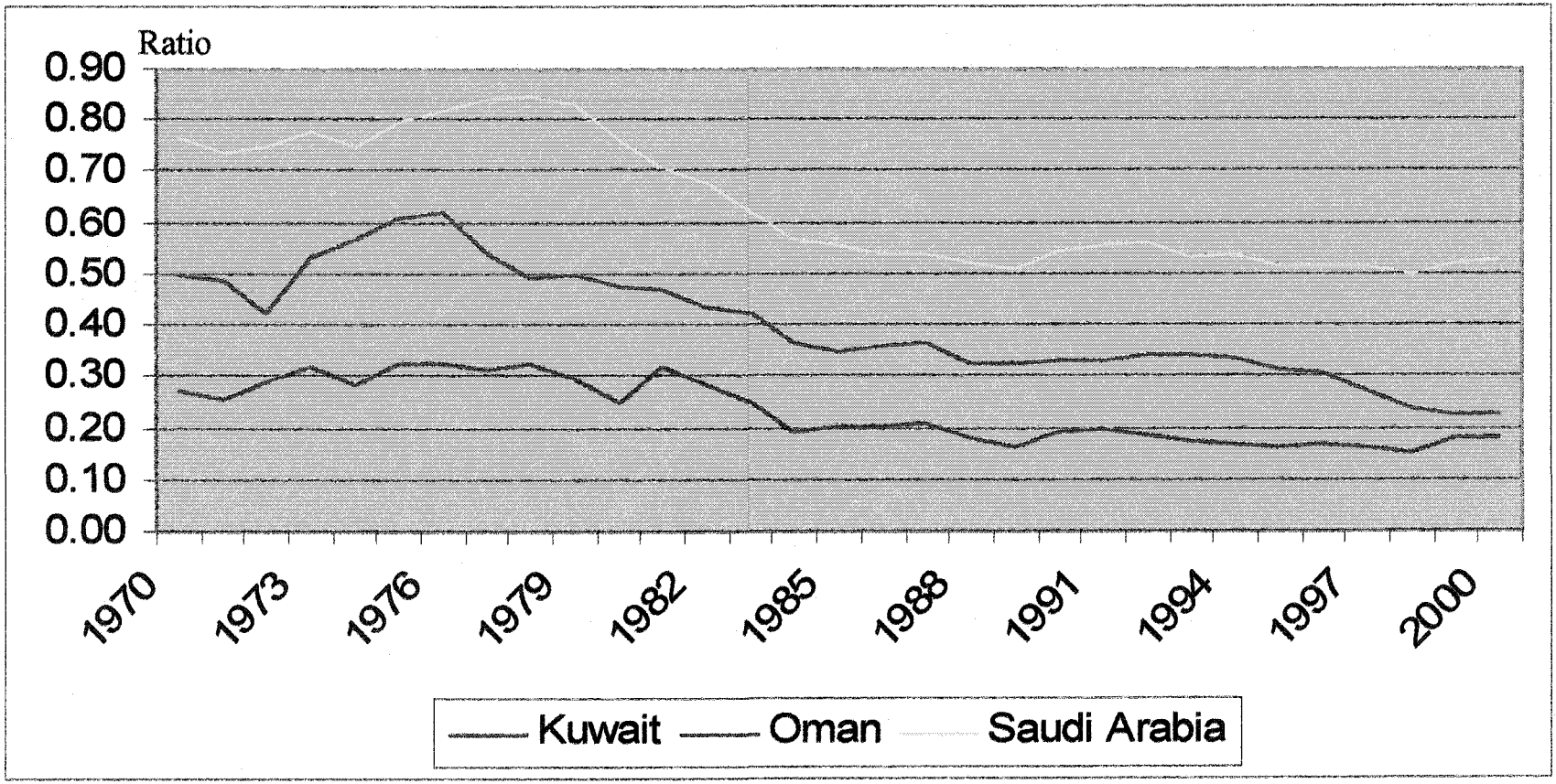


Figure 4.19: M1/M2 Ratio for Kuwait, Oman, and Saudi Arabia.

Source: International Monetary Fund's International Financial Statistics 2003.

In general, M2Y, CPY, and BDY have been higher in Kuwait compared to both Saudi Arabia and Oman and, in general, these ratios are higher for Oman compared to Saudi Arabia. Apparently, this indicates a higher level of financial development in Kuwait; however we need to look at the econometric results to see if this translates into any significant effect on economic growth. Now we turn to an econometric analysis of the relationship between these variables and economic growth.

CHAPTER FIVE

EMPIRICAL RESULTS

5.1 Overview:

This chapter will empirically investigate and analyze the impact of financial intermediation development on economic growth in Kuwait, Oman and Saudi Arabia. In this chapter, the results of the econometric analysis will be presented and discussed for Kuwait, Oman, and Saudi Arabia.

Section 5.2 will provide a brief description of the variables used in this study. Section 5.3 will present and analyze the results of methodology (1), the OLS regressions, for each country in our study. In section 5.4, the results of methodology (2), the cointegration and error correction causality tests, will be presented and analyzed. Finally, section 5.5 will conclude this chapter.

5.2 Data Description:

This section gives a brief description of the variables that will be used in this study; non-financial variables and financial variables. The data used in this study are obtained from the International Monetary Fund's (IMF) International Financial Statistics (IFS) 2003 CD-ROM and from World Development Indicators (WDI) 2003 CD-ROM.

5.2.1 Description of Non-Financial Variables:

5.2.1.1 Gross Domestic Product (GDP):

This is defined as: *"The total market value of all goods and services produced within the political boundaries of an economy during a given period of time, usually one year. This is the government's official measure of how much output [an] economy produces."* (AmosWEB).

In the literature, this variable is usually used as a proxy for the level of income and the rate of economic growth in the economy (King and Levine, 1993b,c). Other variables used to measure economic growth include: the growth rate of real per capita GDP, real per capita GDP, the rate of physical capital accumulation, and the ratio of domestic investment to GDP (King and Levine, 1993b,c).

In this study, we use both the growth rate of non-oil real GDP and the level of real GDP as proxies for economic growth (at 1995 prices).

5.2.1.2 Openness:

This measure is defined as a country's total trade (exports plus imports) as a fraction (i.e. ratio) of GDP, and it is used as a measure of international trade. A large body of studies have, empirically, found positive and significant effects of export-expansion on economic growth (Baldwin, 1963; Krueger, 1978; Meier, 1984; Tyler, 1981; Feder, 1983; Kavoussi, 1984; Ram, 1987; Moschos, 1989; Odedokum, 1991; Bhala and Lau, 1991). However, other studies have found that export-expansion and economic growth are independent (Jaleel and Kwan, 1991; Jaleel and Harnhirun, 1995; Abhayaratne, 1996). Furthermore, some studies found that openness can adversely affect

economic growth (Myrdal, 1957; Nurkse, 1961; Prebisch, 1962; Singer, 1964). In this study we use the sum of exports and imports as a ratio of GDP to represent trade openness.

5.2.1.3 Government Consumption Expenditure:

In the literature on economic growth and financial intermediation, the proxy used to represent government expenditure is the ratio of government consumption expenditure to nominal GDP. Empirical studies produce mixed evidence regarding the impact of government expenditure on long-run economic growth. Some studies suggest that government expenditure has a significant positive role in determining the level of economic growth. Other studies, on the contrary, suggest that the relationship between these two variables is negative (Barth and Bradley 1987; Landau 1983; Gwartney, Holcombe, and Lawson, 1998; Folster and Henrekson, 1999). However, these results differ by country, method employed, categorization of public expenditures, and the form of public expenditure (i.e. productive and unproductive expenditure) (Barro, 1990). In this study we use the ratio of government consumption expenditure to GDP.

5.2.1.4 Inflation:

The proxy used here is the Consumer Price Index (CPI) (1995=100), which represents the inflation rate in the economy. The relationship between inflation and economic growth is found, in the literature, to be negative and significant, especially in cases of high inflation (Fischer, 1993; Barro, 1996; Bruno and Easterly, 1998).

5.2.1.5 Capital:

We use gross fixed capital formation as a proxy for the stock of physical capital (see Odedokum, 1996).

5.2.1.6 Labor:

In this study we calculate the annual growth rate of the total labor force which is obtained from the 2003 World Development Indicators CD.

5.2.2 Description of Financial Indicators:

One of the most important issues in evaluating the relationship between financial development and economic growth is how to obtain a satisfactory empirical measure of financial development and how to measure its affects on economic growth. (See King and Levine, 1993b,c; Demetriades and Hussein, 1996; Levine, 1997; Beck et al., 2000). In the literature, the five most commonly used proxies for financial development are: (1) the ratio of money to GDP. (2) the ratio of banking deposit liabilities to GDP. (3) the ratio of private sector credit to GDP. (4) the share of private sector credit in domestic credit (5) the ratio of domestic credit to GDP.

In this study we only use the first three indicators for two reasons: (1) the unavailability of the data for the countries in our study (2) the first three indicators are more widely used in the literature than the last two indicators.

5.2.2.1 M2Y:

The typical measure of financial development that is used in the literature is the ratio of some broad measure of the money stock to the level of nominal income, and usually this measure is M_2 (King and Levine, 1993b,c; Wood, 1993; Murinde and Eng, 1994; Lyons and Murinde, 1994; Berthelemy and Varoudakis, 1995; Arestis and Demetriades, 1997; and Agung and Ford, 1998). This indicator measures the degree of monetization in the economy, which shows the size and the depth of the financial sector, and one measure of financial depth is liquid liabilities, which is equal to currency held outside the banking system plus demand and interest-bearing liabilities of banks and nonbank financial intermediaries.

According to De Gregorio and Guidotti (1995), monetary aggregates could be a bad indicators of the extent of financial development and they criticize the use of narrow money (i.e. M_1) to income ratio as a proxy for financial development arguing that such indicators (i.e. M_1/GDP) that reflect high level of monetization is likely to be the result of financial underdevelopment, while a low level of monetization is the result of a high degree of sophistication in financial markets. They suggest the use of a less liquid monetary aggregate (M_2/GDP or M_3/GDP) as a proxy for financial development.

In this study, we use a broad money stock (M_2) to GDP ratio to capture the overall ***size*** of the formal financial intermediary sector. In addition, this measure is a typical indicator of financial depth (see King and Levine, 1993).

5.2.2.2 CYP:

In order to obtain a more direct measure of financial development, this study uses the private sector credit ratio (CPY), which equals bank claims on the private sector as a ratio of GDP. This measure excludes loans issued to governments and public enterprises and it also excludes credits issued by the central bank. The significance of this measure is that it represents the share of credit channeled through the private sector.

Under the assumption that the private sector is more efficient than the public sector, it is argued that credit (i.e. loans) provided to the private sector increases investment and productivity of profitable projects more than credit provided to the public sector. In addition, it is argued that credit provided to the private sector is given more strictly than those given to the public sector (King and Levine, 1993b).

5.2.2.3 BDY:

In addition to the first two financial indicators, this study uses the ratio of bank deposit liabilities to GDP. This measure is used as a ***quality*** proxy for financial intermediation development (Demetriades and Hussein, 1996; Luintel and Khan, 1999). In most developing countries, a large part of the broad money stock is currency held outside the banking system. Accordingly, this indicator is used to obtain a more representative measure of financial intermediation development.

5.3 Methodology (1):

This methodology utilizes the Ordinary Least Squares technique (OLS), for each country in our study individually. The equation used in this methodology, as outlined in chapter three, is as follows:

$$\dot{NOGDP}_t = k + a\dot{LAB}_t + b\dot{CAP}_t + c\dot{FI}_{t-i} + d\dot{OPEN}_t + h\dot{GOV}_t + k\dot{CPI}_t + u_t \qquad (5.1)$$

Where $i=1,2,....,n$, *NOGDP* is the real non-oil Gross Domestic Product, *LAB* is labor force, *CAP* is physical capital, *FI* is the financial development indicator, *OPEN* is a measure of openness, *GOV* is government expenditure, and *CPI* is the Consumer Price Index. A dot over the variable indicates that the variable is in growth rate form.

Three regressions will be performed for each country in our study using three alternative measures of financial development; M2Y which is the broad money stock (M_2) to non-oil nominal GDP ratio, CPY which is the ratio of bank claims on the private sector as a ratio of non-oil nominal GDP, and BDY which is the ratio of bank deposit liabilities to non-oil nominal GDP:

$$\dot{NOGDP}_t = k + a\dot{LAB}_t + b\dot{CAP}_t + c\dot{M2Y}_{t-i} + d\dot{OPEN}_t + h\dot{GOV}_t + k\dot{CPI}_t + u_t \qquad (5.1.1)$$

$$\dot{NOGDP}_t = k + a\dot{LAB}_t + b\dot{CAP}_t + c\dot{CPY}_{t-i} + d\dot{OPEN}_t + h\dot{GOV}_t + k\dot{CPI}_t + u_t \qquad (5.1.2)$$

$$\dot{NOGDP}_t = k + a\dot{LAB}_t + b\dot{CAP}_t + c\dot{BDY}_{t-i} + d\dot{OPEN}_t + h\dot{GOV}_t + k\dot{CPI}_t + u_t \qquad (5.1.3)$$

where $i=1,2,....,n$

First we proceed with the unit root test to test the property of the data and to check whether the variables used in these regressions are stationary or nonstationary. This step is necessary to ensure that the regression is not ***spurious.*** For the OLS regression to be valid the variables should be stationary in levels, if not then the first difference of the variables should be used instead. In addition, a unit root test should be applied on the ***"sum of square of errors"*** of the regression to ensure that the regression is not ***spurious***. If the sum of square of errors is stationary then we can ensure that the regression is not spurious, in fact it can be said the OLS regression is ***superconsistent*** (Enders, 1995).

All the variables in our regressions are in growth rate form and are found to be stationary I(0) except for CPI which is nonstationary I(1). Furthermore, the unit root test on the residuals was performed for all nine regressions and the results indicate that the residuals are stationary.

For each country in our study we first perform three regressions. At first the regressions are performed with no lags for the financial intermediation development indicators, and then we perform the regression with one-period lag and report the results were the regression performance is superior based on the coefficients, t-tests, and adjusted R^2.

For all the nine regressions we test for the presence of heteroskedasticity in our regressions, if the null hypothesis of "no heteroskedasticity" is rejected then we correct for the heteroskedasticity by using Heteroskedasticity Consistent Covariances (White) Estimation. In addition to the heteroskedasticity test we test for the presence of autocorrelation, if autocorrelation is present in our regression then a first-order

autoregressive AR(1) process would be estimated. Furthermore, the Jarque-Bera Normality Test and the Ramesy Rest Stability Test (Regression Specification Error Test) are performed on each regression.

5.3.1 Kuwait:

Table 5.1 reports the results of the OLS regressions for Kuwait. The table shows that for the lagged value of M2Y the coefficient is -0.268, however, this coefficient is not significant and does not have the predicted sign. The adjusted R^2 for this regression is 0.12 indicating the only 12% of the change in economic growth is explained by the explanatory variables, which is very low.

The reported coefficient for CPY is -0.264 which is significant at the 10% level. However, the sign of the coefficient is negative which indicates that a 1 percent increase in CPY will lead to a 26.4 percent decrease in real non-oil GDP. The adjusted R^2 for this regression is 0.16 which means, as in the case of M2Y, that the ability of the independent variables to explain the change in the dependent variable is very low.

Finally, BDY has a coefficient of -0.118 which is also insignificant and does not have the expected sign. The adjusted R^2 is 0.06 which is even lower than that for M2Y and CPY.

The results of the regression for Kuwait using one-period lagged values of the financial development indicators M2Y, CPY, and BDY are not supportive of the view that financial intermediation development has a positive role in determining economic growth; the results all show a negative relationship between economic growth and financial development indicators.

5.3.2 Oman:

Table 5.2 depicts the results of the OLS regressions for Oman using three alternative measurements of financial development, M2Y, CPY, and BDY.

The results show that the coefficient of M2Y, without being lagged, is a positive 0.203 which means that when the growth rate of M2Y increases by 1 percent, NOGDP increases by 20.3 percent. The "goodness of fit", adjusted R^2, of the regression is 0.53 indicating the 53% of the change in economic growth is explained by the explanatory variables.

The coefficient on CPY is positive; the coefficient shows that when the growth rate of CPY increases by 1 percent NOGDP increases by 0.147 percent, however, this coefficient is not significant. The adjusted R^2 for this regression also is also 0.55 indicating that 55% of the change in economic growth is explained by the explanatory variables.

The coefficient of BDY is 0.195 which is significant at the 1% level and has the correct sign implying that a 1 percent increase in BDY leads to a 20 percent increase in NOGDP. The "goodness of fit", adjusted R^2, of the regression is 0.61 (61%).

The results of the OLS regression for Oman show evidence of a positive and significant relationship between financial development and economic growth when the financial development indicators used are the broad money stock ratio and the bank deposit liabilities ratio.

5.3.3 Saudi Arabia:

The OLS results for Saudi Arabia are shown in Table 5.3, where the three regressions show that the coefficient of the one-period lagged values of M2Y, CPY, and BDY are all highly significant and have the correct sign. The coefficient on the lagged value of M2Y is 0.052 and the t-test is 5.064 meaning that when M2Y grows by 1 percent, NOGDP increases by 5.2 percent. The adjusted R^2 for this regression is 0.88 indicating that 88% of the change in economic growth is explained by the explanatory variables.

The coefficient on the lagged value of CPY is 0.028 and is significant at the 5% level, meaning that a 1 percent increase in CPY will increase real NOGDP by 2.8 percent. The adjusted R^2 for this regression is 0.85 (85%).

According to Table 5.3, the coefficient of the lagged value of BDY is 0.054, which is significant at the 1% level. This means that when BDY increases by 1 percent, NOGDP increases by 5.4 percent. The "goodness of fit" for this regression is 0.87, meaning that 87% of the change in real NOGDP is explained by the variables in our model.

The results of the OLS regression for Saudi Arabia show evidence of a positive relationship between all financial development indicators and economic growth as measured by non-oil real GDP. These results are evidence that financial intermediation development has a positive role in determining economic growth as measured by real non-oil GDP.

Finally, the Jarque-Bera Normality Test and the Ramesy Rest Stability Test (Regression Specification Error Test) are performed on each regression. The null

hypothesis for the normality test is "The data are normally distributed" and the null hypothesis for the stability test is "there is no misspecification". The results of the two tests are reported in Table 5.4. The table shows that for the normality test, all nine regressions passed the test. The table also shows that for the stability test, the three regressions for Kuwait passed the stability test, while in the case of Oman, only the regressions for M2Y and BDY passed the test, and for Saudi Arabia all three regressions failed to pass the test of stability. The Ramsey RESET test only signals when a specification error may exist, however, the test does not provide specific information on the exact cause of misspecification. Accordingly, an attempt was carried out to resolve this problem by adding new variables and/or deleting some of the variables in the regression, however, this attempt was not successful in changing the results of the Ramsey RESET test for Oman and Saudi Arabia.

The results of methodology (1) suggest that in the case of Oman and Saudi Arabia financial development does have a positive role in determining economic growth as measured by real non-oil GDP. However, the coefficients of M2Y and BDY in the case of Oman are larger than that for Saudi Arabia. The coefficients of M2Y and BDY for Oman are 0.203 and 0.195 respectively compared to 0.052 and 0.054 for Saudi Arabia. As for Kuwait, the results of methodology (1) suggest that financial development does not have a positive role in determining economic growth; the relationship is negative, however, the expectation was that this relationship would be positive in the case of Kuwait.

Table 5.1

OLS Regression Results for Kuwait (Dependent Variable: real NOGDP)

Independent Variable	*Regression 1 M2Y*	*Regression 2 CPY*	*Regression 3 BDY*
C	1.450 (0.104)	-2.568 (-0.200)	-2.139 (-0.166)
LAB	-0.557 (-0.591)	-0.157 (-0.174)	-0.317 (-0.353)
CAP	0.301** (2.127)	0.348 (2.444)	0.294 (1.950)
OPEN	-0.416** (-2.255)	-0.330 (-1.884)	-0.444 (-2.067)
GOV	0.007 (0.054)	-0.057 (-0.399)	0.021 (0.158)
CPI	0.039 (0.280)	0.098 (0.760)	0.066 (0.511)
$M2Y_{t-1}$	-0.268 (-1.446)		
CPY_{t-1}		-0.264* (-1.874)	
BDY_{t-1}			-0.118 (-0.840)
adj. R^2	0.12	0.16	0.06
DW	2.313	2.220	2.062

Notes:

(1) t-test in parentheses
(2) stationary residuals
(3) * significant at the 10% level.
(4) ** significant at the 5% level.
(5) *** significant at the 1% level.

Table 5.2

OLS Regression Results for Oman (Dependent Variable: real NOGDP)

Independent Variable	*Regression 1 M2Y*	*Regression 2 CPY*	*Regression 3 BDY*
C	15.295** (2.190)	16.894 (1.772)	11.049 (1.585)
LAB	-0.170 (-0.225)	0.125 (0.141)	-0.055 (-0.074)
CAP	0.127*** (4.370)	0.063 (2.558)	0.128*** (4.569)
OPEN	-0.153 (-1.685)	-0.040 (-0.377)	-0.204** (-2.396)
GOV	-0.106 (-1.128)	-0.019 (-0.167)	-0.106 (-1.007)
CPI	-0.116 (-1.754)	-0.116 (-1.162)	-0.064 (-0.972)
M2Y	0.203* (1.893)		
CPY		0.147 (0.741)	
BDY			0.199** (2.627)
adj. R^2	0.53	0.55	0.57
DW	1.61	1.66	1.84

Notes:

(1) t-test in parentheses
(2) stationary residuals
(3) * significant at the 10% level.
(4) ** significant at the 5% level.
(5) *** significant at the 1% level.

Table 5.3

OLS Regression Results for Saudi Arabia (Dependent Variable: real NOGDP)

Independent Variable	*Regression 1 M2Y*	*Regression 2 CPY*	*Regression 3 BDY*
C	49.188 (1.909)	10.848 (2.853)	49.884 (1.934)
LAB	0.490 (0.449)	0.131 (0.276)	0.363 (0.0.331)
CAP	0.079 (1.458)	0.213 (4.820)	0.076 (1.391)
OPEN	0.052 (2.279)	0.027 (0.741)	0.050 (2.191)
GOV	0.005 (0.205)	0.029 (0.666)	0.008 (0.281)
CPI	-0.506** (2.361)	-0.104*** (-2.852)	-0.509** (-2.343)
$M2Y_{t-1}$	0.052*** (5.064)		
CPY_{t-1}		0.028** (2.738)	
BDY_{t-1}			0.054*** (4.982)
adj. R^2	0.88	0.85	0.87
DW	1.50	1.48	1.55

Notes:

(1) t-test in parentheses
(2) stationary residuals
(3) * significant at the 10% level.
(4) ** significant at the 5% level.
(5) *** significant at the 1% level.

Table 5.4

Results of Jarque-Bera Normality Test and Ramesy Reset Stability Test

Country		Jarque-Bera Normality Test		Ramesy Reset Stability Test	
		Jarque-Bera	**Probability**	**F-statistics**	**Probability**
Kuwait	M2Y	1.734	0.420	0.265	0.896
	CPY	1.659	0.436	1.282	0.307
	BDY	1.897	0.415	1.649	0.201
Oman	M2Y	0.420	0.810	0.956	0.189
	CPY	0.485	0.784	2.862*	0.060
	BDY	0.809	0.667	1.518	0.246
Saudi Arabia	M2Y	0.320	0.851	9.541*	0
	CPY	0.781	0.676	10.704*	0
	BDY	0.188	0.910	8.695*	0

* indicates the rejection of the null hypothesis.

5.4 Methodology (2):

In this section, and as mentioned in chapter three, the unit root test, the Johansen test, and the causality test using the Error Correction Model will be performed on our data to study the long-run relationship and the causality between financial intermediation and economic growth as measured by real GDP. First, we will start with the unit root using the ADF test. This is a requirement before performing the cointegration and causality tests.

Before starting with the unit root test, Tables 5.5, 5.7, and 5.9 represent the descriptive statistics for Kuwait, Oman, and Saudi Arabia respectively. Tables 5.6, 5.8, and 5.10 represent the Correlation Matrix for M2Y, CPY, and BDY for Kuwait, Oman, and Saudi Arabia respectively.

5.4.1 Unit Root Test

For each country in our study, the ADF unit root test was carried out with a constant for all the variables in our model in their levels and then in their first difference using one lag based on the Schwarz Information Criterion (SIC). According to the test, the null hypothesis is that the variable contains a unit root (i.e. the variable is nonstationary). The alternative hypothesis is that the variable does not contain a unit root (i.e. the variable is stationary). If the null hypothesis is not rejected for the variable in its level and rejected for the variable in its first difference, then we can conclude that the variable is integrated of order one; I (1). If the null hypothesis is rejected for the variable in its level, then it can be said the variable is stationary; I (0).

5.4.1.1 Kuwait:

Table 5.11 shows the results of the ADF unit root test for all seven variables used to conduct the cointegration test for Kuwait. From the results in the middle and right columns of the table, we can conclude that all variables are nonstationary in their levels and stationary in their first difference, accordingly, all seven variables are I (1).

5.4.1.2 Oman:

Table 5.12 shows the results of the ADF unit root test for all seven variables used to conduct the cointegration test for Oman. As depicted in the middle column of the table, all the variables are nonstationary (i.e. contain a unit root) in their levels and are significant at the 1% level. The right column of Table 5.4 shows the unit root test for all variables in their first difference, in which all variables are stationary (GDP and M2Y are significant at the 5% level). The results of the table conclude that all variables are I (1).

5.4.1.3 Saudi Arabia:

Table 5.13 shows the results of the ADF unit root test for all seven variables used to conduct the cointegration test for Saudi Arabia. The column in the middle depicts the results of the unit root test for the variables in their levels and the column on the right depicts the unit root test for the variables in their first difference. According to these results, all variables in the case of Saudi Arabia are nonstationary in their levels and stationary in their first difference at the 1 percent level of significance except for the first difference of CPI which is stationary at the 5% levels only. Accordingly, all the variables are I (1).

Table 5.5

Descriptive Statistics for Kuwait

	RGDP	*OPEN*	*GOV*	*CPI*	*M2Y*	*CPY*	*BDY*
Mean	7.756	0.776	0.226	63.84	0.657	0.373	0.588
Median	7.999	0.745	0.201	70.95	0.715	0.300	0.675
Maximum	9.946	1.050	0.762	105.3	1.920	0.940	1.780
Minimum	3.58	0.500	0.073	13.30	0.180	0.090	0.100
Observations	36	36	36	36	36	36	36

Table 5.6

Correlation Matrix for M2Y, CPY, and BDY for Kuwait

	M2Y	*CPY*	*BDY*
M2Y	1	0.431	0.979
CPY	0.431	1	0.490
BDY	0.979	0.490	1

Table 5.7

Descriptive Statistics for Oman

	RGDP	*OPEN*	*GOV*	*CPI*	*M2Y*	*CPY*	*BDY*
Mean	2.646	0.716	0.266	69.03	0.261	0.190	0.202
Median	2.646	0.750	0.270	73.40	0.270	0.190	0.220
Maximum	5.229	0.900	0.370	104.4	0.390	0.470	0.350
Minimum	0.826	0.500	0.130	25.30	0.150	0.050	0.100
Observations	31	31	31	31	31	31	31

Table 5.8

Correlation Matrix for M2Y, CPY, and BDY for Oman

	M2Y	*CPY*	*BDY*
M2Y	1	0.550	0.954
CPY	0.550	1	0.745
BDY	0.954	0.745	1

Table 5.9

Descriptive Statistics for Saudi Arabia

	RGDP	*OPEN*	*GOV*	*CPI*	*M2Y*	*CPY*	*BDY*
Mean	44.654	0.639	0.252	73.76	0.336	0.144	0.199
Median	47.981	0.630	0.270	87.60	0.300	0.120	0.190
Maximum	68.823	0.850	0.390	101.30	0.620	0.330	0.390
Minimum	12.538	0.450	0.100	26.30	0.070	0.020	0.040
Observations	36	36	36	36	36	36	36

Table 5.10

Correlation Matrix for M2Y, CPY, and BDY for Saudi Arabia

	M2Y	*CPY*	*BDY*
M2Y	1	0.948	0.990
CPY	0.948	1	0.956
BDY	0.990	0.956	1

Table 5.11

ADF Unit Root Test for Kuwait

Variable	*Level*	*First Difference*
GDP	-2.503	-5.247*
OPEN	-1.672	-4.897*
GOV	-2.205	-5.511*
CPI	-1.490	-4.116*
M2Y	-1.755	-6.183*
CPY	-1.843	-3.705*
BDY	-1.626	-6.781*

Notes:

(1) The number of lags is one.

(2) Critical value for the level of the variable at the 1%, 5%, and 10% respectively, are -3.639, -2.951, and -2.614.

(3) Critical value for the first difference of the variable at the 1%, 5%, and 10% respectively, are -3.646, -2.954, and -2.615.

(4) * Significant at the 1% level.

** Significant at the 5% level.

*** Significant at the 10% level.

Table 5.12

ADF Unit Root Test for Oman

Variable	*Level*	*First Difference*
GDP	0.519	-3.382**
OPEN	-2.498	-3.848*
GOV	-2.172	-4.251*
CPI	-1.319	-4.052*
M2Y	-1.540	-3.504**
CPY	-0.468	-4.087*
BDY	-0.927	3.831*

Notes:

(1) The number of lags is one.

(2) Critical value for the level of the variable at the 1%, 5%, and 10% respectively, are -3.679, -2.967, and -2.622.

(3) Critical value for the first difference of the variable at the 1%, 5%, and 10% respectively, are -3.711, -2.981, and -2.629.

(4) * Significant at the 1% level.

** Significant at the 5% level.

*** Significant at the 10% level.

Table 5.13

ADF Unit Root Test for Saudi Arabia

Variable	*Level*	*First Difference*
GDP	-1.371	-3.932*
OPEN	-1.700	-3.708*
GOV	-1.781	-4.957*
CPI	-1.979	-3.036**
M2Y	-1.007	-4.334*
CPY	-0.433	-4.507*
BDY	-0.805	-3.722*

Notes:

(1) The number of lags is one.

(2) Critical value for the level of the variable at the 1%, 5%, and 10% respectively, are -3.639, -2.951, and -2.614.

(3) Critical value for the first difference of the variable at the 1%, 5%, and 10% respectively, are -3.646, -2.954, and -2.615.

(4) * Significant at the 1% level.

** Significant at the 5% level.

*** Significant at the 10% level.

5.4.2 Johansen Cointegration Test

If we are interested in the long-run relationship between two variables, for example X and Y, then there are three cases that can be considered:

1. Both X and Y are stationary (i.e. do not have unit roots), which means that the Johansen cointegration test can not be applied.
2. Both X and Y are nonstationary and are cointegrated.
3. Both X and Y are nonstationary but are not cointegrated.

For the first part, the unit root test, the previous section showed that all the variables in our study are nonstationary in levels and stationary in their first difference. In this section we apply the Johansen cointegration method to answer the question of whether or not there is a long-run relationship between financial intermediation development and economic growth, that is, whether or not they are cointegrated.

Using the Johansen test, the null hypothesis of r cointegrating vectors is tested against the alternative of r +1 cointegrating vectors. Therefore, and since in our case we have five nonstationary variables (i.e. k = 5), then the null hypothesis $r = 0$ is tested against the alternative that $r = 1$, the null hypothesis $r = 1$ against the alternative $r = 2$, the null hypothesis $r = 2$ against the alternative $r = 3$, and the null hypothesis $r = 3$ against the alternative $r = 4$ (i.e. $r = k$-1).

Tables 5.14 through 5.22 assemble the multivariate cointegration results from the Johansen test for Kuwait, Oman, and Saudi Arabia using M2Y, CPY, and BDY to measure financial development. Based on the Schwarz Information Criterion (SIC), the lag length used in the cointegration test is one lag.

5.4.2.1 Kuwait

Table 5.14 shows the results of the Johansen multivariate cointegration test for Kuwait using M2Y as the financial development indicator. Based on the trace statistic, the null hypothesis of "no cointegration" is rejected at the 1% level of significance; the trace statistic is 85.18 which is larger than the corresponding critical values of 76.07 at the 1% significance level. The null hypothesis of "at most one cointegration equation" is not rejected at any level of significance. This implies the existence of one cointegrating vector among the variables of the equation. The coefficient for M2Y is 1.123 with a t-test of 4.60 which is significant; however, it has the incorrect sign.

Table 5.15 reports the Johansen multivariate cointegration test for Kuwait using CPY as the financial development indicator. Based on the trace statistic, the null hypothesis of "no cointegration" is rejected at the 1% level of significance and the null hypothesis of "at most one cointegration equation" is not rejected at any level of significance. Accordingly, one cointegration vectors exists among the variables of the equation with a significant coefficient for CPY, however, the sign of the coefficient is also incorrect (i.e., the sign is expected to be negative).

Table 5.16 represents the results of the Johansen multivariate cointegration for Kuwait using BDY as the financial indicators. The null hypothesis of "no cointegration" is rejected at the 1% level of significance and the null hypothesis of "at most one cointegration equation" is not rejected at any level of significance. Accordingly, one cointegration vectors exists among the variables of the equation with a significant coefficient for BDY, however, again the sign of the coefficient is not as predicted.

The multivariate cointegrating equation for testing the long-run relationship between economic growth and the financial development indicators M2Y, CPY, and BDY in the case of Kuwait are as follows:

$$GDP - 1.781\ OPEN - 5.649\ GOV - 0.0008\ CPI + 1.123\ M2Y = ECT_{t-1} \qquad (5.2)$$

$$GDP - 1.661\ OPEN - 1.981\ GOV - 0.005\ CPI + 0.794\ CPY = ECT_{t-1} \qquad (5.3)$$

$$GDP - 3.019\ OPEN - 5.130\ GOV + 0.002\ CPI + 8.599\ BDY = ECT_{t-1} \qquad (5.4)$$

These equations are normalized on GDP and the signs are reversed.

According to the results shown in equations 5.2, 5.3, and 5.4, it appears that there is a long-run relationship between GDP, OPEN, GOV, CPI, and M2Y, CPY or BDY; however, the signs of M2Y in equation 5.2, CPY in equation 5.3, and BDY in equation 5.4 are positive suggesting, since the signs are reversed, a negative relationship between economic growth and the financial development indicators.

5.4.2.2 Oman

Table 5.17 reports the Johansen multivariate cointegration test for Oman using M2Y as the financial development indicator. Based on the trace statistic, the null hypothesis of "no cointegration" is rejected at the 1% level of significance, however, the null hypothesis of "at most one cointegration equation" is rejected at the 5% level, and is

not rejected at the 1% level, yet the null hypothesis of "at most two cointegration equations" is not rejected at both levels of significance. Based on the 1% levels of significance, the coefficient of M2Y is -4.271 which is, as the t-test shows, not significant. And based on the 5% level of significance, the coefficient is -5.790 which is significant and has the correct sign.

Table 5.18 shows the results of the Johansen multivariate cointegration test for Oman using CPY as the financial development indicator. The null hypothesis of "no cointegration" is rejected only at the 5% level of significance; however, the null hypothesis of "at most one cointegration equation" is not rejected. The reported coefficient for CPY is -21.66 which is significant and has the correct sign.

Table 5.19 reports the Johansen multivariate cointegration test for Oman using BDY as the financial development indicator. Based on the trace statistic, the null hypothesis of "no cointegration" is rejected at the only at the 5% level of significance, however, the null hypothesis of "at most one cointegration equation" is not rejected. The reported coefficient for BDY is -58.88 which is significant and has the correct sign.

The multivariate cointegrating equation for testing the long-run relationship between economic growth and the financial development indicators M2Y, CPY and BDY in the case of Oman are as follows:

$$GDP - 2.811\ OPEN - 32.296\ GOV - 0.065\ CPI - 4.271\ M2Y = ECT_{t-1} \qquad (5.5)$$

$$OPEN + 10.\ 891\ GOV + 0.003\ CPI - 5.790\ M2Y = ECT_{t-1} \qquad (5.6)$$

$$GDP - 1.523\ OPEN - 34.329\ GOV - 0.019\ CPI - 21.660\ CPY = ECT_{t-1} \qquad (5.7)$$

$$GDP + 0.090\ OPEN - 13.972\ GOV - 0.075\ CPI - 58.881\ BDY = ECT_{t-1} \qquad (5.8)$$

Since we have two cointegration equations for M2Y, equation 5.5 is normalized on GDP and significant at the 1% level, while equation 5.6 is normalized on OPEN and is significant at the 5% level. Equations 5.7 and 5.8 are normalized on GDP.

According to the results shown in equations 5.5, 5.6, 5.7, and 5.8, it appears that there is a long-run relationship between GDP, OPEN, GOV, CPI, and M2Y, CPY or BDY and the signs of M2Y in equation 5.5, CPY in equation 5.7, and BDY in equation 5.8 are negative suggesting, since the signs are reversed, a positive relationship between economic growth and the financial indicators.

5.4.2.3 Saudi Arabia

Table 5.20 depicts the Johansen multivariate cointegration test for Saudi Arabia using M2Y as the financial development indicator. Based on the trace statistic, it is clear that the null hypothesis of "no cointegration" is rejected at both the 5% and 1% levels of significance; the trace statistic is 84.65 which is larger than the corresponding critical values of 68.52 and 76.07 at the 5% and 1% levels of significance respectively. The null hypothesis of "at most one cointegration equation" is rejected at the 5% level, and is not rejected at the 1% level, yet the null hypothesis of "at most two cointegration equations" is rejected at both levels of significance. Based on the 1% levels of significance, the

coefficient of M2Y is -1.145 which is, as the t-test shows, significant and has the correct sign. And based on the 5% level of significance, the coefficient is -0.351 which is significant based on the t-test.

As for the variable CPY, Table 5.21 shows the results of the cointegration test using CPY as the financial development indicator. The trace test indicates a value of 76.60 which is larger than the critical value at the 5% and 1% significance levels. This implies the rejection of the null hypothesis of "no cointegration" at both the 5% and 1% levels. But for the null hypothesis of "at most one cointegration equation" we fail to reject at both levels of significance. This implies the existence of one cointegration vector among our variables. The coefficient of CPY in the cointegration equation is -0.315 and the t-test is -4.19, which is significant and has the correct sign.

Table 5.22 reports the results of the Johansen cointegration test for Saudi Arabia using BDY as the financial development indicator. According to the trace test of 83.39, which the larger than the critical values at both levels of significance, the null hypothesis of "no cointegration" is rejected at both the 5% and 1% levels. On the other hand, the null hypothesis of "at most one cointegration equation" cannot be rejected at both levels of significance. The reported coefficient for BDY is -1.491 with at t-test of -6.52 which is significant and has the correct sign.

The multivariate cointegrating equation for testing the long-run relationship between economic growth and the financial development indicators M2Y, CPY and BDY in the case of Saudi Arabia are as follows:

$$GDP - 0.660\ OPEN + 1.649\ GOV - 0.003\ CPI - 1.145\ M2Y = ECT_{t-1} \qquad (5.9)$$

$$OPEN - 0.884\ GOV - 0.003\ CPI - 0.351\ M2Y = ECT_{t-1} \quad (5.10)$$

$$GDP + 0.039\ OPEN + 0.559\ GOV - 0.005\ CPI - 0.315\ CPY = ECT_{t-1} \quad (5.11)$$

$$GDP - 0.641\ OPEN + 0.610\ GOV - 0.002\ CPI - 1.491\ BDY = ECT_{t-1} \quad (5.12)$$

Since we have two cointegration equations for M2Y, equation 5.9 is normalized on GDP and significant at the 1% level, while equation 5.10 is normalized on OPEN and is significant at the 5% level. Equations 5.11 and 5.12 are normalized on GDP.

According to the results shown in equations 5.9, 5.10, 5.11, and 5.12, it appears that there is a long-run relationship between GDP, OPEN, GOV, CPI, and M2Y, CPY or BDY and the signs of M2Y in equation 5.9, CPY in equation 5.11, and BDY in equation 5.12 are negative suggesting, since the signs are reversed, a positive relationship between economic growth and the financial indicators.

The results of the eight cointegration tests reveal that all the results show a long-run relationship between all five variables in each cointegration equation. The results suggest that GDP, OPEN, GOV, CPI, and FI are cointegrated and move together in the long-run. A look at the signs of the financial development indicators in Tables 5.14 – 5.22 reveal that in the case of Oman and Saudi Arabia all the signs are negative suggesting, because the signs are reversed, a positive relationship with economic growth, while the signs of the same variables for Kuwait are positive suggesting that the relationship between financial development and economic growth is negative. This

means that from the eight cointegration equations in our cointegration test, six out of eight cointegration tests, the case of Oman and Saudi Arabia, are supportive of the existence of a positive long-run relationship between economic growth and financial development implying that in the long-run economic growth and financial development move together.

Table 5.14

Johansen Cointegration Test for Kuwait Using M2Y as the Financial Indicator

Hypothesized No. of CE(s)	*Eigenvalue*	*Trace Statistic*	*Coefficient of M2Y*	*t-stat*	*Critical Value*	
					5%	*1%*
None **	0.836	85.182			68.52	76.07
At most 1	0.425	27.278	***1.123***	***4.60***	47.21	54.46
At most 2	0.177	9.568			29.68	35.65
At most 3	0.077	3.324			15.41	20.04
At most 4	0.022	0.741			3.76	6.65

Table 5.15

Johansen Cointegration Test for Kuwait Using CPY as the Financial Indicator

Hypothesized No. of CE(s)	*Eigenvalue*	*Trace Statistic*	*Coefficient of M2Y*	*t-stat*	*Critical Value*	
					5%	*1%*
None **	0.879	113.134			68.52	76.07
At most 1	0.528	45.341	***0.794***	***8.27***	47.21	54.46
At most 2	0.291	21.304			29.68	35.65
At most 3	0.219	10.288			15.41	20.04
At most 4	0.071	2.366			3.76	6.65

Table 5.16

Johansen Cointegration Test for Kuwait Using BDY as the Financial Indicator

Hypothesized No. of CE(s)	*Eigenvalue*	*Trace Statistic*	*Coefficient of M2Y*	*t-stat*	*Critical Value*	
					5%	*1%*
None **	0.832	90.456			68.52	76.07
At most 1	0.369	33.257	***8.599***	***8.15***	47.21	54.46
At most 2	0.338	18.494			29.68	35.65
At most 3	0.103	5.249			15.41	20.04
At most 4	0.052	1.739			3.76	6.65

Notes:
(1) number of lags is one
(2) * denotes rejection of the null hypothesis at the 5 % level of significance.
(3) ** denotes rejection of the null hypothesis at the 5 % and 1% levels of significance.

Table 5.17

Johansen Cointegration Test for Oman Using M2Y as the Financial Indicator

Hypothesized No. of CE(s)	*Eigenvalue*	*Trace Statistic*	*Coefficient of M2Y*	*t-stat*	*Critical Value*	
					5%	*1%*
None **	0.735	88.116			68.52	76.07
At most 1*	0.668	52.171	***-4.271***	***-1.55***	47.21	54.46
At most 2	0.401	22.319	***-5.790***	***-7.35***	29.68	35.65
At most 3	0.239	8.440			15.41	20.04
At most 4	0.037	1.041			3.76	6.65

Table 5.18

Johansen Cointegration Test for Oman Using CPY as the Financial Indicator

Hypothesized No. of CE(s)	*Eigenvalue*	*Trace Statistic*	*Coefficient of M2Y*	*t-stat*	*Critical Value*	
					5%	*1%*
None *	0.783	72.111			68.52	76.07
At most 1	0.446	30.785	***-21.660***	***-3.26***	47.21	54.46
At most 2	0.260	14.816			29.68	35.65
At most 3	0.218	6.684			15.41	20.04
At most 4	0	0.020			3.76	6.65

Table 5.19

Johansen Cointegration Test for Oman Using BDY as the Financial Indicator

Hypothesized No. of CE(s)	*Eigenvalue*	*Trace Statistic*	*Coefficient of M2Y*	*t-stat*	*Critical Value*	
					5%	*1%*
None *	0.839	87.111			68.52	76.07
At most 1	0.533	37.697	***-58.881***	***-6.35***	47.21	54.46
At most 2	0.320	17.125			29.68	35.65
At most 3	0.188	6.688			15.41	20.04
At most 4	0.037	1.041			3.76	6.65

Notes:
(1) number of lags is one
(2) * denotes rejection of the null hypothesis at the 5 % level of significance.
(3) ** denotes rejection of the null hypothesis at the 5 % and 1% levels of significance.

Table 5.20

Johansen Cointegration Test for Saudi Arabia Using M2Y as the Financial Indicator

Hypothesized No. of CE(s)	*Eigenvalue*	*Trace Statistic*	*Coefficient of M2Y*	*t-stat*	*Critical Value*	
					5%	*1%*
None **	0.673	84.652			68.52	76.07
At most 1*	0.599	47.716	***-1.145***	***-6.60***	47.21	54.46
At most 2	0.247	17.523	***-0.351***	***-6.39***	29.68	35.65
At most 3	0.181	8.133			15.41	20.04
At most 4	0.045	1.535			3.76	6.65

Table 5.21

Johansen Cointegration Test for Saudi Arabia Using CPY as the Financial Indicator

Hypothesized No. of CE(s)	*Eigenvalue*	*Trace Statistic*	*Coefficient of M2Y*	*t-stat*	*Critical Value*	
					5%	*1%*
None **	0.624	76.604			68.52	76.07
At most 1	0.562	44.301	***-0.315***	***-4.19***	47.21	54.46
At most 2	0.268	17.055			29.68	35.65
At most 3	0.181	6.738			15.41	20.04
At most 4	0.003	0.127			3.76	6.65

Table 5.22

Johansen Cointegration Test for Saudi Arabia Using BDY as the Financial Indicator

Hypothesized No. of CE(s)	*Eigenvalue*	*Trace Statistic*	*Coefficient of M2Y*	*t-stat*	*Critical Value*	
					5%	*1%*
None **	0.701	83.395			68.52	76.07
At most 1	0.568	43.477	***-1.491***	***-6.52***	47.21	54.46
At most 2	0.233	15.752			29.68	35.65
At most 3	0.170	6.951			15.41	20.04
At most 4	0.023	0.790			3.76	6.65

Notes:
(1) number of lags is one
(2) * denotes rejection of the null hypothesis at the 5 % level of significance.
(3) ** denotes rejection of the null hypothesis at the 5 % and 1% levels of significance.

5.4.3 Error Correction Causality Test:

The causality test used here is based on the error correction representation for the variables that are found to be nonstationary and cointegrated. This section follows the methodology of Anwar et al. (1996).

This study is only concerned with causality between real GDP and the financial development indicators, M2Y, CPY, and BDY. Accordingly, this study will not discuss the causality between GDP and the other variables OPEN, GOV, and CPI.

The error correction representation of the cointegration equation for GDP, M2Y, CPY, and BDY are written as:

$$\Delta GDP = \beta_1 + \sum_{i=1}^{p}[\alpha_1 \Delta GDP_{t-i} + \gamma_1 \Delta OPEN_{t-i} + \phi_1 \Delta GOV_{t-i} + \delta_1 \Delta CPI_{t-i} + \mu_1 \Delta M2Y_{t-i}] + \lambda_1 ECT_{t-1} + \varepsilon_1 \quad (5.13)$$

$$\Delta M2Y = \beta_2 + \sum_{i=1}^{p}[\alpha_2 \Delta GDP_{t-i} + \gamma_2 \Delta OPEN_{t-i} + \phi_2 \Delta GOV_{t-i} + \delta_2 \Delta CPI_{t-i} + \mu_2 \Delta M2Y_{t-i}] + \lambda_2 ECT_{t-1} + \varepsilon_1 \quad (5.14)$$

$$\Delta GDP = \beta_3 + \sum_{i=1}^{p}[\alpha_3 \Delta GDP_{t-i} + \gamma_3 \Delta OPEN_{t-i} + \phi_3 \Delta GOV_{t-i} + \delta_3 \Delta CPI_{t-i} + \mu_3 \Delta M2Y_{t-i}] + \lambda_3 ECT_{t-1} + \varepsilon_1 \quad (5.15)$$

$$\Delta CPY = \beta_4 + \sum_{i=1}^{p}[\alpha_4 \Delta GDP_{t-i} + \gamma_4 \Delta OPEN_{t-i} + \phi_4 \Delta GOV_{t-i} + \delta_4 \Delta CPI_{t-i} + \mu_4 \Delta CPY_{t-i}] + \lambda_4 ECT_{t-1} + \varepsilon_1 \quad (5.16)$$

$$\Delta GDP = \beta_5 + \sum_{i=1}^{p}[\alpha_5 \Delta GDP_{t-i} + \gamma_5 \Delta OPEN_{t-i} + \phi_5 \Delta GOV_{t-i} + \delta_5 \Delta CPI_{t-i} + \mu_5 \Delta M2Y_{t-i}] + \lambda_5 ECT_{t-1} + \varepsilon_1 \quad (5.17)$$

$$\Delta BDY = \beta_6 + \sum_{i=1}^{p}[\alpha_6 \Delta GDP_{t-i} + \gamma_6 \Delta OPEN_{t-i} + \phi_6 \Delta GOV_{t-i} + \delta_6 \Delta CPI_{t-i} + \mu_6 \Delta BDY_{t-i}] + \lambda_6 ECT_{t-1} + \varepsilon_1 \quad (5.18)$$

From the previous equations, four propositions or scenarios for the direction of causality between financial development and economic growth are possible:

1) Unidirectional causality from GDP to FI:

According to this scenario, financial development follows economic growth; "demand-following phenomenon". The development and creation of financial intermediation is a response to the demand for financial services. This view is supported by Patrick (1966) who argued that in later stages of economic development the relationship between financial development and economic growth is a "demand-following phenomenon".

2) Unidirectional causality from FI to GDP:

According to this scenario, financial development causes economic growth; "supply-leading phenomenon". In this situation, the development of financial intermediation proceeds and helps in the development of the economy's real sector through transferring and channeling resources to the more productive sectors. This situation is supported Patrick (1966) who argues that this phenomenon is present in early stages of economic development. In addition, it is supported by empirical work done by King and Levine (1993b,c), and Odedokum (1996).

3) Bidirectional (Bilateral) causality:

In this scenario, the causality is a two-way causality; economic growth causes financial development and financial development causes economic growth. According to

this proposition, economic growth stimulates and permits financial development, and in turn, this financial development results in faster and accelerated economic growth.

4) No causality (variables are independent):

According to this proposition, financial development and economic growth are not related and there is no causality between them. The development of financial intermediation and the development of the economy are caused by other factors that have a role in their development. This scenario can only occur in the case of standard Granger causality test. However, in the case of cointegrated variables, the error correction base causality should not include this scenario since causality should exist in at least one direction in the I(1) variables (Engle and Granger, 1987).

In the error correction equations 5.13 – 5.18, if the financial development indicators have a negative coefficient in the cointegrating equations, implying a positive economic relation to GDP, like in the case of Oman and Saudi Arabia, then the adjustment in following periods would require the coefficients of ECT_{t-1} to be negative for the GDP equation and positive for financial development indicators. On the other hand, if the financial development indicators have a positive coefficient in the cointegrating equations, implying a negative economic relation to GDP, like in the case of Kuwait, then the adjustment in following periods would require the coefficients of ECT_{t-1} to be negative for both the GDP equation and the financial indicator equation.

An F-test was performed on the null hypotheses that $\mu_i = \lambda_i = 0$ for all i in equations 5.13, 5.15, and 5.17. And the same test was performed on the null hypotheses that

$\alpha_i = \lambda_i = 0$ for all *i* in equations 5.14, 5.16, and 5.18. The results of the F-test, as shown in Table 5.23, conclude the rejection of the null hypotheses for all equations for all three countries.

The results of the F-test permit us to proceed in our analysis of the causality issue. In the next step we investigate the direction of the coefficients on the ECT_{t-1}, the λs, to see which variables adjust in response to any disequilibrium to return to the long-run equilibrium relationship. If we assume that there is positive value of ECT_{t-1} (i.e. disequilibrium), then one of our variables, GDP, OPEN, GOV, CPI, M2Y or all of them should adjust to return to the long-run equilibrium. In the case of a positive value for ECT_{t-1}, the coefficient of the λ for GDP should be negative which means that GDP should decrease in the case of a positive ECT_{t-1} and the coefficients of λ for the financial development indicators should be positive which means that the financial development indicators should increase in the case of a positive shock.

5.4.3.1 Adjustment Coefficients (Long-Run Causality):

5.4.3.1.1 Kuwait:

The results of the error correction model for Kuwait are depicted in the right columns of Table 5.24. In the case of M2Y, the results show that the error correction term in both the GDP and M2Y equations are not significant, indicating that neither GDP nor M2Y adjust to return to the long-run equilibrium, however, the results indicates that GOV is the only variable that adjusts to return to equilibrium. In the case of CPY, the table also shows that the error correction term in both the GDP and CPY equations are not significant, indicating that neither GDP nor CPY adjust to return to the long-run

equilibrium, however, the results indicates that GOV is the only variable that adjusts to return to equilibrium. As for the case of BDY, the table shows that only GOV and BDY adjust to return to the long-run equilibrium. Specifically, if there is a positive value of ECT_{t-1}, then GOV would increase by 11 percent annually and BDY would decrease by 5 percent annually to return to equilibrium.

5.4.3.1.2 Oman:

The right columns of Table 5.25 depict the results of the error correction model for the case of M2Y, CPY, and BDY in Oman. The results show that, in the case of M2Y, the error correction term for GOV and M2Y are significant and have the correct sign indicating that in the case of disequilibrium, these two variables will adjust to return to the long-run equilibrium. Specifically, if there is a positive value of ECT_{t-1}, then GOV would increase by 1.7 percent annually and M2Y would increase 4.1 percent annually to return to equilibrium. As for the case of CPY, the table shows that the error correction term for GOV and CPY are significant indicating that both variables adjust to return to the long-run equilibrium; GOV would increase by 2 percent annually and CPY would increase by 7.7 percent annually. Finally, in the case of BDY, the table shows that the coefficients of the error correction term for GOV and BDY are significant indicating that both variables adjust to return to the long-run equilibrium; GOV would increase by 3.4 percent annually and BDY would increase by 0.7 percent annually.

5.4.3.1.3 Saudi Arabia:

The right columns of Table 5.26 depict the results of the error correction model for the case of M2Y, CPY, and BDY. The results, in the case of M2Y, show that only the error correction term for M2Y is significant and has the correct sign. Accordingly, in the case of disequilibrium, only M2Y will adjust to return to the long-run equilibrium. Specifically, if there is a positive value of ECT_{t-1}, then M2Y would increase by 56 percent annually to return to equilibrium. As for the case of CPY, the table shows that only the error correction term for GDP is significant while OPEN and CPY are significant, however, they have the incorrect signs. Accordingly, only GDP would decrease by 8.4 percent annually to return to the long-run equilibrium. Finally, in the case of BDY, the table shows that the coefficients of the error correction term for BDY, OPEN, and CPI are all significant. Accordingly, if there is a positive value of ECT_{t-1}, then all three variables would adjust to return to equilibrium.

5.4.3.2 Short-Run Causality:

Now we turn to the final step in analyzing the causality issue. Specifically, to test the α_i and μ_i coefficients in the error correction equations to determine whether or not there is short-run causality between economic growth and financial development.

5.4.3.2.1 Kuwait:

The middle columns of Table 5.24 depict the results of the chi-statistics and their associated p-values for the short-run causality between GDP and the financial development indicators in the case of Kuwait. The conclusion reached from the results is

that GDP causes M2Y in the short-run; unidirectional causality (i.e. one way causality) from GDP to M2Y. The results also show that there is no short-run causality between CPY and GDP. As for BDY, the results show that GDP Granger cause BDY in the short-run; unidirectional causality from GDP to BDY.

5.4.3.2.2 Oman:

The middle columns of Table 5.25 show the results of the short-run causality for Oman. The causality between M2Y and GDP is unidirectional running from M2Y to GDP. The causality between CPY and GDP is a unidirectional running from CPY to GDP. As for BDY, the results show that there is no short-run the causality between GDP and BDY.

5.4.3.2.3 Saudi Arabia:

The results of the short-run causality for Saudi Arabia are shown in the middle columns of Table 5.26. All three financial development indicators, M2Y, CPY, and BDY appear to Granger cause GDP in the short-run. Specifically, the short-run causality is a unidirectional causality from finance to economic growth; "supply leading" phenomena.

The results of both the short-run and long-run causality for all three countries, Kuwait, Oman, and Saudi Arabia are summarized in Table 5.27. These results show that for Kuwait, GDP causes BDY in both the long-run and short-run, while GDP causes M2Y only in the short-run. It should be mentioned here that the causality in the case of Kuwait is negative; since the relationship between GDP and the financial development indicators in the cointegration equations are negative, then the causality is negative.

As for Oman, the results show unidirectional causality in the long-run from GDP to all three financial development indicators, while in the short-run the causality is from M2Y and CPY to GDP. As for Saudi Arabia, the results show that in the long-run GDP causes both M2Y and BDY, while CPY causes GDP. However, in the short-run all the financial development indicators cause GDP.

Finally, we applied three tests on our VEC; the serial correlation test, the Jarque-Bera normality test, and the heteroskedasticity test. The results of the three tests are summarized in Table 5.28, which indicates that all three financial development indicators in all three countries have passed the serial correlation test. As for the normality test, only the financial development indicators for Kuwait failed to pass the test. Dummy variables were included in the VEC to solve this problem, however, this attempt did not succeed and the results of the test, after including the dummy variable, indicates that all three indicators did not pass the test. As for the heteroskedasticity, the results in Table 5.28 show that all three financial development indicators for Kuwait and Oman pass the heteroskedasticity test, that is, we failed to reject the null hypothesis of "homoscedasticity". As for Saudi Arabia, the VEC that contains the equation for M2Y and BDY failed the test of heteroskedasticity, that is, the null hypothesis of "homoscedasticity" was rejected which means that the variance of the residuals are not equal across the data. Current econometric methods make it difficult to find a correction for the problem.

From the cointegration test for Oman and Saudi Arabia, it seems that, in general, there is strong evidence that financial development and economic growth are cointegrated and this relationship is positive, which is supported by a large body of empirical studies.

On the other hand, the evidence for Kuwait suggests that financial development and economic growth are cointegrated, however, the relationship is negative, a finding contrary to most empirical studies.

The causality tests for Oman and Saudi Arabia, suggest that, in general, there is evidence that economic growth cause financial development in the long-run (i.e. "demand-following" phenomena). In the short-run this causality is, in general, from financial development to economic growth (i.e. "supply-leading" phenomena). On the other hand, the causality tests for Kuwait, suggest that, causality is from economic growth to financial development.

Table 5.23

Wald Coefficient Restrictions Test

Country	*equation*	*Null hypothesis*	*F-stat*	*Prob.*	*Chi-sq.*	*Prob.*
Kuwait	*GDP*	$\mu_1 = \lambda_1 = 0$	170.142	0	340.284	0
	M2Y	$\alpha_2 = \lambda_2 = 0$	240.898	0	481.796	0
	GDP	$\mu_3 = \lambda_3 = 0$	156.044	0	312.089	0
	CPY	$\alpha_4 = \lambda_4 = 0$	156.749	0	313.499	0
	GDP	$\mu_5 = \lambda_5 = 0$	214.555	0	429.110	0
	BDY	$\alpha_6 = \lambda_6 = 0$	265.914	0	531.828	0
Oman	*GDP*	$\mu_1 = \lambda_1 = 0$	2.496	0.106	4.992	0.082
	M2Y	$\alpha_2 = \lambda_2 = 0$	6.444	0.006	12.889	0.001
	GDP	$\mu_3 = \lambda_3 = 0$	3.421	0.051	6.843	0.032
	CPY	$\alpha_4 = \lambda_4 = 0$	7.110	0.004	14.220	0
	GDP	$\mu_5 = \lambda_5 = 0$	2.805	0.083	5.610	0.060
	BDY	$\alpha_6 = \lambda_6 = 0$	7.770	0.003	15.540	0
Saudi Arabia	*GDP*	$\mu_1 = \lambda_1 = 0$	8.055	0.001	16.110	0
	M2Y	$\alpha_2 = \lambda_2 = 0$	13.089	0	26.178	0
	GDP	$\mu_3 = \lambda_3 = 0$	15.919	0	31.839	0
	CPY	$\alpha_4 = \lambda_4 = 0$	15.893	0	31.787	0
	GDP	$\mu_5 = \lambda_5 = 0$	7.070	0.003	14.141	0
	BDY	$\alpha_6 = \lambda_6 = 0$	14.849	0	29.698	0

Table 5.24: Short-Run Causality and Adjustment Coefficients (Long-Run Causality) for Kuwait

	Dependent Variable	Short Run Causality (p-value)				Adjustment Coefficients (ECT_{t-1})	
		FI → GDP		GDP → FI		Coefficient	t-stat
		Chi.sq(χ^2)	p-value	Chi.sq(χ^2)	p-value		
M2Y Equation	Δ GDP	0.24	0.61	--	--	-0.907	-0.96
	Δ OPEN	--	--	--	--	0.033	0.54
	Δ GOV	--	--	--	--	0.158*	4.44
	Δ CPI	--	--	--	--	-0.763	-0.71
	Δ M2Y	--	--	4.79*	0.02	-0.148	-1.34
CPY Equation	Δ GDP	0.15	0.69	--	--	-0.756	-1.22
	Δ OPEN	--	--	--	--	-0.006	-0.14
	Δ GOV	--	--	--	--	0.066*	2.40
	Δ CPI	--	--	--	--	-0.223	-0.31
	Δ CPY	--	--	0.29	0.58	-0.128	-1.11
BDY Equation	Δ GDP	0.16	0.68	--	--	-1.292	-1.63
	Δ OPEN	--	--	--	--	0.031	0.58
	Δ GOV	--	--	--	--	0.112*	3.24
	Δ CPI	--	--	--	--	-0.698	-0.75
	Δ BDY	--	--	6.71*	0	-0.054*	-2.11

* Indicates significance of the test at the 1% level.

Table 5.25: Short-Run Causality and Adjustment Coefficients (Long-Run Causality) for Oman

	Dependent Variable	Short Run Causality (p-value)				Adjustment Coefficients (ECT_{t-1})	
		FI → GDP		GDP → FI		Coefficient	t-stat
		Chi.sq(χ^2)	p-value	Chi.sq(χ^2)	p-value		
M2Y Equation	Δ GDP	9.07*	0.01	--	--	0.077	1.927
	Δ OPEN	--	--	--	--	-0.003	-0.154
	Δ GOV	--	--	--	--	0.017*	2.021
	Δ CPI	--	--	--	--	-1.269	-2.165
	Δ M2Y	--	--	1.72	0.42	0.041*	4.687
CPY Equation	Δ GDP	6.78*	0.03	--	--	-0.045	-0.545
	Δ OPEN	--	--	--	--	0.020	0.468
	Δ GOV	--	--	--	--	0.060*	4.976
	Δ CPI	--	--	--	--	-2.071	-1.823
	Δ CPY	--	--	4.39	0.11	0.077*	4.976
BDY Equation	Δ GDP	1.99	0.36	--	--	0.006	0.167
	Δ OPEN	--	--	--	--	-0.026	-1.080
	Δ GOV	--	--	--	--	0.034*	4.298
	Δ CPI	--	--	--	--	0.088	0.133
	Δ BDY	--	--	0.11	0.94	0.007*	2.309

* Indicates significance of the test at the 1% level.

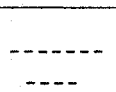
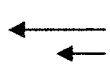
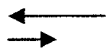
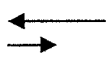
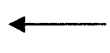
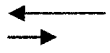
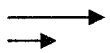
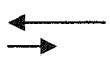
Table 5.26: Short-Run Causality and Adjustment Coefficients (Long-Run Causality) for Saudi Arabia

	Dependent Variable	Short Run Causality (p-value)				Adjustment Coefficients (ECT_{t-1})	
		FI → GDP		GDP → FI		Coefficient	t-stat
		Chi.sq(χ^2)	p-value	Chi.sq(χ^2)	p-value		
M2Y Equation	Δ GDP	5.82*	0.01	--	--	0.106	3.356
	Δ OPEN	--	--	--	--	0.378	1.400
	Δ GOV	--	--	--	--	-0.080	-0.931
	Δ CPI	--	--	--	--	10.140	1.463
	Δ M2Y	--	--	0.15	0.69	0.556*	2.436
CPY Equation	Δ GDP	15.02*	0	--	--	-0.084*	-5.530
	Δ OPEN	--	--	--	--	-0.433	-4.376
	Δ GOV	--	--	--	--	0.025	0.789
	Δ CPI	--	--	--	--	-4.454	-1.303
	Δ CPY	--	--	0.01	0.90	-0.144	-3.722
BDY Equation	Δ GDP	9.08*	0	--	--	0.129	3.334
	Δ OPEN	--	--	--	--	0.648*	2.030
	Δ GOV	--	--	--	--	-0.036	-0.330
	Δ CPI	--	--	--	--	16.804*	2.104
	Δ BDY	--	--	0.01	0.91	0.399*	2.497

* Indicates significance of the test at the 1% level.

Table 5.27

Summary of Short-run and Long-run Causality Test for all countries (Kuwait, Oman, and Saudi Arabia)

Country	*Financial Variable*	*Causality Direction*	*Economic Growth*	*Short-Run*	*Long-Run*
Kuwait	M2Y		GDP	Unidirectional Causality	No Causality
	CPY			No Causality	No Causality
	BDY			Unidirectional Causality	Unidirectional Causality
Oman	M2Y		GDP	Unidirectional Causality	Unidirectional Causality
	CPY			Unidirectional Causality	Unidirectional Causality
	BDY			No Causality	Unidirectional Causality
Saudi Arabia	M2Y		GDP	Unidirectional Causality	Unidirectional Causality
	CPY			Unidirectional Causality	Unidirectional Causality
	BDY			Unidirectional Causality	Unidirectional Causality

* Long arrow indicates long-run causality.

* Short arrow indicates short-run causality.

* Dotted line indicates no causality.

Table 5.28

Tests on the VEC

Country		*Serial Correlation Test*		*Jarque-Bera Normality Test*		*Heteroskedasticty Test*	
		LM-Stat	*Prob.*	*Jarque-Bera Stat*	*Prob.*	*Chi-sq*	*Prob.*
Kuwait	**M2Y equation**	22.24	0.621	164.30*	0	164.97	0.782
	CPY equation	26.28	0.392	274.196*	0	145.09	0.973
	BDY equation	24.62	0.483	152.88*	0	157.45	0.886
Oman	**M2Y equation**	29.92	0.227	13.74	0.185	178.69	0.513
	CPY equation	24.51	0.939	11.85	0.295	172.84	0.635
	BDY equation	13.85	0.964	14.61	0.146	196.94	0.183
Saudi Arabia	**M2Y equation**	21.07	0.688	9.76	0.461	216.22*	0.033
	CPY equation	29.90	0.227	12.79	0.235	199.78	0.148
	BDY equation	21.31	0.675	10.37	0.408	222.42*	0.017

* indicates the rejection of the null hypothesis.

5.5 Conclusion:

In this chapter, nine OLS regressions were performed using real non-oil GDP as the dependent variable. In addition, nine cointegration tests and thirty six causality tests were performed for Kuwait, Oman, and Saudi Arabia.

The results of both methodologies for Kuwait give a negative relationship between economic growth (as measured by non-oil real GDP and real GDP) and financial development; however this negative relationship is not significant in the first methodology. There are several possible explanations for these results. One explanation is that the financial system in Kuwait has been affected by two main shocks over the past twenty years. The first shock was the collapse of the unregulated stock market (Souk al-Manakh) in 1982 which left many investors and creditors suffering from severe losses and forcing government to own shares in many companies as an attempt to relieve creditors during this collapse. The collapse was a result of huge share dealing using postdated checks of which some have bounced back. This collapse had seriously stroked the Kuwaiti economy as a whole and the financial system in particular. In addition, the debts resulting from the crash left all banks insolvent, except for the largest commercial bank in Kuwait, the National Bank of Kuwait. The second shock was the Iraqi invasion of Kuwait in 1990 which severely affected the financial and banking sectors and may have reduced the financial and banking activities even after the liberalization of Kuwait. Banks have suffered from the reduction in the number of employees, many of whom in the prewar period were foreigners. The Iraqi invasion threats continued to be a security concern for Kuwait until 2003. Another explanation for the results obtained for Kuwait could be because of the demographic structure of Kuwait. Foreign workers compose a

large portion of the Kuwaiti population. The population of Kuwait as of 2003 was 2.1 Millions, 60 percent (1.3 Millions) of which are foreign workers. And according to the Kuwaiti law, the foreign population is not allowed to own property in the country. Accordingly, foreign workers tend to remit their earnings to their home countries. A third explanation for the results could be the limited capacity of the Kuwaiti market and the lake of real "non-oil" economy.

The results for Oman are supportive of the view that financial development has a positive role in determining economic growth as measured by real non-oil GDP, however, this is only true in the short-run for the case of real GDP. Since that Oman can be considered in early stages of economic development and less developed than other GCC countries, the results obtained are supportive of Patrick's (1966) concept that in early stages of economic development financial development plays a leading role in determining economic growth, however, this is only true in the short-run.

Saudi Arabia's results are the same as in the case of Oman. However, the OLS regressions for Saudi Arabia are less robust compared to that of Oman. This is also consistent with Patrick's view that as countries develop the role of financial development in economic growth declines.

CHAPTER SIX

SUMMARY, CONCLUSION AND IMPLICATIONS

6.1 Summary and Conclusion:

The relationship between financial development and economic growth and the causality between them is a debated issue. A number of scholars don't believe that the development of the financial system has any significant role in determining economic growth (see Robinson, 1954; Lucas, 1988). On the other hand, a growing body of empirical research has found evidence of a robust relationship between financial development and economic growth (see Goldsmith, 1969; Bencivenga and Smith, 1991; King and Levine, 1993; Murinde and Eng, 1994; Odedokum, 1996; Levine and Zervos, 1998; Beck et al., 2000; Chang and Ho, 2001).

The purpose of this study is to investigate the short-run and the long-run relationship and causality between financial development and economic growth in Kuwait, Oman, and Saudi Arabia, using OLS estimation, Johansen (1988) multivariate cointegration technique, and short-run and long-run Granger causality within the error-correction mechanism (ECM). Specifically, this study attempts to address three questions: (1) Are financial development and economic growth cointegrated in the case of Kuwait, Oman, and Saudi Arabia? (2) Is there a long-run causation between financial development and economic growth, and if so what is the direction of causality? (3) Is

there a short-run causation between financial development and economic growth, and if so what is the direction of causality?

This study uses three alternative financial development indicators: (1) the broad money stock (M_2) to GDP ratio to capture the overall ***size*** of the formal financial intermediary sector, (2) commercial bank claims on the private sector to GDP ratio (CPY) which represents the share of credit channeled through the private sector, and (3) the ratio of bank deposit liabilities to GDP which is used as a ***quality*** proxy for financial development.

The financial systems of Kuwait, Oman, and Saudi Arabia have changed considerably over the last three decades. The structure of the financial system and the banking sectors in the three countries have seen rapid growth and are fairly developed with the central bank in each country regulating and supervising them.

The measure of financial deepening, the ratio of M2 to GDP, reveals that Kuwait, Oman, and Saudi Arabia are well monetized and have reached a fairly high level of financial deepening and a high degree of financial sophistication. In addition, commercial bank credit to the private sector as a ratio of GDP in the three countries has, in general, increased steadily during the period of this study. Further, bank deposit liabilities as a ratio of GDP in the three countries has also increased steadily during the last three decades indicating steady improvement in the quality of financial services.

The raw financial development indicators are highest in the case of Kuwait. The ratio of broad money stock to GDP, the ratio of commercial bank claims on the privates sector to GDP, and the ratio of bank deposits liabilities to GDP are all higher for Kuwait than both Oman and Saudi Arabia. Apparently, this indicates a higher level of financial

development in Kuwait; however we need to look at the econometric results to see if this translates into any significant effect on economic growth.

Two methodologies were used in this study. The first methodology is the OLS regression using non-oil GDP and applying the model used by Odedokum (1996) and the second methodology utilizes the Johansen multivariate cointegration and the error correction based causality following the model used by King and Levine (1993b,c).

The empirical results of the OLS regressions reveal that in case of Kuwait the relationship between financial development indicators and economic growth, as measured by the growth of real non-oil GDP, is negative. While in the case of Oman and Saudi Arabia, the results reveal that there is a positive relationship between the financial development indicators and economic growth.

The empirical results of the cointegration test reveal that there is a long-run relationship between the financial development indicators and economic growth as measured by real GDP, that is, financial development and economic growth move together in the long-run for all countries. In the case of Kuwait, this long-run relationship is negative for all three alternative financial development indicators. While for Oman and Saudi Arabia, this long-run relationship is positive. These results confirm the results found by the OLS regressions where the relationship between the financial development indicators and economic growth were found to be negative in the case of Kuwait and positive in the case of Oman and Saudi Arabia.

As for the error correction based causality, the results indicate that for Kuwait, in the long-run, GDP causes BDY. While in the short-run GDP causes both M2Y and BDY. As for Oman, the results show that the causality in the long-run is unidirectional from

GDP to all three financial development indicators (M2Y, BDY, and CPY), while in the short-run the causality is unidirectional from M2Y and CPY to GDP. Accordingly, in the long-run economic growth Granger-causes the size and quality of the financial sector and Granger-causes credit provided to the private sector, while in the short-run the size of the financial sector and credit provided to the private sector Granger-cause economic growth. As for Saudi Arabia, the results show that in the long-run the causality is unidirectional from GDP to both M2Y and BDY, while the causality, in the long-run, between GDP and CPY is unidirectional from CPY to GDP. As for the short-run, in the case of Saudi Arabia, the causality is unidirectional from financial development indicators to GDP. Accordingly, in the long-run only credit provided to the private sector Granger-causes economic growth, while in the short-run, the size and quality of the financial sector and credit provided to the private sector all Granger-cause economic growth.

6.2 Implications:

The results of this study have important implications for Kuwait, Oman, and Saudi Arabia. In the case of Oman and Saudi Arabia, the results suggest that policies designed to encourage further investments in the financial and banking systems will be beneficial for promoting economic growth. Specifically, given that in the short-run both the size of the financial sector and credit provided to the private sector are important, this could be an indicator that more investment in the financial and banking sectors may increase the role played by these sectors in determining economic growth in the long-run. In addition, given that in the long-run credit provided to the private sector in the case of Saudi Arabia causes economic growth, then this variable can be an important policy

instruments in the hand of policy makers in attempting to accelerate economic growth. Accordingly, in Oman and Saudi Arabia, there is scope for more improvements in the financial and banking sectors and there is room for more measures to enhance competition in finance and banking. On the other hand, the results in the case of Kuwait suggest something else. One hypothesis to explain the results is that the financial system in Kuwait seems to be suffering from the regional crises that resulted from the Iraqi invasion of Kuwait in 1990. Because stability is a necessary condition for having a positive relationship between financial development and economic growth, this crisis, together with other factors, may explain the negative relationship between financial development and economic growth. In the case of Kuwait it seems more important to identify the causes leading to instability and seek to resolve those problems.

Kuwait, Oman and Saudi Arabia have implemented policies toward the liberalization of financial markets; however, there is still room for more liberalization policies. Based on this study it seems that further financial liberalization policies should have a positive effect on the development of the financial system and on economic growth. One issue that will dominate in the near future in these countries is how to deal with competition from international banks. Some of the issues will involve considering the competitiveness and efficiency of local banks.

Harmonization of regulations of the financial system and cooperation in financial and monetary policies between Kuwait, Oman, and Saudi Arabia, or going further to creating a monetary union between all the GCC countries, should also have a positive impact on the development of the financial system which, in turn, would translate into a higher rate of growth for these economies.

6.3 Suggestions for Future Studies:

There are several suggestions this study offers for future research. Due to the lack of data available for the required period, this study only included three GCC countries Kuwait, Oman, and Saudi Arabia. Generating, collecting, and making data available for the other three GCC countries Bahrain, Qatar, and United Arab Emirates would be beneficial for the purpose of comparing the financial development and its role in economic growth in the six GCC countries.

This study only used three financial development indicators, the broad money stock as a ratio of GDP (M2Y), bank claims on the private sector as a ratio of GDP (CPY), and bank deposit liabilities as a ratio of GDP (BDY). A suggestion would be, if the data would be available, to look at additional financial development indicators. More and varied indicators may give policy makers better information about which areas of financial development are most important for them to focus on to increase economic growth. Such indicators could include credit provided by specialized credit institutions (i.e., development banks), indicators that measures the concentration of the commercial banking sector, indicators that separate between public and private ownership of commercial banks and there role in economic growth (Beck et al., 2003).

Our study of the link between financial development and economic growth is conducted at the macroeconomic level (i.e., the country level). Another suggestion would be, if data become available, to study the link between financial development and economic growth at the microeconomic level (i.e., the firm level); that is using firm-level data to study the role of financial constraints on both financial development and employment and their contribution to economic growth.

In the literature, there is some interest in including some proxies measuring societal norms and legal institutions in studying the impact of financial development on economic growth (see Levine, 1998 and Beck et al., 2000). The inclusion of data on the legal system would be beneficial in determining whether or not legal institutions have a direct impact on financial development and indirectly on economic growth in the case of GCC countries. In addition, if data could be generated and made available on some societal norms in these countries, that would make it possible to study the relationship between these norms and both financial development and economic growth.

Some researchers have studied the relationship between financial development and economic growth by examining the relationship between stock market development and economic growth (see Levine and Zervos (1998)). It seems that it would be important to evaluate the relationship and link between stock market development, financial development, and economic growth in Kuwait, Oman, and Saudi Arabia in addition to the rest of the GCC countries.

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