The Stock Market Development, The Banking Sector Development and Economic Growth: The Case of Iran

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ABSTRACT

This thesis investigates the empirical relationship between financial sector development and economic growth in Iran from 1967 through 2009. Results reveal that real income growth in Iran is in long run relationship with financial sector. Real income converges to its long term level by 18.73% speed of adjustment through financial sector. Finally, causality results suggest that in Iran "*demand following*" is driven; therefore, the hypothesis can be confirmed in the case of Iran.

Keywords: financial sector; real income; causality; Iran.

ÖZ

Bu çalışma Iran finansal sektör büyümesi ile ekonomik büyüme arasındaki ilişkiyi ortaya çıkarmayı hedeflemektedir. Yapılan analizler sonucu, finansal büyüme ile ekonomik büyüme arasında uzun dönemli bir denge ilişkisi olduğu ortaya konmuştur. Iran'da reel gelir uzun dönem denge değerlerine 18.73% ile yaklaşmaktadır. Son olarak, nedensellik testleri sunucu, Iran ekonomisi için, "talep-yanlı finansal büyüme" hipotezinin geçerliliği ortaya konmuştur.

Anahtar kelime: finansal sektör; ekonomik büyüme; Nedensellik; Iran.

This thesis dedicated to my family as the most important people in my life

for their unflagging love and support throughout my life

ACKNOLEDGMENTS

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LIST OF ABBREVIATION

ADF test   Augmented Dickey-Fuller test

AR   Auto Regressive

AIC   Akaike Information Criteria

M2   Money and Quasi Money as Ratio to GDP

DC   Domestic Credit Provided by Banking Sector as Ratio to GDP

SHARES   Number of Shares Traded

ECM   Error Correction Model

GDP   Gross Domestic Product

PP test   Phillips-Peron Test

SIC   Schwartz Information Criterion

VAR   Vector Auto Regressive Model

VECM   Vector Error Correction Model

Chapter 1

INTRODUCTION

In recent years, many studies are conducted on the subject of how financial market developments affect and be related to the economic growth of various countries. Among economists always this question arise that which factors have an effect on economic growth and how is their influence on it. Of the reason that makes this issue so significant among the scientist's studies is the key role of financial markets in outfit and conduction of the existing funds in the economy toward the industrial and production sectors and this way economic growth will be enhanced (Shaw, 1973), (McKinnon, 1973), (Levine & Zervos, 1998). The relationship of the financial sector development and economic growth has been the focus of lots of economic discussions, but because results of these studies have been different, scientists never came to an agreement about this debate and never get to a unique consensus. Some of these studies emphasis on the positive effect of the financial market development on economic growth (Gold Smith, 1969), (McKinnon, 1973), (Shaw, 1973), (Fry, 1985) (King & Levine, 1993a) while some others suggest that financial development is the yield of economic growth (Robinson, 1952).The main purpose of these studies is to explore that how stock markets and financial sectors affect the economy. In conclusion, these findings help authorities to make accurate policies.

1.1 Functions of the financial system

Financial system and its functions always have been the basic part of all studies. To set up the correct links between financial development and economic growth, a debate of these functions is very important. Accurate implementation of financial system duties will result in efficient allocation of resources. Financial system acts as an intersection between the savers and the final users of existing funds in economy. As a medium for these funds, financial system has functions that a number of them are as follow:

1. Financial intermediaries do the important, costly and time-consuming task of evaluating firms, managers and plans. For example, the banks evaluate the credit risk and the firm's future earnings potential. Commercial banks, investment firms and investment banks, examine the long-term growth of firms and products. The financial system, which does the assessment of firms, managers, and plans better, has more chances to specify the best investment from savings of the society (Levine R. , 1990).

2. Financial intermediaries and participants in financial markets, provide administration and control of firms and managers. Financial intermediaries would help to make sure managers are trying in the interests of shareholders and creditors of the firm. Without such management and control, it is likely that managers utilize firm's resources in the interests of their personal goals (Stiglitz & Weiss, 1983).

3. Financial system, facilitate business and trade. In lowest level, money as one of the financial instruments minimizes the need for exchange, reduces transaction cost, encourages trade and stimulates expertise. In more complex level credit cards, payment

and settlement system facilitate a large number of economic activities (Levine R. , 2003).

4. Financial system prices the risk and makes risk integration mechanisms, adjustment and exchange of it possible. Recent utilization of options and future contracts in order to bridle of interest rate risk of financial institutions, change the assets maturity and debt maturity in order to attract savers and investors satisfaction. The trade papers, which include the greatest benefits such as shares and bonds may does not contain that much of liquidity and risk value in which customers are looking for. In these cases, financial intermediaries adapt mentioned financial instruments with demand and requirement of the customers and through this way manage the risk, Nieuwerburgh et al., (2006).

1.2 Financial Market Development and Economic Growth Relationship

Numerous studies have been conducted on the subject of financial markets development and economic growth either from theoretical or empirical point of view. The existing studies indicate that the growth or the per capita income cannot be derived only by rise in labor force or capital. Significant part of the observed growth can be explained by technical development. In some growth models, technical development is considered as an endogenous factor to the model. That is why these kinds of models are called endogenous models. However, in exogenous models, technical development is considered as exogenous factor. As well, in the format of traditional models Solow (1956) believes, even in short-time financial development has an effect on growth through rise in the level and efficiency of capital accumulation.

Schumpeter (1911) proposed endogenous growth models to explain the interconnection between innovation and financial phenomenon. Theses growth models beginning to focus on the role of financial sector in economic growth process. The endogenous economic growth theories claim that in addition to explanation of internal consistency are able to clarify the issues related to the differences in the level of economic development of countries as well as the dissimilarities in growth rates.

Shaw (1973), McKinnon (1973) propose financial development is a strategy and can be considered as an introduction in order to reach economic growth. Shaw (1973), McKinnon (1973) proposed the financial freedom theory on the basis of Schumpeter (1911) studies. According to this theory, elimination of government restrictions on the banking sector cause to increase in quantity and quality of investment.

Recent studies apply the endogenous growth models to survey the link between financial development and economic growth. These kinds of models indicate the effect of capital market on the economic growth rate. In this context, Levine (1991) propose several point of views; first point of view declare capital market improve long-term economic growth. In second point of view, market liquidity has effective role on economic growth. As, the existing liquidity of capital market may provide proper resources to make investment as result in fixed assets throughout issuing shares. In second point of view, long-term relationship between capital market and economic growth is questionable.

Green wood and Smith (1996) Propose capital market reduce savings displacement cost and provide investment facilities along with best technology. Stiglitz (1985) believes capital market is not able to improve asymmetric information because the rate of price change is high so the free-rider problem occurs.

Demirguch-kunt and Levine (1996) Note that based on several reasons, reduction of capital market liquidity throughout the decrement of savings may cause to decrement of economic growth:

1. Firstly, capital market may reduce savings rate through substitution and income effects.
2. Secondly, with decrement of certainty associated to investment, higher liquidity of capital market may impresses the savings rate.
3. Thirdly, the liquidity of capital market may encourage the myopia investors to make investment, because of this issue economic growth decrease.

More liquidity of market may cause investors delay in sales of their shares. More liquidity of market may cause weak investors transfer their shares then as a result investment reduces and control of company by management and owner of firm increase.

Contrary to this view, Jensen and Murphy (1990) propose capital market cause to efficient allocation of resources as well as improvement of economic growth.

According to the model of King and Levine (1993a), higher rate of innovations lead to higher rate of economic growth. In the absence of financial markets, it is possible that projects investment face with lack of liquidity. Markets are able to provide appropriate and more low-risk liquidity for investment. In addition, financial markets can be effective on economic growth through information. Holmstrtom and Tirole (1993) declare capital market can control management's performance and this issue can be accomplished through existing information related to the firm's performance. Thus information which are presented concerning the firm's share price, have significant role for management structure and economic growth.

Levine (1997), Introduce a useful framework regarding the role of financial intermediaries. He believes that financial intermediaries are able to increase the economic growth trough two ways: Capital Accumulation and Technological Innovations.

Firstly, existences of financial intermediaries distribute the risk. In the absence of financial markets, investment funds exit of long-term investment projects and this issue

cause to decrement of economic growth. Financial market collects funds and distributes it throughout investors thereby it provides possibility of long-term investment. Overall, diversify the liquidity risk and the productivity risk which small investors will face with that. Capital market, make investors able to be shared in lots of firms and with variety of financial intermediaries facilities, encourage the economy to make investment in risky project, this function lead to stimulate the economic growth.

Secondly, financial intermediaries improve the resource allocation among various projects through information collection. Asymmetric information make necessary to conduct a survey. Maybe a firm has projects to run but cannot provide useful and positive information regarding that to investors. Thus, information collection will be costly for investors. Capital market provides conditions in which investors are able to acquire necessary information to make investment.

Thirdly, Capital market improves corporate control. Stock market establish common interests and prospective among firm's managers and shareholders.

Fourthly, capital market stimulates savings appropriately. Capital market accumulates small funds and invests them in proper projects.

Fifthly, financial market enhances specialization. Specialization reduces transactions costs and increases economic growth.

Existing theories, confirm relationship between financial development and economic growth as well as virtual effects of capital market and banks on economic growth. Many of these models, as King and Levine (1993a) verify financial intermediaries and their link with financial markets reduce transactions and information costs and help in proper resource allocation as well as lead to realization of long-term growth. This class of models, in addition indicates, financial development may damage economic growth. Especially, financial development may cause to decrement of savings rate by means of development of resource allocation and reduction of savings rate of return. Available theories concerning the relationship among capital market and banks demonstrate, these two can be substitute and supplement of each other.

The Economists such as Boyd and Prescott (1986) propose banks have effective and helpful role in improvement of resource allocation however others such as Stiglitz (1985) and Bhide (1993) declare capital market is not as well as banks in resource allocation.

The endogenous growth models with the assumption that the final output of capital is always positive get to the result that financial markets development leads to increase in economic growth in long-term. In this regards, the study which is accomplished by Bencivenga and Smith (1991) try to explore how effective is financial development on increase in economic growth. According to such kinds of researches, financial instruments are recognized as the best channels in order to allocate the capital toward the best and most efficient situation.

Also, endogenous growth models as studies of Levine (1991) verify that financial development can not lead to economic growth without labor productivity growth. In addition, Levine (1991) proposes financial markets are able to assist firms in assessment of market liquidity and investment risk. On the other hand, financial markets can lead to rise in savings, investment and economic growth. Capital market provides conditions in a way, households be able to better classify their risk preferences and supply their required liquidity. In developed capital market, shares ownership can provide required liquidity to do investment in projects.

Many proxies can be applied to indicate the financial sector development. One is the ratio of household's savings in the banks or the ratio of loans allocated to private sector. The financial sector through decrease in transaction costs at economy lead to improvement in saving level, capital accumulation, technological growth and economic growth. These effects can take place throughout various channels. Financial development occurs at a time in which the ability of financial market to perform mentioned duties are developed and that financial market can improve decision making for saving and investment, ultimately cause to economic growth, Levine (2004).

In summary, it can be proposed that according to existing debates relevant to economic growth and financial market, financial markets can lead to economic growth throughout investment.

Study of this issue, especially can be very useful in case of developing countries. Because, many of these countries are faced with the problem of capital shortage and as

one of the most important sources of continuous economic growth is capital accumulation, so throughout the financial markets the process of capital formation can be accelerated.

This study aims to investigate the impact of stock market development and banking sector development as the proxies of financial sector development on economic growth of Iran by using of the time-series data from 1967 through 2009. In this regards, the ratio of money supply to GDP as well as the ratio of domestic credit provided by banking sector to GDP are employed as the proxies of banking sector and that number of shares traded is employed as the proxy of the stock market to explore how economic growth is affected by the applied financial channels. Since the employed proxies are significant parts of the financial system of any economy thus, study concerning their contribution in economic growth is very significant. Since Iran is a developing country, economic growth is being an important issue and the result of this study can be very useful to make accurate policies for the financial markets of Iran.

Subsequent chapters of this study are organized as follows: chapter 2 aims to make a review about the history and current contribution of financial sectors with focus on the stock market and banking sector of Iran. Chapter 3 intended to review the existing literature of the study. Chapter 4 focuses on the data and methodology which are applied in order to conduct this study. In chapter 5 the empirical results of the study as well as interpretation of the obtained results are represented. At last, chapter 6 makes a conclusion based on the findings of the study.

Chapter 2

BRIEF OVERVIEW OF STOCK MARKET, BANKING SECTOR AND FINANCIAL SYSTEM IN IRAN

2.1 The Islamic Republic of Iran

Major function of financial markets is to supply financial resources of enterprises that are looking for available funds to run their projects. These markets can be classified based on their functions, type of the financial instruments as well as various financial services that are offered by them.

In general, financial market divides into two main sectors, capital market and money market. Capital market by itself divides into the primary market and secondary market. In the primary market, required capital of the firm forms and issued shares are traded for the first time. In the secondary market, securities in which had been sold at the primary market are traded at secondary market. However, existence of the secondary market facilitates transfer of ownership of securities.

Tehran Stock Exchange has been founded at February 1967. At the first year of its operating just six companies were listed, whereas presently (2010) more than 420 companies are listed at Tehran Stock Exchange. During the first years, the activities of Tehran Stock Exchange focused on trading of government bond and certain state-backed

certificate. At the present, 37 various sectors are permitted to capitalize throughout the Tehran Stock Exchange. According to Tehran Stock Exchange regulations, foreign investors are authorized to do investment from 2005 onwards provided that only maximum 10% shares of a listed company can be purchased and minimum for three years following the purchase are not allow to take out their capital. (Tehran Stock Exchange, 2011).
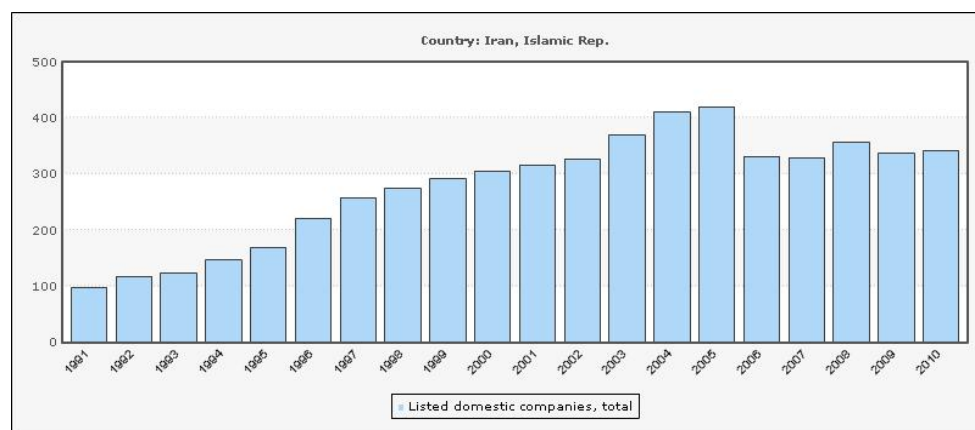
Figure 2.1 Listed domestic companies, total

Source: (World Bank,, 2011)

In general, the activities of Tehran Stock Exchange can be classified into four periods. The first period starts from 1967 to 1978. Over this period, number of companies which had been listed as six at 1967 with the capital IRRs 6.2 b, increased to 105 at 1978 with the capital IRRs 240 b. In addition, some laws ratified, in order to development of stock market. Such as "ownership development of manufacturing units" law as well as tax exemption for the listed companies laws. However, during 11 years activity of Tehran

Stock Exchange before the Islamic revolution, the value of shares traded raised from IR 15m to IRRs 34.2 b (Tehran Stock Exchange, 2011).

Over the second period (1979- 1988), Tehran Stock Exchange did not have significant activities. This recession took place after the Islamic Revolution of Iran concurrent with Iran-Iraq war. This situation kept into continues until the end of 1988 whereas from 105 listed companies at Tehran Stock Exchange till 1978, just 56 remained at the end of 1988 (Tehran Stock Exchange, 2011).

The third period commences from 1989 to 2006. After the Iran-Iraq war 1989, the government took into consideration the renewal of Tehran Stock Exchange activities as a key economic channel in order to implementation of privatization policies. However, the tendency of macroeconomic policies in order to employ this valuable economic tool, caused to significant increase in the number of listed companies (i.e. from 56 at 1988 to 422 at 2006) as well as raise in the value of shares traded (i.e. from IRRs 9.9 b at 1988 to IRRs 44.8 b in 2006) (Tehran Stock Exchange, 2011).

Over the last period (2006 to current), Tehran Stock Exchange experienced the execution of privatization plan for the state-owned companies. This important issue caused to increase in market capitalization to around USD 87 billion by the end of 2010 (Tehran Stock Exchange, 2011).

Furthermore, Tehran Stock Exchange joined as a full member to World Federation of Exchanges (WFE) in 1994. Overall, Tehran Stock Exchange has experienced

achievements over the recent decades including the first rank of World Federation of Exchange list in terms of the highest return on investment equal to 131.4% in 2003 (Tehran Stock Exchange, 2011).
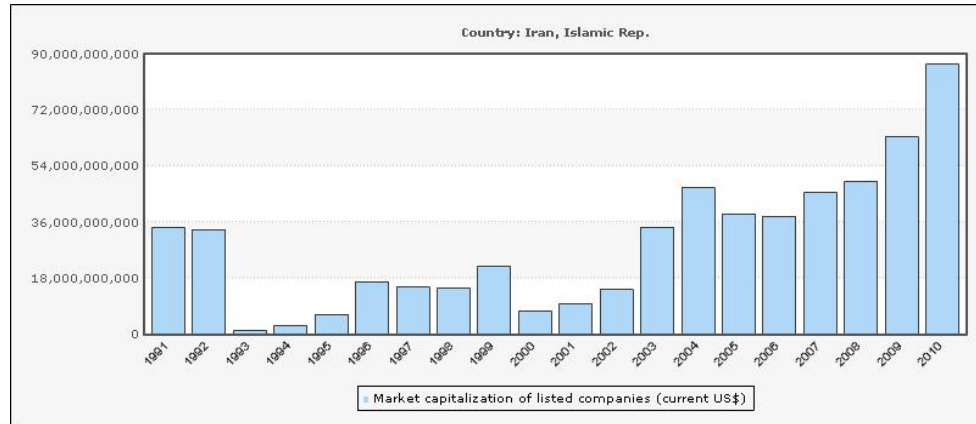
Figure 2.2 Market capitalization of listed companies (current US$)

Source: (World Bank,, 2011)

In financial systems in which are based on capital market and securities, savers submit their financial resource to the applicant units through purchase of various types of commercial papers. This style is called direct investment as well. United States of America and Grand Britain are countries in which follow this method.

On the other hand, the money market involves numerous financial identities. In developing countries, banks are the most important part of money market. In such kinds of countries that money market and banks are executive of financial system, savers submit their facilities to private and public sectors throughout financial institutions. This

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method also is called indirect investment. Germany and Japan are countries in which apply this method.

In Iran the banking sector, composes the major part of money market as well as financial system. This can be deduced by evaluating the share of banking sector in financial growth of Iran economy. As it is illustrated by figure 2.3, over the past years, on average banking sectors have had a big share of GDP.
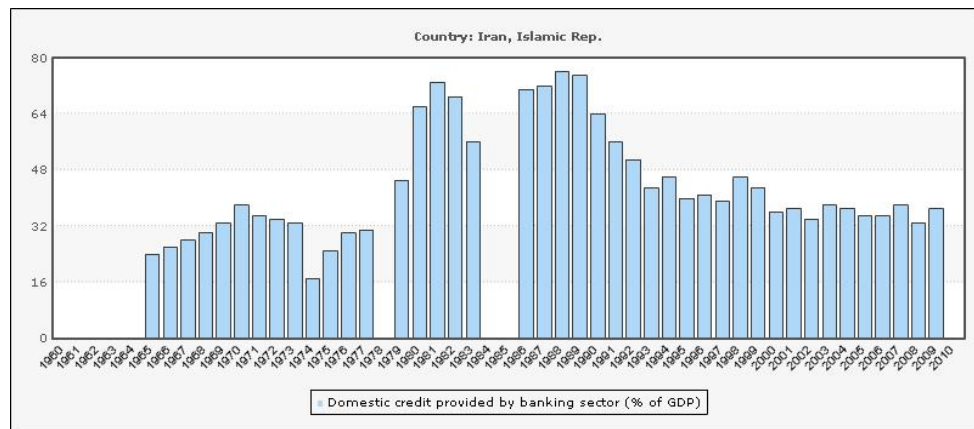
Figure 2.3 Domestic credit provided by banking sector (% of GDP)

Source: (World Bank,, 2011)

On the other hand, by looking at the status of stock market of Iran and its contribution in economic growth, it can be concluded that the capital market of Iran as a part of financial system has not have significant impact on economy of Iran. Whereas, contribution of the market capitalization of listed companies as ratio to GDP, has been very small over recent years.
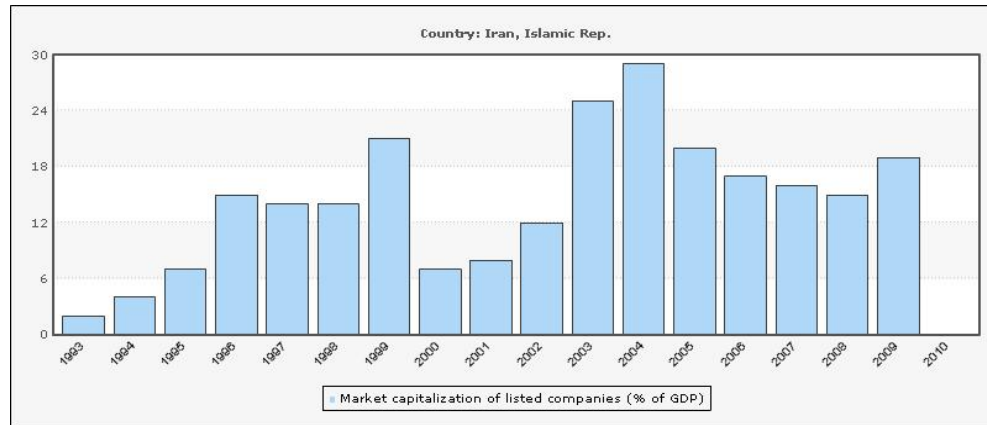
Figure 2.4 Market capitalization of listed companies (% of GDP)

Source: (World Bank,, 2011)

An overview on status of the stock market of Iran and comparison of that with the banks status as a whole, imply financial system of Iran is bank-based. In such financial system, production and business firms and enterprises finance their required capital throughout the bank resources rather than capital market. Over the past years, on average banking sectors have had a big share of GDP, whereas the market capitalization of listed companies over recent years has had small contribution in GDP.
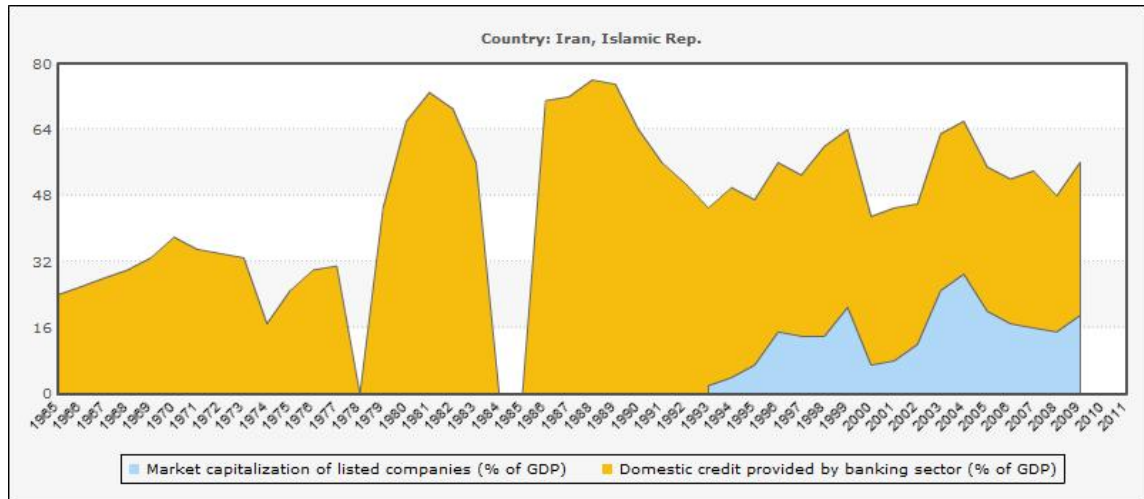
Figure 2.5 Market capitalization of listed companies compared to Domestic credit
provided by banking sector (% of GDP)

Source: (World Bank,, 2011)

In Iran bank's assets include foreign assets, money and coins, deposit in central bank
(legal, visual), government sector and non-government sector debt. Money market
components in Iran consist of commercial banks, community banks, non-bank financial
institutions and private banks. The biggest share of money market is allocated to
commercial banks. Figure 2 indicates distribution of the commercial banks asset
(public), the assets of specialized banks (public) as well as the assets of private banks
and credit institutions in 2008 which are the major elements of Iran money market
(Central Bank Of The Islamic Republic Of Iran, Annual Review, 2008/09-, 2011) .

Distribution of Money Market Components

- The Assets of Commercial Banks (Public)
- The Assets of Specialized Banks (Public)
- The Assets of Private Banks and Credit Institutions

16%

18%

66%
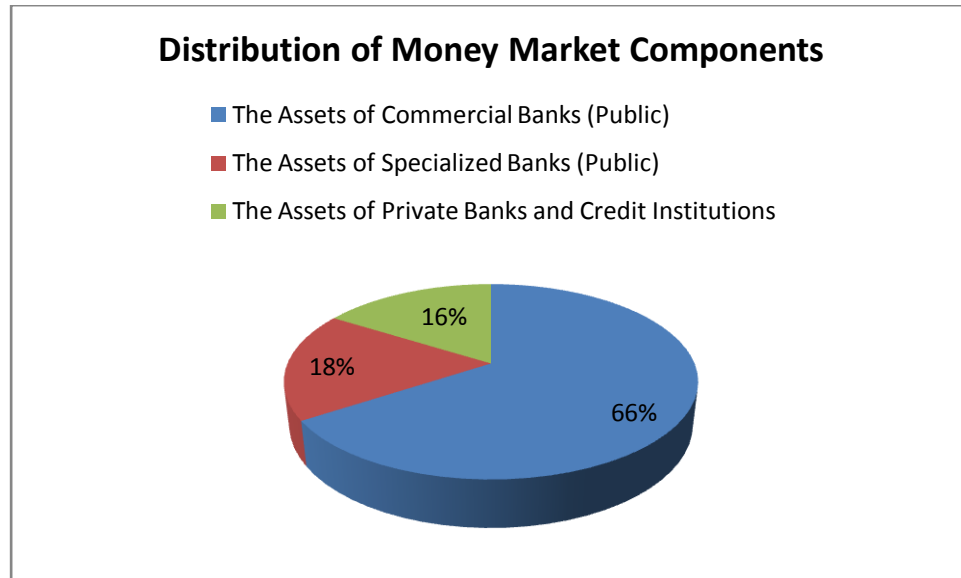
Figure 2.6 Assets distribution of money market components in Iran (2008)

Source: (Central Bank Of The Islamic Republic Of Iran, Annual Review, 2008/09-, 2011)

The status of Iran financial development compared to other countries demonstrates weakness in the economy of Iran in this regard. The World Economic Forum in 2011 published a report concerning the status of financial development of the world. This report indexes the names of 60 leading countries of the world in financial development, but Iran is not included in this list. The level of financial development is measured and classified from one to seven in which seven indicates the most complete financial development. The Hong Kong SAR is the first country of this overall index ranking whereas its financial development rate is 5.16 (World Economic Forum, 2011).

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Chapter 3

LITERATURE REVIEW

This chapter makes a review of previous results from various methodologies in the literature to learn how economic growth is connected to money and capital market (Financial Markets).

In general, regarding the consequence of financial market on economic growth, two traditional doctrines can be distinguished in economic development studies. The first group follow Robinson (1952) point of view and believe financial markets just are considerable as the servant of industry. To their belief, financial markets are passive compared other factors that have an effect on differences of growth rates of countries. In other words, financial intermediaries act just as passive channels in order to conduct the households' savings toward investment activities.

Adherents of this doctrine that follow Robinson (1952) point of view believe, main factors of economic growth should be considered as existing capital and amount of investment as public sector policies mainly should be focused on capital accumulation Jappeli and Pagano (1994), Gertler and Rose (1994).

In the study that has been accomplished by Jappeli and Pagano (1994) on the households-sector credit markets, the results indicated that development of these kinds

of markets is negatively correlated with savings and growth rates. Therefore, some kinds of financial development impress economic growth negatively. Gertler and Rose (1994) studies, did an investigation regarding the empirical relevance of financial sector development and the level of real per capita income using statistical information of the 69 developing countries over 1950-88. Gertler and Rose (1994) concluded that income growth rate and financial sector growth rate have negative correlation.

Second doctrine follows Schumpeter (1912) viewpoint. Economists such as Goldsmith (1969), McKinnon (1973), Shaw (1973) suggest that financial markets and financial intermediaries are key factors in terms of development and economic growth. To their belief, differences in quantity and quality of given financial services by financial institutions can explain the differences in growth rates among countries King and Levine (1993a), De Gregorio and Guidotti (1995), Levine and Zervos (1998).

In this regard, Goldsmith (1969) is of the first researchers that indicated financial development and economic growth have positive relationship. He sought to reveal the channels through which financial markets and institutions affect economic development. He did the empirical cross-country investigation in relation to 35 countries over the time interval between 1963 -1860. Goldsmith (1969) employed the financial system asset to GDP ratio as indicator of financial development. Findings of this study demonstrate if the considered time interval is long enough then financial development and economic development have positive correlation. Moreover, in the periods that the countries studied experienced faster growth, the average rate of financial development had been higher. Although, Goldsmith (1969)'s research concluded that financial system and

economic growth are strongly correlated but it does not determine the direction of causality between these two variables.

In the comprehensive cross-country study that is accomplished by King and Levine (1993a) using data on 77 countries from 1960 through 1989 by using various measures of economic growth and financial development, they sought to find out whether long-run economic growth, capital accumulation and productivity growth can be explained by the level of financial development. King and Levine (1993a) employed real per capita GDP, real per capita stock growth and production efficiency growth as indicators of economic growth. According to King and Levine (1993a) study, by looking to the countries with lower growth rate toward higher growth rate, the following indicators draw attention: more financial deepening, higher importance of commercial banks compared central bank, greater share of private sector from credits as well as greater proportion of credit to private sector of total economic activity. Thus, King and Levine (1993a) deduced there exist robust positive correlation between financial development indicators and three economic growth indicators.

Levine and Zervos (1996) undertook the empirical investigation to examine the effect of financial system on economic growth. In this regards, Levine and Zervos (1996) employed various instrumental variables such as LOG real per capita GDP, LOG intermediate school enrollment rate, political instability (the number of revolutions), black market exchange rate, the share of government consumption of GDP and the total value of shares traded to GDP ratio. Levine and Zervos (1996) applied less squared method along with mentioned variables to investigate about the relationship of economic

growth and stock market. Findings indicated significant as well as robust positive correlation among considered indicators of stock market development and real per capita GDP.

Analysis of Rajan and Zingales (1998) point out those industries which are dependent to external financing are able to growth faster at economies with developed financial markets. Important variables in their study are the loans taken by the private sectors into GDP that is as an indicator of banking sector system as well as the size of the stock market through market capitalization into GDP.

Levine and Zervos (1998) did an investigation during 1976-1993 intended for 49 countries on the subject of empirical relationships between different variables of stock market development, banking development and economic growth. Indicators in which they employed inside their study are the current value of domestic shares into the value of listed domestic shares as well as the value of traded shares into GDP as both are the indicators of stock market liquidity. As a result of this study measures of the stock market liquidity and banking sector development are positively correlated with the future economic growth rates, capital accumulation and productivity growth.

First, Patrick (1966) proposes the issue of causality between financial development and economic growth. According to Patrick (1966) two hypotheses of "*supply leading*" and "*demand following*" raised. The "*supply leading*" hypotheses posses that financial development causes the economic growth. This means that voluntary establishment of financial institutions and financial markets and increase in their numbers, lead to growth

of financial services and subsequently rise in economic growth. On the other hand, the *"Demand Following"* hypotheses imply the demand for financial development is a result of economic growth. Thus, economic growth causes to increase of demand for the newer and more complicated financial institutions and services, finally results in financial development. Although Patrick (1966) believes the relationship between financial development and economic growth depends on the degree of development of each country. In the early stages of development, improvement of financial services, development of new financial instruments as well as financial restructuring cause to economic growth. But in the process of economic growth financial evolutions cause to demand for new types of financial instruments and services. Thus, Patrick (1966) stated during the process of financial development the direction of causality shift from *"supply leading"* into *"demand following"*.

Overall, besides two mentioned hypotheses (*"supply leading"*, *"demand following"*), in this regard, one other group of economist believe nearly financial development is not related to economic growth. Lucas (1988) declared "The importance of the financial matters is very broadly over stressed". Moreover, some other economists suggest that, economic growth and financial development have bilateral and simultaneous impact on each other, Demeriades and Hussein (1996).

After Patrick (1966), many researchers have attempted to test the Patrick (1966) hypothesis empirically. In the studies conducted by McKinnon (1973), King and Levine (1993a), Neusser and Kugler (1998) and Halicioglu (2007) the *"supply leading"*

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hypothesis confirmed. Nevertheless, Goldsmith (1969), Jung (1986), Guryay et al., (2007) accepted the "*demand following*" hypothesis.

De Gregorio and Guidotti (1995), made the cross-country empirical investigation on the subject of long-term relationship between economic growth and financial development. The results indicated a positive correlation in most countries studied. Interestingly, this study confirms the negative relationship between economic growth and financial development for Latin American Countries.

In addition, many researchers established significant empirical studies to examine the relevance of stock market development, banking sector development and economic growth. Van Nieuwerburgh (2005) carried out a research, on the subject of the long-term relationship of financial market development and economic development by means of Vector Auto Regression model in case of Belgium. Van Nieuwerburgh (2005) employed the index of stock market development as the indicator of financial development. As a result of this study, depending on degree of development in the stock market at different periods, stock market has had different impact on the economic growth. Thus, as stock market is more developed economic growth will be higher.

Hondroyiannis et al., (2004) accomplished the empirical study to examine the relevance of stock market, banking sector development and the performance of real section of economy using monthly time series data in case of Greek from 1986 through 1999. Hondroyiannis et al., (2004) indicated the bilateral causality between the activity of real section of economy and the investment of securities market as well as activity of real

economy and banking sector credits. Furthermore, the empirical results confirmed the long-term relationship among these three variables.

In the study that is conducted by Caporale et al., (2003) in relation to the effect of stock market development on economic growth of the Malaysia, Philippine and Korea this hypothesis is tested in which in endogenous models whether financial development through its effect on investment and productivity cause to higher growth?. To test this hypothesis the Granger Causality and Auto Regression Model have been employed. As a conclusion, stock market development through increase in investment productivity leads to increase in long-term growth.

Shahbaz et al., (2008) applied ARDL method to investigate about the relation of stock market and economic growth in Pakistan. Their findings confirm existence of the long-term and bilateral correlation between the stock market development and economic growth. However, in short-term period their relationship is unilateral namely from stock market toward economic growth.

Mohtadi and Agarwal (2006) employed panel data method and endogenous model to survey the effect of stock market development on the economic growth of 21 countries during 21 years interval. The results, confirm the existence of positive correlation between different indexes of stock market and economic growth. According to findings of this research, stock market development leads to encouragement as well as increment of private investment.

Levine and Thorsten (2001) did an investigation concerning the effect of stock market and banking sector development on economic growth by means of panel data method intended for 42 countries. The results of study indicated that there exist a positive and meaningful correlation between stock market development, bank and economic growth. In addition, the findings conclude the stock market offers various and more financial services rather than banks as in developed stock markets the effect of stock market development on economic growth is higher than the effect of banking sector development index.

Rousseau and Vuthipadadorn (2005) employed the VAR and VECM models to make a cross-country investigation on ten Asian countries over 1950-2000 on the subject of the relevance of financial system development and economic growth. Rousseau and Vuthipadadorn (2005) confirmed not only the long-term relationship between financial variables and real economy but also indicated in most countries studied, the direction of causality is from financial section to real economy sector.

In the study that has been accomplished by Trablesi (1998) using the information of 69 developing countries as well as applying panel data technique, clarified that financial deepening play a serious role in the economic growth of countries. Results of Trablesi (1998) study verified the positive effect of financial development on economic growth of countries studied. However, the prerequisite is an innovative and entrepreneur private sector with the capability of collecting savings and conducting them toward productive investment. Moreover, it is observed from this study that financial sector can be effective on economic growth through increase of productivity of investment.

Howells and Soliman (2003) did an investigation about the correlation of stock market development and economic growth in case of Chile, Korea, Malaysia, Philippines. This study sought to detect channels in which stock market development affect economic growth in the long term. In this research to examine causality correlation VAR models are employed. As a result of this study, stock market development with raise in productivity and efficiency of investment cause to increase in economic growth in these four countries.

Demirguch-kunt and Levine (1996) undertook the comprehensive cross-country empirical study using data on 44 industrial as well as developing countries from 1986 through 1993. Demirguch-kunt and Levine (1996) concluded the countries with organized stock markets also have efficient as well as well-functioning banking institutes. On the other hand, at the countries with week stock markets there are no well-organized and competent banking system.

Kar and Pentecost (2000) undertook the empirical study in which examine the causal relationship between financial development and economic growth in case of Turkey. Kar and Pentecost (2000) have considered five different indicators for financial development then the Granger Causality Test has been employed. Based on the results, the causality between financial development and economic growth has been sensitive relative to selection of financial development indicator.

Calderon and Liu (2003) examined the causality direction between financial development and economic growth by means of Geweke Analysis with using data on

109 developed as well as developing countries from 1960 through 1994. The findings indicated financial development commonly lead to economic growth. Calderon and Liu (2003) indicated the bidirectional causality between economic growth and financial development. Moreover, financial deepening in developing countries has had more impact on causal relationship rather than developed countries. As a conclusion, financial deepening improves economic growth through faster capital accumulation as well as productivity growth. Abu-Bader and Abu-Qarn (2006) did the same examination in relation to Middle East countries and North Africa. Abu-Bader and Abu-Qarn (2006) concluded the results are sensitive relative to selected indicator for financial development.

Liang and Teng (2006) using two VAR models for two indicators of financial development undertook the empirical study on the subject of financial development and economic growth in the case of China over 1952-2000. Liang and Teng (2006) employed variables such as real per capita GDP, rate of bank credits, consumer price index, net exports, physical capital and real interest rate. Liang and Teng (2006) concluded if financial system does not allocate resources and capital efficiently, not only the economic growth would not take place but also the economy still remains incomplete and underdeveloped because market does not support financial system.

In general, the findings of researches of existing literature imply it is not possible to get to a comprehensive agreement in relation to the effect of financial development on economic growth among studies. But given that how the financial development is accomplished or what were the selected indicators to explain financial development and

whether the case of study has been a developing or underdeveloped country or a member of advanced industrial countries, studies reached to different results.

Given the above, this study aims to investigate the stock market development and banking sector development, which are important parts of the financial system of an economy and their influence on economic growth in case of Iran.

Chapter 4

DATA AND METHODOLOGY

4.1 Data

This research aims to investigate the effect of financial sector development on economic growth of Iran from 1967 through 2009. The banking sector development and stock market development are employed as the proxies of financial development in order to conduct this study. Time series data are utilized in this research based on annual interval. Various sources are referred to extract required data. The Central Bank of Iran as well as Tehran Stock Exchange are inside country sources intended for stock market data whereas The World Bank Development Indicators (WDI) of the World Bank (2009) used for banking sector and economic growth data. According to (Beck, 2002) different measures can be employed as the proxies of financial development in which every raise in the quantity of these indicators can be considered as financial development to intended financial sector.

The variables which are considered by this study are as follows; the real gross domestic product (GDP) is considered as the proxy of economic growth based on 2000 constant local currency prices. Moreover, as Beck (2002) proposes the ratio of money and quasi money (M2) to GDP based on the current local currency is employed as the first financial variable in this study. M2 which is a measure of money supply is defined as the

entire quantity of money existing in the economy of a given country at a particular point in time. M2 is known as a measurement of money supply in which consist of M1 in addition to demand deposits with the exception of those are with the central government, various types of time savings deposits except from central government, currency in circulation as well as the total amount of currency out of banking system. The ratio of domestic credit provided by the banking sector to GDP is considered as the second measurement for the financial development in this study. DC consists of total amount of credits given to the different sectors based on gross value except from the credits given to the central government that is on a net basis. Number of shares traded is the third variable which is selected as the stock market proxy. This variable indicates the total amount of shares bought and sold by traders during a specified time period. In this study to approximate the growth impact of independent variables on regressand all the variables are considered in natural logarithm forms (Katircioglu, 2010) .

4.2 Empirical Model

Lots of researches have been conducted in economic in order to find out the financial proxies in which economic growth is affected by them on the subject of various countries. Depends on the subject of the study as well as the employed methodology, different types of data such as time series data, panel data and cross-section data are utilized. This study aims to investigate the effect of financial sectors development which are proxied by banking sector and stock market on economic growth of Iran. The proposed financial sector proxies are determined as the ratio of money and quasi money which represent money supply to gross domestic product, the ratio of domestic credit

provided by banking sector to gross domestic product and the number of shares traded. Thus, the following model is proposed in order to employ mentioned financial proxies.

[GDP = f (M2, DC, SHARES)] (1)

In this model gross domestic product (GDP) is considered as a dependent variable to financial sector regressors.

The proposed model (1) can be explained in natural logarithm form in order to explore the growth effects of independent variables (Katircioglu, 2010):

$(\ln GDP_t = \beta_0 + \beta_1 \ln M2 + \beta_2 \ln DC + \beta_3 \ln SHARES + \varepsilon_t)$ (2)

In a way that by the period t, lnGDP is the natural logarithm of real income of IRAN, lnM2 is the natural logarithm of money supply (as % GDP) as a proxy of banking sector, lnDC (as % GDP) is the natural logarithm of domestic credit provided by banking sector, lnSHARES is the natural logarithm of the stock market proxy and ε is the error term (Katircioglu, 2010).

4.3 Methodology

One model is employed in this study as it is subject to be examined by use of the Augmented Dickey-Fuller (ADF) and Philips-Peron (PP) unit root tests. For the second step, Johansen Co integration test has been applied to explore the long run association among financial sector variables and economic growth for the model. At last, Granger

Causality test has been utilized in order to determine the direction of causality between the variables.

4.3.1 Unit Root Test

Prior to doing estimation of the proposed econometric model and in order to running co-integration test among financial sector variables and economic growth, the time series data are required to be examined for unit root test. The aim to run unit root test is to find out whether the under-study time series data are stationary or not. In case the under study data are stationary ensures long run association among money supply (M2), domestic credit provided by banking sector (DC), number of shares traded (SHARES) and the economic growth (GDP). In this regard, the Augmented Dickey-Fuller (ADF) as well as Philips-Perron (PP) unit root tests are employed to examine the data are stationary in this study. The Philips-Perron (PP) is considered to be executed as a substitute to Augmented Dickey-Fuller (ADF) to test regarding unit roots. In general, the unit root test consists of series which is shown in the model as follows:

$$\Delta y_t = a_0 + \gamma y_{t-1} + a_2 t + \sum_{i=2}^{p} \beta_j \, \Delta y_{t-i-1} + \varepsilon_t \qquad (3)$$

As y represents the series; t = time (trend factor); a = constant term (drift); ε_t = Gaussian white noise and p = the lag order. The lags number "p" in the regressor was selected by Akaike Information Criteria (AIC) to be sure the errors are white noise Katircioglu et al., (2007). The null hypothesis (H_0) proposes that the series data has unit root test which means it is non-stationary. On the other hand, the alternative hypothesis proposes that series data has no unit root which means it is stationary. After running the test to check

for stationary or non stationary, the t-statistic is required to be checked. By the other words, in order to reject the null hypothesis (H_0) and accept the alternative hypothesis the value of coefficient needs to be greater than critical values. Otherwise the null hypothesis should be accepted which means the variable is non-stationary. In case the variable is non-stationary, so as to make it stationary and get rid of this problem the differences need to be taken. In order to make the series stationary which are non-stationary and are integrated of order 1 the first differences need to be taken (See Gujarati, 2003).

As a result of running Phillips Perron test the t-statistic of the coefficient can be corrected by the AR (1) regression in order to take the serial correlation of e_t into account Katircioglu et al. (2007).

The Newey- West heteroscedasticity autocorrelation consistent standard error is a procedure which is broadly applied.

$$\omega^2 = \gamma_0 + 2\sum_{i=1}^{q}(1 - \frac{j}{q+1})\gamma_j \tag{4}$$

$$\gamma_j = \frac{1}{T}\sum_{t=j+1}^{T}\tilde{\varepsilon}_t\,\tilde{\varepsilon}_{t-j} \tag{5}$$

As q represents the truncation lag, γ_j expresses the covariance of estimated residuals j-lag apart and T indicates the sample size. The Phillips Perron t-statistic is calculated as follows:

$$t_{pp} = \frac{\gamma_0^{\frac{1}{2}} t_b}{\omega} - \frac{(\omega^2 - \gamma_0) T s_b}{2\omega\hat{\sigma}} \qquad (6)$$

4.3.2 Co-integration Test

The aim to do the co-integration test is to determine whether the variables have long run association or not. By the other words, do the variables move together in the long run? To discover the co-integration among variables the Johansen method is employed in this study Katircioglu et al., (2007). The trace and maximum eigenvalue tests are applied by Johansen test to search for the co-integration between variables. Among these two tests, trace test is superior to maximum eigenvalue and that its results are more robust in support of co-integration (Cheung & Lai, 1993).

According to Johansen (1988) as well as Johansen and Juselius (1990) method, the estimation of every likely co-integrating vectors among a set of variables is possible Katırcıoglu et al., (2007). In addition, the problems which arise from Engle and Granger (1987) method can be removed by that. The following Vector Auto Regressive (VAR) model clarifies this procedure:

$$X_t = \Pi_1 X_{t-1} + ... + \Pi_k X_{t-k} + \mu + e_t \text{ (for t=1,...T)} \qquad (7)$$

As X_t, X_{t-1}, ..., X_{t-k} are correspondingly considered as the vectors for the current and lagged values of P that are know as *I(1)* in the model; Π_1, ..., Π_k which are considered as the coefficients matrices with (PXP) dimensions; μ which is known as an intercept vector; and e_t which is known as a vector of random errors Katırcıoglu et al., (2007).

The quantity of lagged values is calculated in a way that there is no autocorrelation among variables. The number of co-integrating association(s) (i.e. *r*) can be realized by the rank of Π. In order to get to this number, it is required to examine whether its Eigen values (λ_i) are not equal to zero. According to Johansen (1988) and Johansen and Juselius (1990), by use of Eigen values of Π base on descending order the trace statistics can be computed Katırcıoglu et al., (2007). Following formula can be employed to calculate the trace statistic (λ_{trace})

$$\lambda_{trace} = -T \sum \text{Ln}(1-\lambda_i), \text{ i=r+1, ..., n-1 and the hypothesis are :} \tag{8}$$

$$H_0: r = 0 \qquad H_1: r \geq 1$$

$$H_0: r \leq 1 \qquad H_1: r \geq 2$$

$$H_0: r \leq 2 \qquad H_1: r \geq 3$$

4.3.3 Error-Correction Model

According to presumption which is proposed by Katircioglu (2010), the real income in equations (2) are not likely to instantly be adjusted to their long-run equilibrium levels and each of their factors pursue a shift. Furthermore, the following error correction model can be used to capture the rate of adjustment among the short-run and the long-run levels of real income:

$$\Delta lnGDP_t = \beta_0 + \sum_{i=1}^n \beta_1 \Delta lnGDP_{t-j} + \sum_{i=0}^n \beta_2 \Delta lnM2_{t-j} + \sum_{i=0}^n \beta_3 \Delta lnDC_{t-j} + \sum_{i=0}^n \beta_4$$

$$\Delta lnSHARES_{t-j} + \beta_5 \varepsilon_{t-1} + \mu_t \qquad (9)$$

As Δ represents a shift in the GDP, M2, DC and SHARES variables and ε_{t-1} indicates the one period lagged error correlation term (ECT) that is approximated from equations (2). In equations (9), ECT indicates how quick the elimination of the disequilibrium among the short-run and the long-run values of regressand takes place in any period (Katircioglu, 2010).

4.3.4 Granger Causality Tests

The Granger Causality test is applied to determine the direction of causality between variables in this study (Granger, 1969). To run the Granger Causality test the Vector Error Correlation Model (VECM) is required. To do so, the variables are required to be co-integrated. Mainly, the Granger Causality test concentrate on the t-test in relation with error correction term in VECM. The residuals of the co-integration association which are used by causality test cause to generation of Error Correction Term (ECT).

$$\Delta \ln Y_t = C_0 + \sum_{i=1}^k \beta_i \Delta \ln Y_{t-i} + \sum_{i=1}^k \alpha_i \Delta \ln X_{t-i} + p_i ECT_{t-1} + \mu_t \qquad (10)$$

$$\Delta \ln X_t = C_0 + \sum_{i=1}^k \gamma_i \Delta \ln X_{t-i} + \sum_{i=1}^k \zeta_i \Delta \ln Y_{t-i} + \eta_i ECT_{t-1} + \varepsilon_t \qquad (11)$$

As Y and X represents the variables which are in consideration, the ρ_i indicates the adjustment coefficient and the ECT_{t-1} represents the error correct term of the VECM model. The ECT tries to explain how quickly the regrssand reach to its long run

equilibrium in percentage form. Δ expresses the first difference operator. According to equation (10), direction of causality is from X to Y provided that ρ_i is significant and is not equal to zero. On the other hand, equation (11) clarifies that direction of causality is from Y to X provided that η_i is significant and different than zero, Katırcıoglu et al., (2007).

Chapter 5

DATA ANALYSIS AND EMPERICAL RESULTS

5.1 Unit Root Tests

The unit root test procedure is applied in this study in order to determine whether the variables are stationary or not. In this regards, the Augmented Dickey Fuller (ADF) and the Philips-Perron(PP) test are employed to test for existence of unit root process. Both of these unit root tests are accomplished at levels and first difference. The obtained results are demonstrated in Table 5.1.

As a result of the ADF and PP unit root tests which is represented in table 5.1, it can be realized that the GDP, money supply (M2), domestic credit provided by banking sector (DC) as well as number of shares traded (SHARES) of IRAN are non-stationary variables although becomes stationary at their first difference. All the above variables are integrated of order I (1) on the subject of Iran during the sample period.

On the other hand, since value of shares traded (CAP) is stationary at level as confirmed both by ADF and PP tests, it will not be added to the further analysis.

Various results are provided by the ADF and PP unit root tests for GDP variable, but since the PP test is superior to ADF test, the results of the PP test is taken into account regarding the last assessment, Katircioglu (2009).

Table 5.1 ADF and PP Tests for Unit Root

Statistics (Level)	ln GDP	Lag	ln M2	lag	ln DC	lag	ln share	lag	ln cap	lag
τ_T (ADF)	-2.9168	(1)	-2.739	(1)	-1.887	(0)	-1.965	(4)	-3.561**	(0)
τ_μ (ADF)	-0.4313	(4)	-2.782***	(1)	-1.973	(0)	-0.895	(0)	-1.300	(0)
τ (ADF)	1.9980	(3)	0.239	(0)	-0.477	(0)	0.273	(0)	0.244	(0)
τ_T (PP)	-2.4719	(2)	-2.472	(1)	-1.808	(3)	-3.158	(2)	-3.584**	(2)
τ_μ (PP)	-1.5225	(2)	-2.526	(1)	-1.906	(3)	-0.923	(1)	-1.303	(1)
τ (PP)	2.75	(2)	0.244	(3)	-0.577	(7)	0.063	(2)	0.090	(2)

Statistics (First Difference)	Δln GDP	lag	Δln FDI	Lag	Δln DC	Lag	Δln Share	Lag	Δln CAP	Lag
τ_T (ADF)	-3.257***	(3)	-5.472*	(0)	-6.490*	(0)	-3.340***	(0)	-3.687**	(0)
τ_μ (ADF)	-3.7948*	(2)	-5.530*	(0)	-6.628*	(0)	-3.476**	(0)	-3.841*	(0)
τ (ADF)	-3.185*	(0)	-5.582*	(0)	-6.631*	(0)	-3.703*	(0)	-3.945	(0)
τ_T (PP)	-3.1916	(6)	-5.387*	(4)	-7.689*	(7)	-3.604**	(1)	-3.687**	(0)
τ_μ (PP)	-3.257**	(6)	-5.478*	(3)	-8.187*	(8)	-3.737*	(1)	-3.841*	(0)
τ (PP)	-2.920*	(6)	-5.534*	(3)	-7.001*	(4)	-3.877*	(1)	-4.001*	(1)

Note:

GDP represents real gross domestic product; M2 is the money and quasi money; DC is the domestic credit provided by banking sector, SHARE is the number of shares traded.

5.2 Co-integration Tests

In this study the Johansen (1988) and Johansen and Juselius (1990) method is applied in order to accomplish the co-integration test. It is required to be mentioned which because the value of shares traded (CAP) variable is stationary and integrated of order I (0), it is failed to be considered by this study to further analysis. As the co-integration test requires the variables to be stationary as well as integrated of the same order, thus the CAP variable is eliminated in this study (Katircioglu, 2009). Although, other variables can be considered since they are integrated of the same order I (1). The co-integration test has been applied to real GDP (dependent variable), money supply (M2), domestic credit provided by banking sector (DC) and number of shares traded (SHARES) to examine about the co integration between these variables. Since the real GDP, money supply (M2), domestic credit provided by banking sector (DC) and number of shares traded (SHARES) are non stationary variables and become integrated of order I (1), they are subject to test for co-integration (Engle & Granger, 1987). The table 5.2 illustrates the co-integration results.

Table 5.2 Johansen Co-integration Test

Model [log GDP: F (log M2, log DC, log SHARES)

Hypothesized No. of CE(s)	Eigenvalue	Trace Statistic	5 Percent Critical Value	1 Percent Critical Value
None *	0.620379	50.58369	47.21	54.46
At most 1	0.282676	20.55765	29.68	35.65
At most 2	0.198233	10.25860	15.41	20.04
At most 3	0.104153	3.409546	3.76	6.65

Trace test indicates 1 cointegration equation(s) at the 5% level

Trace test indicates no integration at the 1% level

*(**) denotes rejection of the hypothesis at the 5%(1%) level

According to table 5.2 the Johansen co-integration test confirms one co-integrating vector in the model where GDP is dependent variable. The trace statistic is rejected at 5% significant level. This means that, there is long run relationship between GDP and intended financial development variables in Iran meaning that in the long run they move together.

5.3 Level Equation and Error Correction Model

The Johansen co-integration test confirms that the GDP (dependent variable) and its regressors are integrated meaning that these variables have long run association. The Vector Error Correction Model can be applied when the variables are co-integrated. Thus, the level coefficients in addition to the ECM for short run coefficients are required to be computed. According to table 5.3, the intercept (c) is equal to 32.38. That means that if from one year to another year if there is no change in money supply (M2), no change in domestic credit provided by banking sector (DC) and no change in number of shares traded (SHARES) then GDP by itself will continue to increase by 32.38%. On the other hand, money supply (M2) has elastic impact on the real GDP of Iran economy, meaning that change in the GDP is greater than the change in the M2. When money supply (M2) increases by 1% then the GDP of Iran increases by 1.14% and this is statistically significant. The domestic credit provided by banking sector (DC) has inelastic impact on the real GDP of Iran economy. That means that, if the domestic credit (DC) increase by 1% then the real income (GDP) of Iran will decrease by 0.98% and this is statistically significant. The number of shares traded (SHARES) has inelastic impact on the real GDP of Iran economy. Meaning that, a 1% increase in number of shares traded (SHARES) will cause to increase in GDP of Iran by 0.077% and this is statistically significant. The model which is employed in this study is statistically significant at lag 1 based on the t-statistics of the error correction model. Error correction term shows that real income of Iran converges to its long term equilibrium level by 18.73% (speed of adjustment each year) by the contribution of financial development indicators (M2, DC, SHARES).

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Table 5.3 Level Equation and Error Correction Model

Cointegrating Eq:	CointEq1
LOGGDP(-1)	-1.000000
LOGM2(-1)	+1.145183 (0.28645) [-3.99781]
LOGDC(-1)	-0.981773 (0.22971) [4.27390]
LOGSHARE(-1)	+0.077686 (0.00486) [-15.9896]
C	+32.38522

Error Correction:	D(LOGGDP)
CointEq1	-0.187328 (0.08728) [-2.14630]
D(LOGGDP(-1))	0.334734 (0.16953) [1.97447]
D(LOGM2(-1))	-0.074980 (0.14034) [-0.53428]
D(LOGDC(-1))	0.130247 (0.07899) [1.64893]
D(LOGSHARE(-1))	0.016345 (0.01860) [0.87861]
C	0.030111 (0.01584) [1.90094]

R-squared	0.339663
Adj. R-squared	0.207595
Sum sq. Resids	0.050780
S.E. equation	0.045069
F-statistic	2.571888
Log likelihood	55.43348
Akaike AIC	-3.189257
Schwarz SC	-2.911711
Mean dependent	0.057143
S.D. dependent	0.050630

Determinant resid covariance (dof adj.)	1.22E-08
Determinant resid covariance	5.15E-09
Log likelihood	119.8718
Akaike information criterion	- 5.927214
Schwarz criterion	- 4.632000

5.4 Granger Causality Tests

In this study co-integration test has been applied in order to investigate the constant long run association between variables. Nevertheless, the direction of causality among variables cannot be clarified through this test. In the case there is long run relationship between variables meaning that there is co-integration, so it can be concluded that as a minimum one direction of causality exists between the variables (Enders, 1995). To determine the direction of causality among variables the Granger Causality test has been employed where the real GDP is considered as the regressand in the model. The obtained results propose a bi-directional causality among DC and M2. It implies the existence of feedback association (effect) among DC and M2. Moreover, according to the results a unilateral causality runs from GDP to DC. That means that any change in GDP motivates a shift in DC. On the other hand, a unilateral causality can be realized from the results which run from GDP to SHARES. Meaning that, as a result of change in GDP the SHARES will be stimulated as well. At last one more causality is suggested by the results in which runs from SHARES to DC. That means that, any change in SHARES motivate a shift in DC as well.

Table 5.4 Granger Causality Tests under Block Exogeneity Approach

Dependent variable: LOGGDP			
Excluded	**Chi-sq**	**df**	**Prob.**
LOGM2	1.683067	2	0.4310
LOGDC	2.851282	2	0.2404
LOGSHARE	1.286134	2	0.5257
All	6.579821	6	0.3615
Dependent variable: LOGM2			
LOGGDP	0.465856	2	0.7922
LOGDC	9.991817	2	0.0068
LOGSHARE	0.549612	2	0.7597
All	11.25374	6	0.0808
Dependent variable: LOGDC			
LOGGDP	6.870182	2	0.0322
LOGM2	19.98568	2	0.0000
LOGSHARE	6.751977	2	0.0342
All	23.89593	6	0.0005
Dependent variable: LOGSHARE			
LOGGDP	4.955692	2	0.0839
LOGM2	0.070958	2	0.9651
LOGDC	0.311226	2	0.8559
All	9.352979	6	0.1547

Chapter 6

CONCLUSION

6.1 Conclusion

This thesis focused on investigating the empirical relationship between financial sector development and economic growth in Iran, which has a close economy and a close financial and banking sector as well as a close stock market. With this respect, it is an interesting topic area to search this relationship in the case of Iran. As financial sector development, stock market and banking sector indicators have been selected in this thesis. The main results of the thesis suggest that a long run relationship between real income growth and financial sector development has been confirmed by using the Johansen co-integration tests. Financial sector has statistically long term impact on real income growth in Iran. Furthermore, real income in Iran converges to its long term equilibrium level by 18.73 percent by the contribution of financial sector. However, Granger causality tests under Block Exogeneity Approach suggest that real income is not financial sector driven in Iran; but, financial sector is output driven. Therefore, the "*demand following*" hypothesis can be confirmed for the long term of the Iranian economy according to the result of this thesis.

This study has investigated that although Iran has a close financial system, but it has statistically long term impact on real income. The authorities should now interpret this

scientific finding in order to promote the Iranian financial sector. This finding has been investigated for a close economy. Then, the question can be raised "What about if the Iranian economy would be integrated into the world financial system".

6.2 Limitations and Further Research

In order to conduct this study the gross domestic product (GDP), the ratio of money supply to GDP (M2), the ratio of domestic credit provided by banking sector to GDP (DC) as well as the number of shares traded (SHARES) are applied with consideration of time series data from 1965 through 2009. The reason referred to the data accessibility of applied financial proxies. Supplementary researches can be subjected to be done by applying other financial proxies in case of data accessibility. At last, the subject of this study can be applied in the case of other countries as well as cross-country studies as well.

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