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**FINANCIAL DEVELOPMENT AND ECONOMIC
GROWTH: THE CASE OF TURKEY**

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“Financial Development and Economic Growth: The Case of Turkey”

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ABSTRACT

The aim of this study is to investigate the relationship between financial development and economic growth in Turkey after the completion of financial liberalization between years 1988–2012. To achieve this aim, existing theoretical and empirical literature has been reviewed in detail. By considering theoretical link between variables, the financial development and economic growth relationship for Turkey in the context of financial liberalization process has been examined with the aid of tables and graphs. In empirical part of the study, by using quarterly time series data between 1988–2012 for Turkey, causal relationship between financial development and economic growth has been tested by using VAR analysis, cointegration and Granger causality tests. The result of the empirical study showed that while there is no long run relationship between variables, there exists a short-run relationship which causality runs from economic growth to financial development.

Key words: Financial Development, Economic Growth, Financial Liberalization, VAR analysis, Causality

“Finansal Gelişme ve Ekonomik Büyüme: Türkiye Örneği”

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ÖZ

Bu çalışmanın amacı Türkiye için finansal gelişme ve ekonomik büyüme arasındaki ilişkinin finansal serbestleşme süreci tamamlandıktan sonraki dönem olan 1988–2012 yılları arası için araştırılmasıdır. Bu amaca ulaşmak için, var olan teorik ve uygulamalı literatür detaylı bir şekilde incelenmiştir. Değişkenler arasındaki teorik bağlantıyı göz önünde bulundurarak, Türkiye için finansal gelişme ve ekonomik büyüme ilişkisi finansal serbestleşme süreci çerçevesinde tablolar ve grafikler yardımıyla incelenmiştir. Çalışmanın uygulama bölümünde, Türkiye için 1988–2012 yılları arası çeyreklik zaman serisi verileri kullanılarak, finansal gelişme ve ekonomik büyüme ilişkisi VAR analizi, koentegrasyon ve Granger nedensellik analizleri yardımıyla test edilmiştir. Uygulamalı çalışmanın sonucunda, değişkenler arasında uzun dönemli bir ilişki bulunmazken, kısa dönemde ekonomik büyümeden finansal gelişmeye doğru bir nedensellik ilişkisi ortaya çıkmıştır.

Anahtar kelimeler: Finansal Gelişme, Ekonomik Büyüme, Finansal Serbestleşme, VAR analizi, Nedensellik

PREFACE

The fundamental question in economic growth is why countries grow at different rates. The growth literature has come up with numerous explanations of cross-country differences in growth process such as factor accumulation, technological improvements, research and development activities, factor endowments, institutional development, macroeconomic stability, and even ethnic and religious diversity.

In recent years, substantial theoretical and empirical studies devoted to clarify the relationship between financial development and economic growth. The main debate emphasized on the role of the financial system in fostering economic growth and development. The main line of the inquiry in early literature is testing the hypothesis of the positive relationship between financial development and economic growth. Some of the studies suggest that countries with better-developed financial systems tend to grow faster. Most but not all studies support this hypothesis. While some of the studies found bi-directional relationship, others state that the finance and growth nexus is unimportant and overstated.

In the light of last theoretical and empirical works on financial development and economic growth relation, the importance of examining the relationship on country basis has revealed. The reason is that economic structure, development process, factor accumulation, innovations, macroeconomic policies and especially financial institutions differ between countries. In this context, our aim in this study is to examine the relationship between financial development and economic growth for Turkey, and to clarify the causal relationship by using econometric analysis. Thus, the relationship will be evaluated according to Turkey's financial structure and economic situation. Moreover, when determining the financial development and economic growth relationship, it will also be evaluated in financial liberalization process. In the empirical part of this study, the causal relationship between financial development and economic growth will be empirically examined.

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Betl MUTLUGN

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LIST OF ABBREVIATIONS

ADF	: Augmented Dickey-Fuller Test
BRSA	: Banking Regulation and Supervision Agency
CBRT	: Central Bank of Republic of Turkey
CMB	: Capital Markets Board
EGM	: Endogenous Growth Models
EGT	: Endogenous Growth Theory
FDR	: Financial Development Report
GDP	: Gross Domestic Product
GNP	: Gross National Product
IMF	: International Monetary Fund
ISE	: Istanbul Stock Exchange
NGM	: Neoclassical Growth Models
NGT	: Neoclassical Growth Theory
PP	: Phillips-Perron
SME	: Small and Medium sized Businesses
TFP	: Total Factor Productivity
TL	: Turkish Liras
USD	: United States Dollar
VAR	: Vector Autoregression
VECM	: Vector Error correction Model
WEF	: World Economic Forum

INTRODUCTION

Economists give a great deal of attention to economic growth and disparities in growth rates among countries since the emergence of the economy as a science. The questions of which factors affect economic growth and what are the motives behind the long term sustainable economic growth have always been a central issue in economics. Since the economic growth is a fundamental indicator in measuring country's welfare and well-being of people, it is important to assess the factors that affect economic growth and channels elicit the relation between them. A large and expanding literature tries to shed some light on the roles of policy or variables in the determination of long run economic growth.

In recent years, an increasing interaction and connection between real sector and the financial system have attracted considerable attention. Actually, academic research on the finance-growth nexus is not a new one and dates back to work of Bagehot in 1873. Many theoretical and empirical studies have been devoted to cover the direction and degree of this relationship ever since that time. While economists have generally reached a consensus on the role of financial development in economic growth, theoretical and empirical studies supporting the relationship is still very much in progress.

Studies on the financial development and economic growth relation can be examined under three different categories; theoretical explanations to clarify the channels between variables, direction of the causation, and empirical studies on this relationship. Theoretical explanations for finance and growth relation revolved around growth theories. In the 1960s and 1970s, the leading neoclassical growth theory suggests that achieving long-run economic growth depends only on continuous technological progress. Other factors that affect economic growth couldn't be explained with this theory. The emergence of endogenous growth theory in 1980s which allow endogeneity of different variables in growth model have

enabled further clarifying the financial development and economic growth relationship. In this context, the effect of financial development on economic growth is explained through human capital, technology financing, capital accumulation and total factor productivity.

Current literature on the direction of causality composes three different streams related to financial development and economic growth. The first group of economists contends that financial system development is crucial for economic growth and less developed financial systems may retard economic growth. In the context of theoretical explanations, this view is consistent with Walter Bagehot (1873) and Joseph Schumpeter's (1911) views. In these studies, the effect of financial development on economic growth is explained by channels such as human capital, capital accumulation, total factor productivity, and technology financing in the context of endogenous growth model. Empirical studies on cross country basis also support this view. Second group of economists suggest that financial development follows economic growth, as Robinson (1952) states. Empirical studies based on country specific analysis confirm this relationship. Last line of group states that contribution of financial development on economic growth is negligible and this relationship has been overstated in the literature as Keynes and Lucas states.

Many empirical studies have investigated the relationship between financial development and economic growth, but results are ambiguous and the finance-growth nexus is controversial. Empirical researches on this subject are dominated by cross-country studies due to the lack of sufficient time series data for developing countries. While results of the cross country studies found positive relationship and causality runs from financial development to economic growth, time series analyses show that direction of causation is from economic growth to financial development.

Briefly, the underlying relationship between financial development and economic growth remains unclear and ambiguous in theory and empirics. Results of the related theories and empirical studies searching the degree and direction of this relationship

differ because of the differences in stages of development, time, institutional structure, and policy implementations between countries.

The debate of the financial system and economic growth relationship has accelerated especially after the late 1970s, with the fundamental transformation of economic policies towards liberalization in developing countries. After 1980s, results of the liberalization policies concerning the financial system and real sector in developing countries had started to reveal in many ways, both positively and negatively. In Turkish economy, after the implementation of economic liberalization policies in 1980s, positive and negative effects of economic liberalization policies had emerged in clear way, especially after 1990s. By the intense attempts to harmonize the global economic system, 1990s for Turkish economy will also remain in memories as a crisis period.

In the light of abovementioned issues, the aim of this study is to clarify the controversial relationship between financial development and economic growth, and help to estimate the real effect underlying this relationship for Turkey between years 1988-2012.

The motivation for the study is the observation of apparent relationship between financial and real sector in the last decades which show itself especially after financial liberalization and in current economic issues such as 2008 economic crisis. Moreover, growth rate of Turkey moves in the same direction with financial development and respond positively to financial deepening in the last few years. Besides, the existing empirical literature has several shortcomings since they ignore different institutional and structural characteristics of each economy. Thus, to reach realistic results, it is necessary to evaluate financial development and economic growth relationship according to the structure of the Turkish financial system and its economic performance.

The outline of the thesis comprises three parts. Chapter 1 is the theoretical part which surveys functions of the financial system, theoretical transmission mechanism

between financial development and economic growth, theoretical and empirical literature. Theoretical considerations in the literature are also considered to better understand the finance and growth nexus. Chapter 2 examines financial development and economic growth relationship for Turkey by examining background of the Turkish financial system and evaluates in process of financial integration. Lastly, chapter 3 empirically examines the financial development and economic growth for Turkey after liberalization, between years 1988-2012 by using quarterly time series data and proper econometric packages. The empirical part of the study excludes stock market development and considers only development in banking sector development by using VAR analysis and Granger causality tests. In the conclusion part, results of the study are evaluated in the context of financial liberalization.

In the context of the aim of the study, this thesis has four hypotheses: First, “The banking sector development and economic growth is positively related after 1980s.” Second, “There is a short run relationship between financial development and economic growth, but there is no long run relationship between variables.” Third, “Causality between financial development and economic growth runs from economic growth to financial development for Turkey.” Fourth, “Theoretically, policies implemented for financial liberalization after 1980s has been negative factor for economic growth.” To test first three hypotheses, last part empirically studies the financial development and economic growth relationship for Turkey. The methodology of this study is to apply econometric analysis by using VAR model and Granger causality test after realizing theoretical link between variables and reviewing related theoretical and empirical literature.

CHAPTER 1

THE RELATIONSHIP BETWEEN FINANCIAL DEVELOPMENT AND ECONOMIC GROWTH

In this chapter, first section 1.1 examines the relationship between financial development and economic growth from theoretical perspective. Functions of the financial system will be explained to understand the role of the financial system in economic growth. Then, theoretical relationship between financial development and economic growth will be examined. While section 1.1.3 surveys theoretical literature, section 1.1.4 shows measurement of financial development. Lastly, section 1.2 examines empirical studies on the finance and growth nexus.

1.1. FINANCIAL DEVELOPMENT AND ECONOMIC GROWTH: THEORETICAL PERSPECTIVE

1.1.1. Functions of the Financial System

An emergence of the financial system can be attributed to the existence of information and transaction costs. The financial system minimizes the costs of acquisition of information and transactions. In the classical complete market of Arrow-Debreu state contingent claim framework, in which there is no market friction, there is no need for the financial system; because there is full information in market and transactions costs are absent.¹ Risks are fully internalized in the price system, lenders and borrowers deal directly in the market. So, no party needs to use financial services. But in reality, Arrow-Debreu world does not exist. To reach realistic results, we need no introduce frictions to assumptions of our economic model. These frictions can be **agency frictions** which arise from asymmetric informational frictions of agents known as market failures of adverse selection and

¹ See Kenneth Arrow, "The Role of Securities in the Optimal Allocation of Risk Bearing," **Review of Economic Studies**, Vol.2, Apr. 1964., Gerard Debreu, **Theory of value**, New York: Wiley, 1959.

moral hazard, or enforcement frictions that limit the scope for contracting because they limit pledge ability; or **collection problem** of agents caused by high transaction costs and liquidity risk.² The existence of market frictions inherent in real world requires the financial system.

Definition of the Financial System

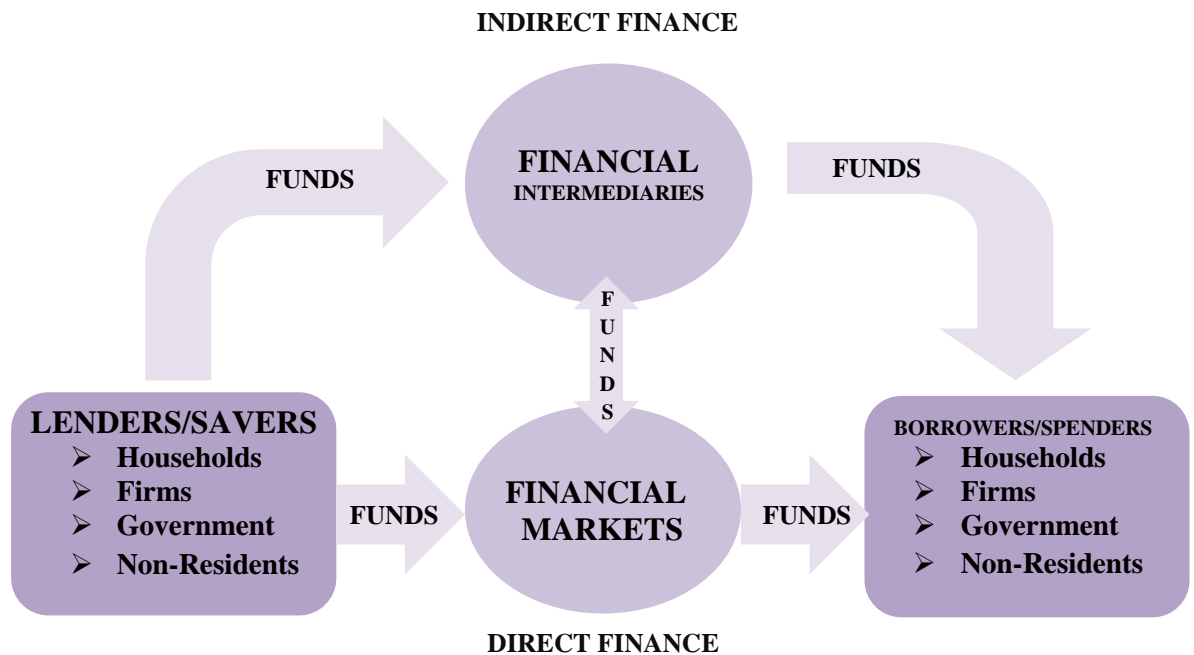
Financial system can broadly be defined as an essential economic function of channeling funds from households, firms, and governments that have saved surplus funds by spending less than their income -lender or savers- to those that have a shortage of funds because they wish to spend more than their income –borrower or spenders.³ It is simply an intermediation process between borrowers and lenders. In this process, transaction services provide convenience in risk, liquidity, maturity and monitoring to economic agents. It allocates funds to projects with the highest marginal product of capital in an uncertain environment. Financial services enable fund transfers between these economic agents by their financial tools and legal entity in administrative rules. Put differently, financial sector utilizes productive resources of the economy to facilitate capital formation by providing wide range of financial tools to meet the different needs of borrowers and lenders.

Transmission mechanism of funds between savers and borrowers by the financial system can be seen schematically above, in Figure 1.1, borrowers (spenders) and lenders (savers) are the same economic agents: households, firms, government or non-residents. Savers and spenders make a choice between indirect financing (financial intermediaries) and direct financing method (financial markets) to lend or borrow.

² M. Kabir Hassan, “Financial Development and Economic Growth: What we know and what we can do about it?” **University of New Orleans**, USA, pp. 4, 5.

³Frederic S. Mishkin, **The Economics of Money, Banking and Financial Markets**, Pearson Press, 7th Edition, p. 23.

FIGURE 1.1: Flow of Funds through the Financial System



Classification of the Financial System

There are several categorizations of the financial system. According to most widely used financial structure discrimination, financial system consists **financial intermediaries** such as banks, Central Bank, pension funds, private finance institutions, insurance companies etc., and **financial markets** such as money and capital markets, foreign exchange markets, derivative and commodity market, futures markets, currency markets, etc..

Another categorization of the financial system is based on relative dominance of financial intermediaries or financial markets in an economy. If financial intermediaries play an important role in economic activities rather than the financial markets, then the financial structure of the economy is **bank-based system**. On the contrary, **market-based system** prevails in economy, if a stock or bond market is

dominant. In above Figure 1.1, countries that have bank-based system mostly use indirect financing method by intermediation process and countries that have market-based system use direct financing method in their fund supply and demands. For instance, Germany and Japan has bank-based financial system while United States and United Kingdom are the examples of market-based financial system.

Basic Features of the Financial System

Financial sector varies from other sectors of the economy, especially from real sector, in structure, mechanism and implication of public policies. Financial sector is more vibrant and effective sector than the other sectors. But even it has strong positive externalities; it is more fragile and more liable to crises. Financial system also tends to be less competitive and more dependent than the real sector referring to policy makers approve oligopolistic, even monopolistic structure in the financial system for economic stability. Thus, government and policy makers apply tighter policies and put more regulations to decrease risks and prevent crisis for the reason that financial system is prone to risks, market failures, coordination errors and exploitations. That is, governments play a large role in all of the most successful financial markets, as in the case of Wall Street market, the international emblem of free markets.⁴

Financial system also utilizes information and communication technologies more effectively than the other sectors and gets advantage from technological improvements. For Levine;

“Nonfinancial developments like changes in telecommunications, computers, nonfinancial sector policies, institutions, and economic growth itself influence the quality of financial services and the structure of the financial system.”⁵

⁴Joseph Stiglitz, “The Role of the Financial System in Development”, **Presentation at the Fourth Annual Bank Conference on Development in Latin America and the Caribbean**, San Salvador, 1988, p.2.

⁵ Ross Levine, “Financial Development and Economic Growth: Views and Agenda”, **Journal of Economic Literature**, Vol. 35, Number.2, 1997, p. 721.

Technological improvements lower transaction costs and affect financial arrangements.⁶ Indeed, in the last years, developments in information and communication technologies have increased the size of information and boost the spillover of knowledge. Financial system have benefited from this improvements by increasing the quality of its financial tools. But at the same time, an increase in the size of information and spillover of knowledge may cause “knowledge pollution” which increases asymmetric information that financial system is more pertinent than real sector.

Functions of the Financial System

To realize the functions of the financial system is crucial for correlating the financial development and economic growth. These functions has best described and categorized in Levine’s comprehensive survey article.⁷ According to Levine, functions of the financial system can be classified into the following five categories:

- i. Allocate resources
- ii. Mobilize savings
- iii. Facilitate risk management
- iv. Exert corporate control
- v. Ease trading of goods, services, contracts

i. Acquiring Information and Allocating Resources

Without the existence of financial markets and institutions, savers wouldn’t be willing to lend their savings to investors who are undertaking long-term risky projects, because it is costly to evaluate investment projects for individual savers. Besides, collecting information about numerous firms and managers, and processing this information according to economic conditions in an uncertain environment

⁶ Robert C. Merton, “Financial Innovation and Economic Performance”, **J. Applied Corporate Finance**, Vol.4, No.4, 1992, pp. 12–22.

⁷ Levine, “Financial Development and Economic Growth: Views and Agenda”, **op. cit.**, p. 690.

requires time, capacity and means. Savers may not have these abilities, so they can avoid investing in projects for which they have very little or reliable information.⁸

Financial systems emerge to collect, process, and produce information on possible investments and they are more efficient than individual savers in this process. Levine (1997) explained the reason of the efficiency of the financial systems in information acquisition and resource allocation. By assuming that there is no financial system, if there is a fixed cost to acquiring information about an investment opportunity, each investor must pay the fixed cost separately to learn about the firm. Because of this information cost structure, individuals may use financial intermediaries and markets to economize on the costs of acquiring and processing information about investments. Financial system can pay the fixed cost once, and use collecting and processing skills and intermediation service for all individuals, instead of each individual acquire information and pay the fixed cost over and over again. By economizing from information acquisition costs and facilitating the acquisition of information about investment opportunities, financial markets and intermediaries improves resource allocation.⁹

There are two advantages of the financial system here: First, economizing from information acquisition costs and second, better evaluating this information about the investment opportunities available by assessing the associated risks. Thus, funds are channeled to the most promising and highest return projects. This leads to improved quality of investments and support economic growth.

For Diamond (1984), financial systems emerge to minimize the costs of acquiring information on projects and to monitor and evaluate their performance.¹⁰ Body and Prescott (1985) also claim that since the investment opportunities of agents are

⁸ Levine, "Financial Development and Economic Growth: Views and Agenda", *op. cit.*, p. 694.

⁹ Levine, "Financial Development and Economic Growth: Views and Agenda", *op. cit.*, p. 695.

¹⁰ Douglas Diamond, "Financial Intermediation and Delegated Monitoring," *Review of Economic Studies*, Vol. 51, No.3, 1984, pp.393-414.

private information, these information and transaction costs encourage the existence of financial intermediaries endogenously.¹¹

Hansson and Jonung (1997) argued that a well-functioning financial system leads to more efficient allocation of resources by increasing the ability to assess better investment projects. Financial intermediaries arise to lend on a large scale to investment projects, improves their decision making capacity about projects that worth financing. They specialize on finding and evaluating different investment opportunities, and channel existing capital to most promising projects. Consequently, average productivity of investments will increase.¹²

Greenwood and Jovanovich (1990) states that many firms and entrepreneurs are searching for capital for their investment projects and they consult to financial markets and institutions because they are better at revealing sound firms and managers. This leads to more efficient allocation of scarce funds and faster growth.¹³

Stock markets also play an important role in information acquisition and processing this information about investment projects. It reduces resources that economic agents must spend to acquire information. Larger and more liquid markets allow agents with private information to profit from the information.¹⁴

ii. Mobilizing Savings

Financial system pools savings from different savers for investment. The mobilization of savings involves collecting savings from a large number of individuals by creating small denomination instruments and transfer aggregate savings to agents with better investment opportunities. For Erik Sirri and Peter

¹¹ John Boyd and Edward Prescott, "Financial Intermediary-Coalitions." **Journal of Economic Theory**, Vol.38, No.2, 1986, p. 212.

¹² Pontus Hansson and Lars Jonung, "Finance and Economic Growth: The Case of Sweden 1834-1991", **Research in Economics**, Vol. 51, No.3, September 1997, pp. 277-78.

¹³ Jeremy Greenwood and Boyan Jovanovic, "Financial Development, Growth and the Distribution of Income", **Journal of Political Economy**, Vol.98, No.5, October 1990, p.1085.

¹⁴ Sanford J. Grossman and Joseph E. Stiglitz, "On the Impossibility of Informationally Efficient Markets", **The American Economic Review**, Vol. 70, No. 3, 1980, pp.393-408.

Tufano (1995), without access to multiple investors, many production processes would be constrained to economically inefficient scales.¹⁵ With aggregated savings, financial system can finance very large investment projects.

In the absence of the financial system, individual savers would have to utilize their savings on their own. Savers with small denominations may not be eager to lend due to the transaction costs and this will decrease the amount of capital available to lend in the economy for the investment. On the other hand, firms that need massive savings in order to accomplish their investment projects would have to collect from many individual savers who have small denominations to complete entire amount of capital. Moreover, this process is costly as they have to make contracts with all of small savers. Financial markets and intermediaries encourage households to transfer their savings into the financial system and creating necessary funds for investment by realizing mobilization of savings.

Carosso (1970) explained the difficulty of collecting small savings by pointing out the range of transaction costs. He states that American investment banks used their European connections and major banks and industrialists in the United States to raise capital for investment in the mid-1880s. They also used advertisement methods such as newspapers, pamphlets and they try to sell securities to households by travelling the states.¹⁶ De Long (1991) and Naomi Lamoreaux (1994) points out that not only transaction costs make it difficult to mobilize savings, but financial institutions also spend resources to establish reputations in order to persuade savers that their savings will be used in good investment opportunities.¹⁷

¹⁵Erik R. Sirri, Peter Tufano, "The Economics of Pooling," in **The global financial system: A functional perspective**. Eds.: Dwight B. Crane Et Al. Boston, MA: Harvard Business School Press, 1995, pp. 81-128.

¹⁶ Vincent Carosso, **Investment Banking in America: A History**, Cambridge, MA: Harvard University Press, 1970.

¹⁷ Naomi R. Lamoreaux, **Insider Lending: Banks, Personal Connections and Economic Development in Industrial New England**, New York, Cambridge U. Press, 1994., J. Bradford De Long, **Inside the Business Enterprise: Historical perspectives on the use of Information**, Chicago, University Of Chicago Press, 1991, pp. 205–236.

iii. Facilitating Risk Management

The existence of transaction and information costs and the difficulty of understanding the complex economic environment for individuals create risks. Most of the promising and high-return investment projects are risky since they require long term loans. In contrast, individual savers are risk averse and they will not be enthusiastic to finance risky projects even though they have higher returns. A well-functioning financial system enables savers and investors to diversify their portfolio, hedge against risks and pool risks. In this way, risk-averse savers increase their loanable savings and invest in a portfolio of high risk projects. Armed with tools of insurance against risks and services that allows keeping diversified portfolios, financial markets and intermediaries direct more capital to high-risk, high-return investment projects. This, in turn boosts the overall productivity of capital and increase economic growth.

Here, it is important to detail the risks associated with financial transactions. Levine (1997) classified risks into two categories; liquidity risk and idiosyncratic risk.¹⁸

Liquidity risk arises from the uncertainties in converting assets into a medium of exchange. Uncertainties involve asymmetric information and transaction costs which have a negative effect on liquidity, so they raise the liquidity risk. Financial markets and intermediaries evolve to mitigate the frictions associated with liquidity risk. Thus, liquid capital markets decrease the cost of trading financial instruments and limit the uncertainty about the timing and settlement of those trades.¹⁹ Financial intermediaries also provide liquidity effectively by properly matching the different maturity periods of loans.

¹⁸ Levine, "Financial Development and Economic Growth: Views and Agenda", *op. cit.*, p. 692.

¹⁹ *Ibid.*

Many potentially high-return investment activities, innovative projects or implementing a new technology to production process require high volume and long-term commitment of capital, plus carries high risk. Investors may be reluctant to tie up their savings to these projects since they don't want to lose the control of funds for a long time. Financial systems provide liquidity for long term investments, mitigate liquidity risk, and therefore, induce savers to invest in high-return projects requiring a long-term commitment of capital by removing anxieties of investors. Financial markets, especially stock market allows investors to invest in high return projects by their high liquid structure. They enable to sell security and obtain cash quickly when necessary.²⁰

For Hicks (1969), the reason of industrial evolution in England was not coming from technologic improvements but the developments in capital market that mitigated liquidity risks was the main reason.²¹ It has been argued by Bencivenga and Smith (1991) that an emergence of financial intermediaries provides amelioration of liquidity risks faced by individuals and facilitates investment activities. This prevents unnecessary liquidations in economy.²² Diamond and Dybvig (1983) constructed a model to show the shocks that savers receive after investing in an illiquid, high-return project or in a liquid, low-return project. After choosing an illiquid, high-return project, investors receive a shock, and investors may wish to access their savings before the investment project yields return. This risk, in turn creates an incentive to invest in liquid, low-return projects. Investors want to learn whether other investor has received a shock or not, to give a right decision. This reflects an information cost and financial markets emerge to mitigate this cost.²³

²⁰ James B. Ang, "A Survey of Recent Developments in the Literature of Finance and Growth", Discussion Paper 03/07, **Department Of Economics**, Monash University, p. 5.

²¹ John Hicks, **A theory of economic history**, Oxford: Clarendon Press, 1969. pp. 143-45.

²² Valerie R. Bencivenga and Bruce D. Smith, "Financial Intermediation and Endogenous Growth," **Review of Economic Studies**, Vol. 58, No.2, April 1991, pp. 195-209.

²³ Douglas W. Diamond and Philip H. Dybvig, "Bank Runs, Deposit Insurance, and Liquidity," **Journal of Political Economy**, Vol. 91, No. 3, June 1983, pp. 401-419.

Another category of risk for Levine called “idiosyncratic risk” is an unsystematic risk that occurs under unique circumstances associated with firm-specific cases, individual projects, country or industry basis etc... Financial intermediaries and markets provide vehicles for trading, pooling and diversifying risk to these agents. This induces to hold a portfolio shift toward projects with higher expected returns and promotes economic growth.²⁴

Risk diversification also has a positive impact on technological improvements and innovative activities. Agents usually engage in innovative projects to yield higher returns. Risk-averse savers can invest with complacency in a portfolio of new technologies and products instead of choosing a single new technology or product by risk diversification.

Consequently, highly liquid markets and intermediaries transform financial instruments into investments and into high-return, long-term projects and enhance economic growth.

iv. Monitoring Investments and Corporate Control

After acquiring information and deciding to finance an investment project, financial markets and intermediaries continue to control activities and decrease the costs related to monitoring firms and exert corporate control by providing efficient, increasing availability of services.

It is costly to verify investment project returns for outside investors. They may be discouraged to invest in projects thinking that firms will use their funds in risky activities and there will be a risk of default. Firms will also be constrained from borrowing more given that higher leverage means greater risk of default and higher verification expenditures by lenders.²⁵ For Bernanke and Gertler, (1989), these

²⁴ Levine, “Financial Development and Economic Growth: Views and Agenda”, **op. cit.**, p. 694.

²⁵ Levine, “Financial Development and Economic Growth: Views and Agenda”, **op. cit.**, p. 696.

verification costs may impede efficient investment.²⁶ To avoid this, financial institutions require collateral and arrange financial contracts with firms and firms allow for the monitoring of their investment projects. Besides, financial intermediaries establish strong relations with firms over time and the cost of information acquisition and monitoring cost reduces further. As information asymmetries decrease, external funding constraints also decrease. This leads to better resource allocation.

From the financial market perspective, stock markets also promote corporate control. The valuation of company assets based on stock prices provides a yardstick to measure managers' performance. This leads to improved corporate controls.²⁷

Sum up, more efficient monitoring investments and corporate control tends to improve allocation of capital and effects positively economic growth.

v. Easing Transactions

Financial system stimulates specialization, innovation, technological advances and growth by reducing transaction costs. As is known, main function of the financial system is to pool and transform savings into funds that can be used in investment activities. When performing this function, financial system specialize in all services they give and decrease *transaction costs*. Financial system can manage and invest funds at a much lower cost than the small individual depositors and investors since evaluating every potential borrower or finding required funds for investment to borrow is difficult and costly. That is, the activities of financial intermediaries and markets lead to lower the transaction costs and this promotes specialization and productivity movements by encouraging the invention of new and better and cost effective production technologies. Thus, they facilitate the exchange

²⁶ Ben Bernanke and Mark Gertler, "Agency Costs, Net Worth, and Business Fluctuations", **American Economic Review**, Vol. 79, No. 1, March 1989, pp.14-31.

²⁷ Ang, **op. cit.**, p. 6.

of technology, allow creative individuals to specialize in innovations that strengthen economic growth.²⁸

For Levine, *“More specialization requires more transactions. Because each transaction is costly, financial arrangements that lower transaction costs will facilitate greater specialization. In this way, markets that promote exchange encourage productivity gains.”*²⁹

To sum up, the effect of finance sector on economic growth accrues through the functions of the financial system. Allocating credit to most promising projects, facilitation of portfolio diversification for savers to reduce risks, collecting and processing information on investment projects, reducing transaction cost, easing credit constraints, monitoring firms after the lending process by sound financial system is expected to improve the efficiency of resource allocation, increase returns from investments and raise capital accumulation, thereby boost economic growth.

1.1.2. Theoretical Foundations of the Relationship between Financial Development and Economic Growth

Economists have different opinions on the relationship between the financial system and economic growth. While some of these views advocate a positive, first order relationship between financial development and economic growth such as Levine (1997), others state that finance-growth relation has been “badly over-stress” in literature as Lucas asserts.³⁰ Even if economists agree on the existence of the relationship and recognize that financial development is crucial for economic growth, they discuss the direction of the causation, and causal relationship between variables remains also unclear. Moreover, the discussion of the financial development and economic growth lies on the different models as economists work with different

²⁸ “Assessing Regional Integration in Africa 2008: Towards Monetary and Financial Integration in Africa”, United Nations Publications, January 2009, pp. 109-110.

²⁹ Levine, “Financial Development and Economic Growth: Views and Agenda”, *op. cit.*, p. 701.

³⁰ Levine, “Financial Development and Economic Growth: Views and Agenda”, *op. cit.*, p. 688.

theoretical frameworks. The empirical studies conducted by literature also vary considerably due to the different institutional and structural characteristics of each economy.³¹ Thus, each country has different forms of the financial system, so they should be evaluated according to their own structure and dynamics.

Nevertheless, a healthy financial system is an integral part of a sound economy. It would be wrong to oversight the development of financial sector in determining the economic growth and development policy for a country. Although development of the financial sector is beneficial for the economy and have strong positive externalities in process of transforming savings into investments, these externalities can also be negative as the financial system is crisis-prone and have potential destructive effects for the whole economy.

As previously stated, there are different models and views that explain the channels between financial system and economic growth. The literature on finance-growth relation contains four main aspects of the subject: **the existence and degree of the relationship, direction of the causation, finance-growth nexus according to theoretical models and which channels elicit the relationship.** This section includes theoretical considerations of the literature on finance-growth nexus and explains the transmission mechanism between finance and growth by considering these main aspects. Before delving into the relationship, clarifying the notion of economic growth and financial development will be useful.

Economic Growth

Economic growth is simply an increase in the amount of goods and services produced in a given country. It is commonly measured as an annual rate of increase in country's real Gross Domestic Product (GDP).³²

³¹ Ang, **op. cit.**, p. 2.

³² Philippe Aghion, Peter Howitt, **The Economics of Growth**, The MIT Press, London, 2009, p. 1.

In fact, the notion of “economic growth” contends more comprehensive and meaningful statements. Economic growth implies an increase in living standards and wealth of people living in a society. Wealth of people depends on an increase in their consumption. Thus, economic growth can be defined as having an ability and capacity to produce goods and services in an increasing variety and quantity of a society.³³ An increase in production capacity leads to sustainable increase of income per person for a given country. Real per capita income is also an indicator of economic growth.

Economic growth is a long run, dynamic and supply side issue. It depends on increasing the potential level of output, i.e. real GDP. Economic growth theory suggests that the sources of economic growth rely on the expanding production scale and increasing the efficiency of the factors of production. Expanding the production scale means “factor accumulation” and it depends on increasing the factors of production that economy have. Factor accumulation is one of the main sources of economic growth and it has a direct effect on growth process.³⁴ These sources depend on the ability to raise the rates of accumulation of physical and human capital, to increase labor and to encourage entrepreneurship. The other source of economic growth is the efficiency of the factors of production which depends on technological improvements that comes from research and development (R&D) activities, learning by doing process, etc... Technological improvements have an indirect effect on economic growth in that its activities increase the efficiency of the factors of production. Other than that, finding or exploiting natural resources, government policies, finance, etc. also effects economic growth. In fact, any production activity and policy that affect production potential, production scale and efficiency are the sources of economic growth.

Economic growth of a country is closely related to the welfare of that country and it affects social and economic development, as well. By promoting welfare of individuals related to consumption levels and economic decisions, economic growth

³³ Türkan Turan, **İktisadi Büyüme Teorisine Giriş**, Yalın Yayıncılık, İstanbul, 2008, 1. Basım, p. 11.

³⁴ Ibid.

also provides a social development through increasing quality of living, social services and relations, and modernization of ethos.³⁵ Experiences after industrial revolution have confirmed that there is a noticeable leap in welfare increases and modernization process. Countries had been classified as developed and under-developed countries. This new world design led nations to set economic growth as a main goal for harmonization with the new process. Thus, economic growth is one of the main economic policies of governments for developing countries, as in Turkey.³⁶ Determining the sources of economic growth is essential for policymakers to decide which policy should be applied.

Financial Development

Financial development can be defined as a process of establishment and expansion of institutions, instruments and markets, and improvement in quality and efficiency of the financial system that supports productive investment opportunities in an economy.³⁷ A well-functioning economy needs a financial system that moves funds from people who save to people who have productive investment opportunities. For a sound financial system, efficiency of the components of the financial system ought to be increased in the process of transformation of savings into investments. An environment that financial system works in must also be vigorous to reflect positively the benefits of sound financial system.³⁸

³⁵Cüneyt Dumrul, “**Finansal Sistemin Gelişimi ve Ekonomik Büyüme: Teori ve Türkiye Uygulaması**”, İktisat Doktora Tezi, Erciyes Üniversitesi Sosyal Bilimler Enstitüsü, Kayseri, March 2010, p. 39.

³⁶ Whilst economic growth is crucial for developed countries, economic development is in the foreground for underdeveloped countries. Economic development consists of education, health and other social factors, as well as economic growth. There is no sense in experiencing economic growth by poor countries with little or no economic development initiatives.

³⁷ Dumrul, **op. cit.**, p.14.

³⁸ Reşat Can Akkay, “**Gelişmekte Olan Piyasalarda Finansal Gelişme Ekonomik Büyüme İlişkisi: Türkiye Örneği**” Doktora Tezi, İstanbul Üniversitesi Sosyal Bilimler Enstitüsü, İktisat Anabilim Dalı, İstanbul, 2010, p.10.

Financial sector development in the process of economic growth causes both financial deepening and financial widening.³⁹ Financial deepening refers to an increase in the pool of financial services that reaches to all levels in the society. It is measured by an increase in the ratio of money supply to GDP.⁴⁰ This means that the more liquid money is available in the economy; the more opportunities exist in that economy for continued and sustainable growth. Financial widening is enhancement in financial services, enlargement of financial institutions and evolution that the financial system undergoes as a size and structure. Financial sector development that arises from financial widening and deepening increases savings and these increased savings will be transferred to more productive projects. This will help more efficient resource allocation and lead to economic growth.

A more detailed financial development notion and its measurement will be made in the later chapters. For now, the description of financial development and the functions of the financial system that has been studied in the previous section are sufficient for understanding the transmission mechanism between financial development and economic growth.

Transmission Mechanism between Financial Development and Economic Growth

For Levine, transmission mechanism between financial development and economic growth is based on the functions of the financial system that has been studied in previous section, 1.1.1. He states that “*the functioning of financial systems is vitally linked to economic growth.*”⁴¹

Figure 1.2 displays the channels which financial system affects economic growth. The costs of acquiring information, enforcing contracts, and making transactions

³⁹ Ahmet İncekara, **Bankacılık ve Finansal Kurumlar**, İktisadi Araştırmalar Vakfı, İstanbul, 2011, p. 17.

⁴⁰ Aslı Afşar, “Finansal Gelişme ile Ekonomik Büyüme Arasındaki İlişki”, **Muhasebe ve Finansman Dergisi**, No:36, October 2007, p.190.

⁴¹ Levine, “Financial Development and Economic Growth: Views and Agenda”, **op. cit.**, pp. 690.

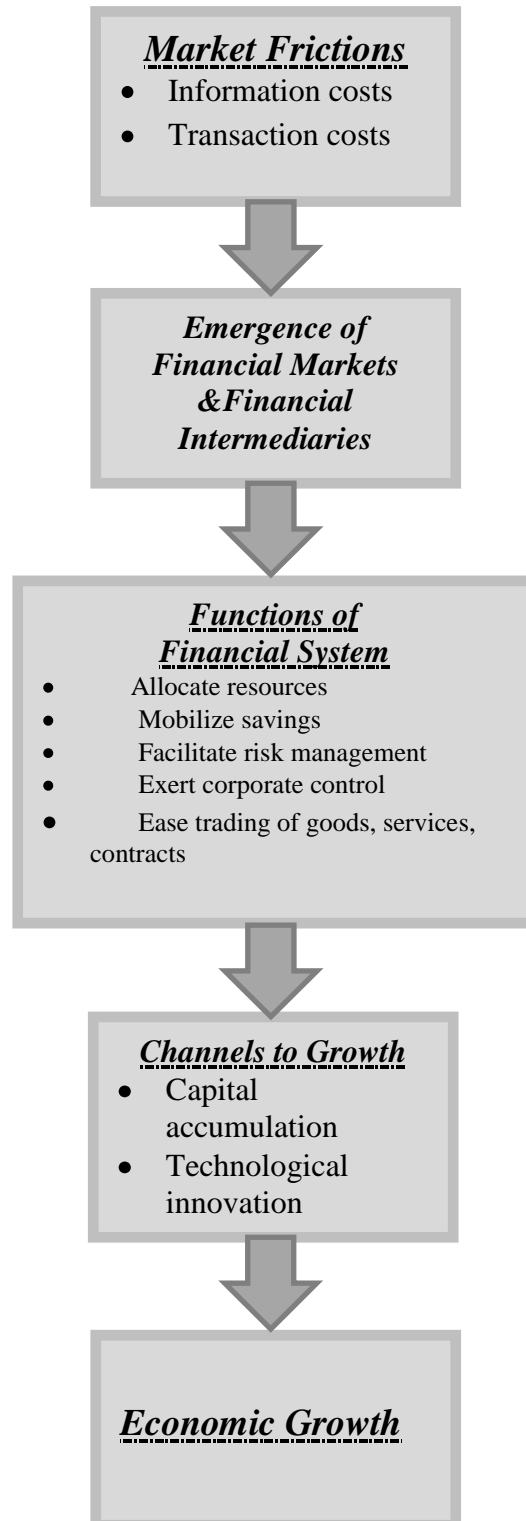
create incentives for the emergence of particular types of financial contracts, markets and intermediaries.⁴² Financial systems may affect economic growth by providing such functions as producing information and allocating capital, monitoring firms, facilitating the trading, hedging, diversifying, and pooling of risk, mobilizing savings and easing exchange. By ameliorating market frictions, financial system changes constraints and incentives faced by households and firms. In this way, financial system affects saving and investment decisions. Thus, each of these functions affects steady state economic growth by two channels: through **capital accumulation or technological innovation**. On capital accumulation, there are two ways for the financial system to affect steady-state growth rate: by altering saving rate or by changing capital formation. Romer (1986), Lucas (1988) and Rebelo (1991) stress on the role of financial system in reallocating savings among different capital producing technologies. Their growth model based on the capital externalities or capital goods produced using constant returns to scale. Steady-state per capita growth is generated without the use of non-reproducible factors.⁴³ On technological innovation, the financial system supports an invention of new production processes and goods as Romer (1990), Grossman and Helpman (1991) and Aghion and Howitt (1992) states. Thus, the financial system affects steady-state economic growth by changing the rate of technological innovations.

When searching the finance-growth relation, the sources of economic growth must also be handled. As a matter of fact, the transmission mechanism between finance system and economic growth exists indirectly by the sources of economic growth. These sources have been briefly explained in subsection of economic growth. Next section studies one of the main aspects of the relationship, the finance-growth nexus according to theoretical models.

⁴² Ross Levine, "Bank-based or Market-based Financial Systems: Which is Better?", **Journal of Financial Intermediation**, Vol. 11, No. 4, 2002, pp. 398–428.

⁴³ Levine, "Financial Development and Economic Growth: Views and Agenda", **op. cit.**, p. 691.

FIGURE 1.2: Theoretical Transmission Mechanism between Finance and Growth



1.1.2.1. Financial Development and Economic Growth Nexus According to Growth Theories

It is necessary to set a theoretical basis for the sources of economic growth and to examine finance-growth relation according to main economic growth models for soundness in our analysis. Because economic growth models may stress on different factors for the economic growth in their theoretical structure by ignoring and excluding other factors that is essential for other growth models. Thus, this section considers this nexus according to neo-classical and endogenous growth models when examining the finance-growth relation.

In the 1960s and 1970s, the leading neoclassical growth theory (NGT) suggests that achieving long-run economic growth depends only on continuous technological progress. Thus, NGT partly explains the sources of economic growth and it was an insufficient model in explaining differences in cross-country growth rates. Other factors that affect economic growth couldn't be explained with this theory. The emergence of the endogenous growth theory (EGT) in 1980s allow endogeneity of different variables in growth model and enabled further clarifying the sources and factors that affect economic growth. Endogenous growth models (EGM) also enable empirically testing the role of different variables in growth such as macroeconomic stability, inequality, income and wealth, institutional development, ethnic and religious diversity and financial market imperfections, along the capital accumulation, technology, and innovation. Thus, after 1980s, factors other than the capital accumulation and technology in determining economic growth have started to attract attention in explaining output growth.

Financial Development and Economic Growth in terms of Neoclassical Growth Theory

In the 1960s and 1970s, the leading economic growth theory was the traditional neoclassical growth model based on the seminal works of Solow (1956) and Swan (1956) that has been developed independently from each other. In NGM, aggregate production in an economy depends on the amount of capital stock, labor and the technological progress, given that

$$Y = F [K, AL] \quad (1.1)$$

where (Y) denotes the amount of production, (K) is capital stock, (L) is the amount of labor input and (A) is the state of technology.⁴⁴ Assuming the technological progress is constant over time, production function becomes

$$Y = F(K, L) \quad (1.2)$$

A crucial property of neoclassical growth theory is *the law of diminishing returns* to the accumulation of capital; that is as labors equip with more and more capital without inventing new uses for the capital, less and less output would be produced.

Aggregate production function exhibits constant returns to scale: factors of production, K and L are homogeneous of degree one- when we double the amount of capital or labor, the amount of production also doubles. This allows writing production function in per capita terms. Multiplying the equation (1.2) by 1/L:

$$Y/L = (K/L, L/L) \quad (1.3)$$

$$y = f(k) \quad (1.4)$$

where y is per capita production and k is per capita capital or capital-labor ratio.

⁴⁴ In Solow-Swan growth model, technology is labor augmenting or Harrod-neutral technological progress which increases the efficiency of labor input.

Assuming that labor force grows at a constant rate and technology is given exogenously i.e. it is determined by the factors outside the economy, growth rate depends only on capital accumulation, or per capita capital stock. Output will grow only if capital stock increases.

Change in capital stock for a nation depends on country's saving rate and depreciation rate of capital. If we assume that the following statements;

- people save a constant fraction s of their gross income Y ,
- the capital stock K depreciates at a constant rate δ each year as a result of depreciation ,
- population grows at a rate n which causes k to fall at an annual rate nk ⁴⁵,

then, the net change in per capita capital and the equation for accumulation of per capita capital stock over time is ⁴⁶

⁴⁵ Population growth, n , will cause capital-labor ratio k to fall at a rate nk , because each additional labor reduces the amount of capital per person, given the total capital stock.

⁴⁶ Total saving is $S = sY$ where $S=I$;

Net change in capital stock is the difference between gross investments and total depreciation

$$\dot{K} = I(t) - D(t) \text{ where } D = \delta K \text{ and } \dot{K} = \frac{dK}{dt}$$

Growth rate of net capital stock is

$$\frac{\dot{K}}{K} = \frac{I}{K} - \delta$$

$$\frac{\dot{K}}{K} = \frac{sY}{K} - \delta$$

$$\frac{\dot{K}}{K} = \frac{sf(k)}{k} - \delta$$

Per capita growth rate of net capital stock is

$$\frac{\dot{K}}{K} - \frac{\dot{L}}{L} = \frac{sf(k)}{k} - \delta - \frac{\dot{L}}{L}$$

where growth rate of population is $\frac{\dot{L}}{L} = n$

$$\dot{k} = sf(k) - (n + \delta)k \quad (1.5)$$

In neoclassical vision, each country experience two characteristically different forms of growth: **transitory path** of physical capital accumulation and **steady state path** of reproduction.⁴⁷ In transitory path, it is possible to increase economic growth by capital accumulation over the rate of growth of labor force and depreciation rate;

$$sf(k) > (n + \delta)k \quad (1.6)$$

But this process is unsustainable in the long run because of the diminishing returns for capital accumulation. A point will be reached where all of savings will be compensate for depreciation and population growth.⁴⁸

$$sf(k) = (n + \delta)k \quad (1.7)$$

In steady state, there is no incentive to invest more capital as the rate of profit fall behind the minimum threshold regarded tolerable.⁴⁹ Thus, per capita capital stays constant in equation (1.7), where $\dot{k} = 0$.

Hence, the only way to explain persistent long run growth is the technological progress that allows an escape from diminishing returns and continually offset the effect of diminishing returns. When we extend the model by embodying

$$\frac{\dot{K}}{K} - \frac{\dot{L}}{L} = \frac{\dot{k}}{k}$$

$$\frac{\dot{k}}{k} = \frac{sf(k)}{k} - \delta - n$$

$$\dot{k} = sf(k) - (n + \delta)k$$

⁴⁷ Erinç Yeldan, **The Economics of Growth and Distribution**, Eflatun Yayinevi, 1. basım, 2009, pp.113-114.

⁴⁸ Aghion and Howitt, **The Economics of Growth**, op. cit., p.26.

⁴⁹ Akkay, op. cit., p.10.

technological progress in production function as seen in equation (1.1), new state variable of the model is the “*effective capital-labor ratio*” or “*effective per capita capital*” as the productivity of labor factor increases due to the technology⁵⁰:

$$\hat{L} \equiv A.L \quad (1.8)$$

$$\hat{k} \equiv \frac{\hat{K}}{\hat{L}} \quad (1.9)$$

$$\hat{y} = f(\hat{k}) \quad (1.10)$$

Accumulation equation in steady state for effective capital-labor ratio is almost identical to equation (1.5):

$$\dot{\hat{k}} = s f(\hat{k}) - (n + \delta + x) \cdot \hat{k} \quad (1.11)$$

where x denotes the exogenous value of progress in science. In the short run, an increase in savings can *temporarily* raise the growth rate above x . But, in steady-state, growth rate of effective capital-labor ratio again stays *constant*, $\dot{\hat{k}} = 0$ and growth rate of per capita capital grows at a rate x .

As capital accumulates, technological progress continually offset the diminishing marginal returns to capital. So, the growth rate of output per person does not fall to zero and output-capital ratio remains constant as the economy approaches to steady state in which the two conflicting forces of diminishing returns and technological progress exactly offset each other.⁵¹

Solow also put the economics of growth into growth accounting which its objective is to break down the growth of output into the growth of the factors of production -capital and labor- and the growth of the efficiency in the utilization of these factors. In other words, the attempt was an explicit decomposition of the

⁵⁰ Turan, **İktisadi Büyüme Teorisine Giriş, op. cit.**, p.68.

⁵¹ Aghion and Howitt, **The Economics of Growth, op. cit.**, p.29.

sources of growth into contributions from factor inputs and from output per unit of total input.⁵² The measure of this contribution is usually referred to as Total Factor Productivity (TFP) which cannot be measured directly. TFP is a procyclical and residual term. TFP is also called “Solow Residual” referring the part of growth that cannot be explained through capital accumulation or the accumulation of other traditional factors, such as land or labor. For policy purposes it may matter whether output growth stems from factor accumulation or from increases in TFP. In this context, we can say that the effect of financial development on economic growth included in Solow residual term of TFP. Thus, we cannot distinguish and accurately measure its effect on growth since it is included in unexplained part of economic growth.

Consequently, in NGM, achieving long-run economic growth depends on continuous technological progress, as can be seen above. Thus, the change in saving rate just has a *level effect* and doesn't affect the growth rate in the long run. Only exogenous technology factor affects the steady-state per capita growth rate. In the Solow-Swan model, the positive effect of financial institutions on capital accumulation could, in the long run, reflect itself only in the level of production, and not on its growth rate. Since technological progress is treated as an exogenous factor and determined by the factors outside the realm of economic activities, financial development cannot be a determinant of long run growth in neoclassical framework. The level of financial development could affect the long run growth rate only via a very limited route, if it directly affected the rate of technological progress.⁵³ Economic growth theory stress on capital accumulation process; the role of channeling and transferring savings into investments is performed by the finance sector. Development in finance sector in a given country is related economic growth. Financial development could influence the economic growth rate by changing the productivity of capital or the level of production by changing the saving rate.

⁵² Nicholas Crafts, **Solow and Growth Accounting: A Perspective from Quantitative Economic History**, University Of Warwick, August 2008, p.1.

⁵³ Kotaro Tsuru, “Finance and Growth: Some Theoretical Considerations, and a Review of the Empirical Literature”, **OECD Economics Department Working Papers**, No. 228, 2000, p. 6.

Financial Development and Economic Growth in terms of Endogenous Growth Theory

Although Solow-Swan model had accepted the significant effects of innovation, technology and other factors on economic growth, these factors evolved outside the realm of the economic system and they were given exogenously in the model. Therefore, the model couldn't explain the sources of long term sustainable economic growth and differences in development between countries.⁵⁴ This drawback of the model led economists to put forth a new approach in economic growth to explain how economic growth exists and which policies effect growth rate. A reaction to NGM emerged in the late 1980s named "Endogenous Growth Theory" which was leaded by Romer (1986) and Lucas (1988) by their alternative approach to economic growth. The origin of their work based on the return of capital which doesn't have to be diminishing as in the NGM. They suggest a wider "capital" term by including human capital in it. Through the contribution of human capital which provides positive externalities and knowledge spillover effects, sustainable economic growth can be achieved even though the efficiency of capital decreases. In EGT, economy that already operates creates an endogenous dynamic for economic growth.⁵⁵

New growth models reject the assumptions and predictions of neoclassical model and try to find the factor effecting long run sustainable economic growth. The most important contribution of the EGT to economic growth theory is abandoning the assumption of diminishing returns to inputs in Solow-Swan Model and inclusion of the variables like innovation, technological improvements, R&D activities, human capital, division of labor and specialization, economies of scale, externalities and spillover effects, infrastructure investments, pubic policies etc..⁵⁶ The inclusion of different variables in growth model has two important implications. First, the focus shifted from exogenous technological progress to different models that explain the

⁵⁴ Türkan Turan, "Neoklasik Büyüme Modeli ve Koşullu Yakınsama Hipotezi", **İstanbul Üniversitesi Maliye Araştırma Merkezi Konferansları**, Vol. 39, 2001, p. 135.

⁵⁵ Alpaslan İsağiller, **İçsel Büyüme Modelleri**, İ.Ü. Sosyal Bilimler Enstitüsü., No:2826, pp.9-10.

⁵⁶ Dumrul, **op. cit.**, p. 67.

engine of economic growth by accumulation of human capital and knowledge over time. Technology is treated as an endogenous variable, because every innovation reflects purposeful activity which exert in government agencies, private institutions or R&D laboratories. Thus, technology cannot be independent from economic activities. Second the inclusion of different variables allows constant or increasing returns to scale and offset the effect of diminishing returns to the capital stock. Because, the stock of human capital includes various sources such as research and development (see Romer, 1986, 1990), public infrastructure investment (see Barro, 1991), accumulated capital (see Rebelo, 1991) that continually increases the efficiency of capital stock by permitting constant or increasing returns and eliminating diminishing returns to capital assumption of NGT.⁵⁷ Within the EGT, long-run sustainable growth is due to the physical and human capital accumulation in the presence of non-decreasing returns in inputs which drive the growth rate.

NGT attributed the economic growth to exogenous technological improvements and population growth and ignored the importance of developments in financial sector in process of economic growth. However, the EGT has sought to find the missing explanation for long run economic growth and renewed the debate between financial sector and economic growth. These new models provide a theoretical framework indicating that the financial system can have both growth and level effects and attempt to analyze whether the financial development is determinant of economic growth.

For an illustration, in a simple EGM, Pagano (1993) uses the AK model to highlight the positive relationship between the percentage of saving diverted to investment, and steady state growth rate.⁵⁸ The ‘AK’ model, where aggregate output is a linear function of the aggregate capital stock:

$$Y_t = AK_t \tag{1.12}$$

⁵⁷ Robert J. Barro: “Economic growth in a cross section of countries”, **Quarterly Journal of Economics**, Vol. 106, No. 2, May 1991, pp.407-443.

⁵⁸ Marco Pagano, “Financial Markets and Growth: An Overview”, **European Economic Review**, Vol.37, No. 2-3, 1993, pp. 613-622.

He postulates that only capital (K_t) is used in production. K_t exhibits constant returns to scale, depreciates at a rate δ and there is no population growth. Change in capital stock over time:

$$K_{t+1} = I_t + (1 - \delta)K_t \quad (1.13)$$

In a closed economy with no government, capital market equilibrium requires that gross saving S_t is equal to gross investment I_t .

Financial intermediaries pool savings, a fraction of ϕ saved by households and dollar saved by households generates less than one dollar worth of investment. Assume that a certain proportion of saving $(1 - \phi)$ is *lost* during the financial intermediation, because it is the spread between lending and borrowing rates, and to securities brokers and dealers as commissions, fees etc. and it represent inefficiency in the financial system. Therefore, the saving-investment relationship is

$$\phi S_t = I_t \quad (1.14)$$

and the steady state growth rate is

$$g = \frac{K_{t+1} - K_t}{K_t} = \frac{I_t + (1 - \delta)K_t - K_t}{K_t} = \frac{\phi S_t}{K_t} - \delta \quad (1.15)$$

$$g = A\phi s_t - \delta \quad (1.16)$$

where $s_t = S_t / Y_t = S_t / AK_t$.

Equation (1.16) shows how financial development can affect economic growth by three ways:

1. By raising the proportion of saving funneled to investment, ϕ
2. By increasing the social marginal productivity of capital, A
3. By influencing the private saving rate, s .

For Pagano, financial sector contributes economic growth by channeling funds to investments, increasing the average efficiency of capital and raising the efficiency of savings. Financial system provides convenience in fund transfer between economic agents by their opportunity in information gathering, evaluating and monitoring investment projects. If financial system develops and executes its functions more effectively, it is expected to provide the average productivity of capital.

Consequently, after the emergence of EGM, the relationship between the financial system and economic growth could be better explained as opposed to NGT such as Solow-Swan growth model. In Solow growth model, financial system can only has a level effect and does not affect steady state growth rate as there is no way to affect long-run growth rate through savings. On the other hand, in EGM, financial system has both growth and level effect and it is possible to change growth rate with savings rate by different channels.

1.1.2.2. Theoretical Considerations of the Finance-Growth Literature

This part of the study examines the theoretical considerations of the finance and growth literature under three distinctive subjects. When searching the financial development and economic growth, some matters should be examined in order to understand the link between these variables. These theoretical considerations are argued by economists and remained controversial. Following subjects are the debate of the direction of the causation between variables, the effect of financial structure of the economy on economic growth and financial development and economic growth relation according to stages of development of the countries.

Causal Relationship between Financial Development and Economic Growth

The direction of causation between financial development and economic growth is crucial for development policy since it has different policy implications. As stated earlier, although the existence of the relationship is accepted in literature, economists haven't agreed on the direction of the causation between financial development and economic growth yet. While some authors claim that direction of causality is from financial development to economic growth, opponents argue that the relationship is from economic growth to financial development.

This debate of the bi-directional relationship between financial development and economic growth was first studied comprehensively and hypothesized by Patrick in 1966 and used in many of the theoretical and empirical studies. In his study, he proposes a distinction between “supply leading” and “demand following” approach to financial development.⁵⁹

In supply leading hypothesis, financial intermediaries, institutions and markets supply their services- assets and liabilities- in anticipation of demand. Supply of financial services creates demand for financial services. Thus, financial development leads and promotes economic growth. In demand following hypothesis, financial intermediaries, institutions and markets develop in response to demand for financial services by savers and investors in real sector. Development of the financial sector is a consequence of the development of the real sector. So, economic growth leads financial development.

Patrick postulated that at initial stages of economic development, the economy is characterized by financial under-development which captured by borrowing constraints, credit rationing, financial repression, etc...⁶⁰ As the financial system

⁵⁹ Hugh T. Patrick, “Financial Development and Economic Growth in Underdeveloped Countries”, **Economic Development Cultural Change**, Vol. 14, No. 2, 1966, pp. 174-89.

⁶⁰ Gregory Ovie Jobome, **The Financial System And Economic Growth in the United Kingdom: A Disaggregated Time Series Approach**, The Business School And The Department Of Economics, Loughborough University, March 2002, p. 49.

expands through the creation of financial institutions, it promotes economic growth. Thus, for less developed and developing countries, “supply-leading” approach is more possible which financial development leads to economic growth. This view of Patrick has led authors to investigate the role of financial sector in countries and they also derive so called “finance-led” growth hypothesis from “supply leading” phenomenon of Patrick. The finance-led growth hypothesis has been popular among several developing countries in order to promote economic development.⁶¹ For more developed countries, financial sector is already developed and its role is passive in the process of growth. Savers and investors demand for a greater variety of financial assets to better accommodate their needs in financial transactions. This leads financial intermediaries and markets response and creates a wider array of financial assets and financial institutions which is termed “demand-following” approach.

It can be said that financial development has positive and significant effect and it spur economic growth in early stages of economic growth on the grounds that as the financial system develops, it improves resource allocation, support investment activities and increases investment efficiency. After that, Berthelemy and Varoudakis (1995) state that beyond some threshold of financial development, diminishing returns to finance will happen which they describe as a gradual leveling-off of the effect of financial development on growth.⁶²

Financial Structure and Growth

As have stated earlier, the views on the financial development and economic growth relationship changes for different countries as they have different forms and organization of financial structure. According to widely used distinction of the financial system in literature, there are two views on the relationship between financial structure and growth including the intermediary-based and the market-

⁶¹ Muzafar S. Habibullah, “Financial Development and Economic Growth in Asian Countries: Testing the Financial-Led Growth Hypothesis”, **Saving and Development**, Vol. 23, No. 3, 1999, p. 279.

⁶² Jean-Claude Berthelemy and Aristomène Varoudakis, **Thresholds in financial development and economic growth**, The Manchester School Supplement, 1995, p.78.

based financial system. In intermediary-based or bank-based financial system such as Germany and Japan, banks play a dominant role in providing financial services such as mobilizing savings, allocating capital, monitoring investment and providing risk management means. In market-based financial system such as United Kingdom and United States, securities market perform financial services in transferring savings to firms, easing risk management, exerting corporate control. Economic literature emphasize on the relative advantages of intermediary versus market-based financial system and long debated this issue beginning with reference to four countries, Germany, Japan, United Kingdom and United States.

Advocates of bank-based system emphasize on the positive role of banks in economic development and growth; they also argue that market based system has several drawbacks. Gerschenkron (1962) and Goldsmith (1969) state that the bank-based system in Germany permitted a closer relationship between intermediaries and firms than was possible in the market-based system in the United Kingdom.⁶³ Gerschenkron (1962) also indicates that banks are more effective in financing development in developing countries. State-owned banks are better in allocation of savings and they can overcome the problem of market failure easily.⁶⁴ Moreover, banks that independent from regulatory restrictions can exploit economies of scale and scope in information gathering and processing.⁶⁵ Boyd and Prescott, (1986) refer that market-based systems reveal information publicly. This reduces incentives for investors to seek and acquire information. Thus, information asymmetries are more likely to increase in market-based systems than in bank-based financial systems.⁶⁶ On the other hand, banks form long run relationship with firms and monitor its investment activities. This eases distortions from asymmetric information. In short,

⁶³ Alexander Gerschenkron, **Economic Backwardness in Historical Perspective, A Book of Essays**, Cambridge, MA: Harvard University Press, 1962.

⁶⁴ Raymond W. Goldsmith, **Financial Structure and Development**, New Haven, CT: Yale University Press. 1969.

⁶⁵ Ross Levine, Norman Loayza and Thorsten Beck, "Financial intermediation and growth: Causality and causes," **Journal of Monetary Economics**, Elsevier, Vol. 46, No. 1, August 2000, pp. 31-77.

⁶⁶ John H. Boyd and Edward C. Prescott, "Financial Intermediary-Coalitions", **Journal of Economic Theory**, Vol. 38, No.2, 1986, pp. 211-232.

arrangements of bank-based system can produce better improvement in resource allocation and corporate governance than market-based institutions.⁶⁷

By contrast, advocates of market-based financial system highlights the success of securities market in encouraging long run economic growth by financing industries that face continuous technological improvements.⁶⁸ Broad, liquid, and sound financial markets foster growth and profit incentives, enhance corporate governance and facilitate risk management.

In this context, what kind of financial institutions might maximize economic growth? If one view the literature and try to reach a conclusion from this debate, it can be concluded that relative merits of bank versus market system does not have any influential effect on growth and development. Although a shift from banks to capital markets is often viewed as evidence of financial development, countries with market-based financial systems do not perform better than those with bank-based systems.⁶⁹ This can be proved by considering that Germany and Japan are bank-based and the United Kingdom and the United States are market-based financial system. These countries all have very similar long-run growth rates. This implies that financial structure did not matter much.⁷⁰ Both bank and market development has positive effect on economic growth and development as financial development. So, what matters for economic growth is financial development that contains sound bank and markets, not relative dominance of its components.

⁶⁷Joseph Eugene Stiglitz, "Credit Markets and the Control of Capital", **Journal of Money, Credit, and Banking**, Vol.17, No.1, 1985, pp.133–152.

⁶⁸ Franklin Allen and Douglas Gale, **Comparing Financial Systems**, Cambridge, MA: MIT Press, 1999.

⁶⁹Gemma Estrada, Donghyun Park and Arief Ramayandi, "Financial Development and Economic Growth in Developing Asia", **Asian Development Bank Economics Working Paper**, No. 233, November 2010, p.8.

⁷⁰ Asli Demirguc -Kunt and Ross Levine, **Financial Structure and Economic Growth, A Cross-Country Comparison of Banks, Markets, and Development**, The MIT Press Cambridge, Massachusetts London, England 2001, p. 81.

Financial Development and Economic Growth in Developing and Developed Countries

The first studies that inquire the relationship between financial development and economic growth have devoted to less developed and developing countries. The effect of financial development on economic growth changes with respect to different stages of economic development. Thus, finance may affect growth differently in developing countries when compared to industrialized countries.

Economic literature has tended to pool developed and developing countries when examining the relationship between financial development and economic growth. The effect of financial development on economic growth can be different with regard to stages of economic development for a given country. Moreover, the significance of each financial system may also differ with the stages of economic development. While the composition and efficiency of the financial system is more relevant to economic growth for developed countries, the initial phases of development of financial intermediation on economic growth in developing countries can be more important.

Less developed and developing countries typically have less developed financial markets and institutions. The costs associated with acquiring information, enforcing contracts and executing transactions are high, savers are more reluctant to tie up their savings for long periods of time to investment projects of firms as they don't rely much on financial intermediaries and markets. Also, aggregate savings of developing countries are deficient and not enough to fulfill the investment opportunities of a country. Thus, a country may rely on external financing and need capital inflow for economic development.

Gurley and Shaw (1955) argue that one of the differences existing between developed and developing countries is that the financial market is more developed in

developed countries than in developing countries.⁷¹ Their argument was that a well-developed financial market could extend borrower's financial capacity and improve more efficient resource allocation. By providing necessary funds for investment projects, financial markets enhance physical capital accumulation and contribute economic development.

In many less developed and developing countries, financial repression policies typically seen which governments repress the financial sector including activities such as directed lending to the government, caps on interest rates, regulation of capital movement between countries and a tighter association between government and banks. McKinnon⁷² and Shaw⁷³ (1973) have provided valuable insight into the role of financial sector in developing or "lagging" economies.⁷⁴ In their analysis, they emphasize on the constraints placed on economic development by an ineffective financial sector. They state that poor performance of investment and growth in developing countries can be attributed to "financial repression" with disequilibrium interest rate conditions, interest rate ceilings, high reserve ratios and directed credit programs. These sources of financial repression are the reasons for low savings, credit rationing and low investment. This leads low economic growth rate in less developed and developing countries. They conclude that these barriers on financial sector can be overcome by financial liberalization and benefits can accrue from it. They believed that financial liberalization will increase domestic savings and capital accumulation which finally leads to economic growth. Therefore, financial liberalization is crucial in fostering the growth process as positive interest rates resulting from the liberalized policy encourages households to increase their incentives to save more.

⁷¹ John Gurley and Edward Shaw, "Financial Aspects of Economic Development", **American Economic Review**, Vol. 45, 1955, pp. 515-537.

⁷² Ronald I. McKinnon, **Money and Capital in Economic Development**, Washington, D. C., Brookings Institution, 1973.

⁷³ Edward S. Shaw, **Financial Deepening in Economic Development**, New York: Oxford University Press, 1973.

⁷⁴ Shaw defines a lagging economy as "confines itself to poverty partly by imposing upon its markets patterns of financial, fiscal, and international economic policy that, in effect, instruct market participants to keep aggregate levels of income and wealth where they are. It depends on the plan, mandate, ration, license, and privilege to optimize resource allocation and use". In Edward S. Shaw, **Financial Deepening in Economic Development**, New York: Oxford University Press, 1973, p. 52.

FitzGerald also argues that dismantling of the traditional development finance model in developing countries has seen as core element of the economic reform. After post-war decades, developing countries has moved away from national bank-based financial structure towards open capital markets, implement financial market liberalization policies and held the standard model of financial structure to reflect the imperatives of “financial development”. Thus, these reforms and financial liberalization were expected to raise savings and investment levels, increase the rate of growth and reduce macroeconomic instability in developing countries.⁷⁵

Well-functioning financial markets can positively contribute to economic growth in both developed and developing economies. Nevertheless, the effectiveness and efficiency in the financial sector affect both the volume of investment and the allocation of the resources in the economy. However, some of the studies state that financial development contributes more on growth in developing countries and the development of the financial system has a greater impact on growth in a developing country than in developed economies. Calderon and Liu (2002) denote in their study that financial deepening contributes more to the causal relationships in the developing countries than in the industrial countries, which implies that the developing countries have more room for financial and economic improvement. In addition, the causal relationship from financial development to TFP growth is stronger in developing countries, while the converse relationship is stronger in industrial economies.⁷⁶ Furthermore, Rousseau and Wachtel (2005) found that the relationship of financial development and economic growth holds for middle income countries which are positive and significant, but this relationship is not significant for low and high income countries.⁷⁷

⁷⁵ Valpy FitzGerald, “Financial Development and Economic Growth: A Critical View”, Background Paper for **World Economic and Social Survey**, Oxford University, 2006, pp. 3-4.

⁷⁶ César Calderón and Lin Liu, “The Direction of Causality between Financial Development and Economic Growth”, **Central Bank of Chile Working Papers**, No. 184, 2002, pp. 3-4.

⁷⁷ Peter L. Rousseau and Paul Wachtel, “Economic Growth and Financial Depth: Is the Relationship Extinct Already?” **Wider Discussion Paper**, Vol.10, 2005.

Conversely, some of the studies state that developed countries has more efficient, effective, larger and active financial sector. When moved from developing countries to more developed countries, financial deepening and financial development increases. In this way, contribution of financial development to economic growth increases in developed countries. According to a World Bank study, “...the asymmetry of information between users and providers of funds has not been reduced as much in developing countries as it has in advanced economies – and indeed may have deteriorated”⁷⁸ . Thus, the effect of financial development on growth is more significant in developed countries.

In this section, theoretical considerations in finance and growth literature have been examined. To better understand the theoretical relationship between financial development and economic growth, it is necessary to link theoretical facts to theoretical literature. In the next section, the theoretical literature of financial development and economic growth relation will be discussed from historical perspective.

1.1.3. Financial Development and Economic Growth: Theoretical Literature

The role of financial development in economic growth is long debated, controversial issue in economics literature. Financial development and economic growth relationship has occupied the minds of many economists starting from the works of Adam Smith to Schumpeter and it still continues to maintain its popularity. This nexus has become a hot topic especially in the last 40 years, as the world economies has started to adopt financial liberalization policies and involved in globalization process. Financial development is required to come up with this process in order to support productive investment projects which lead to higher economic growth.

⁷⁸ World Bank, **Finance for Growth: Policy Choices in a Volatile World**, A World Bank Policy Research Report, Washington D.C.: World Bank, 2001, p.7.

Origin of the debates on the finance and growth relation is old as much as the history of the economics and it dates back to classical economist Adam Smith who states that density of banks and banking activities in the Scotland of his times play crucial role on growing trading volume and rapid development of the Scottish economy.⁷⁹ However, Smith didn't focus on the specific finance and growth relation, he just mentioned about the importance of the financial system on economic growth. Nineteenth century classical economists ignored financial intermediation as an important element in explaining economic growth until Bagehot.

The link between finance and growth was first demonstrated in the literature by Walter Bagehot (1873). In his work, he discussed the relationship between efficient capital markets and the Industrial Revolution.⁸⁰ For him, financial development had played a crucial role in industrial revolution by accelerating capital flows for an important business projects. He presented apparent examples on how financial market development in England stimulates capital flow to find its highest rate of return in that country. He also mentioned about the functions of financial markets and noted the importance of financial markets on transformation of savings into long term investments in the economy.

Marxian economists have also emphasized on the dominant and destructive role of the financial system in the process of capitalist economic development. Hilferding, on his book *Finance Capital* (1910), recognized the important role of the financial system in economic development.⁸¹ Financial development was seen as the determinants rather than the result of economic development in the early stage of development. However, the resulting development of monopolies and cartels will have a detrimental and destructive effect to the society. Under this possibility, The

⁷⁹ Adam Smith, **An Inquiry into the Nature and Causes of the Wealth of Nations**, eds. Cannan E., The Modern Library Edition, 1994, New York, (1776), p. 323.

⁸⁰ Walter Bagehot, **Lombard Street, A Description of the Money Market**, Richard D. Irwin Inc., Homewood, Illinois, 1962.

⁸¹ Rudolph Hilferding, **Finance Capital (Das Finanzkapital)**, Vienna, 1910.

Marxist writers provided rationale for state intervention and financial repression for economic development.

After the Great Depression in 1929, Fisher tried to explain the reasons of economic crisis by the financial sector and he emphasized on two main factors: over-indebtedness and deflation.⁸² Staying in line with the 'debt-deflation' theory, the reason of weak economy was high leverage ratio of the borrowing class in the wake of prosperity preceding 1929. This made the economy so vulnerable and contiguous crashes in many branches of businesses deepened the crisis in this period. These continuous crashes spread out and an indirect reason behind this was financial system, because the crisis was including all the borrowers and debtors in the economy. Deflation accompanied to this bad course of events and assets were transferred from borrowers to lenders. Borrowers decreased their consumption and future contracts as a result of a decrease in their net worth. This caused economy went worse and vicious cycle of reduction in output and an increase in deflation rate.⁸³

Joseph Schumpeter was the first economist who explicitly states that financial intermediaries have positive impact on economic growth.⁸⁴ His efforts on emphasizing finance sector's importance for economic growth has provided basis on finance-growth relation literature and inspired many economists. He put the role of financial intermediation and entrepreneurship at the center stage of economic development.⁸⁵ For Schumpeter, sound banking sector finances and supports technological innovations for productive and efficient production of goods. So, banks support new production technologies by providing funds to entrepreneurs and thus, banking sector is the most important motive behind the economic growth. The way of banking sector affects growth depends on the functions of financial sector,

⁸² Irwing Fisher, "The Debt-Inflation Theory of Great Depression", *Econometrica*, Vol.1, No.4, 1933, pp. 337-357.

⁸³ Akkay, *op. cit.*, pp. 10-11.

⁸⁴ Joseph A. Schumpeter, **The Theory of Economic Development: An Inquiry into Profits, Capital, Credit, Interest, and the Business Cycle**, Oxford University Press, Oxford. 1911.

⁸⁵ Joseph A. Schumpeter, **The Theory of Economic Development**, Cambridge (MA):Harvard Ac. Press, 1934.

because banking sector doesn't have an important role on saving rates. Financial intermediaries mobilize savings, allocate resources efficiently, and facilitate the trading, hedging, diversifying and pooling of risk, monitors managers.

By using “bankers” and “development” terms instead of modern expression of “financial system” and “economic growth”, he denoted the important role of financial intermediaries in his writings as:

*“The banker stands between those who wish to form new combinations and the possessors of productive means. He is essentially a phenomenon of development, though only when no central authority directs the social process. He makes possible the carrying out of new combinations, authorizes people, in the name of the society as it were, to form them. He is the ephor of the exchange economy.”*⁸⁶

The relationship between finance and innovation is the center of economic growth process. Schumpeter stresses on the important role of finance in an innovation process and states that entrepreneurs form innovations by using new production techniques which requires credits.

Consequently; the message that Schumpeter wants to give about the importance of finance in the process of development is *“the relation between credit creation by banks and innovation is fundamental to the understanding of the capitalist engine.”*

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Financial system didn't have an explicit role in Keynes's theory of output determination. While Keynes believed that financial elements were important, he directed his attention to other issues. However, financial system played a part in the theory of investment behavior in the General theory. “State of confidence” is the key factor for understanding investment decisions. Keynes distinguished two basic determinants of this state. The first was borrowers' beliefs about prospective yields from investment projects. The second was the “state of credit” that lenders had in

⁸⁶ Schumpeter, The Theory of Economic Development, **op. cit.** p.78.

⁸⁷ Joseph A. Schumpeter, **Business Cycles, A Theoretical, Historical and Statistical Analysis of the Capitalist Process.** McGraw-Hill Book Company, New York Toronto London, 1939, p.111.

financing borrowers. A collapse in confidence of either borrowers or lenders was sufficient to induce downturn. Financial markets can have an effect on real economy by establishing trust mechanism between economic agents.⁸⁸

Keynesian economist Joan Robinson (1952) put forth the reverse causal direction between finance and growth and asserted that economic growth creates a demand for financial services.⁸⁹ According to this view, the financial system develops in response to the demand generated by a growing real economy. This can be accepted as contrary view of the supply-leading hypothesis of Patrick that has been studied in theoretical considerations part in previous section of the study. In his conclusion, he claims in his famous quotation that *“By and large, it seems to be the case that where enterprise leads, finance follows.”*⁹⁰

Gurley and Shaw (1955) argue that the evolution of more sophisticated financial markets is an essential aspect for economic growth.⁹¹ Diversification of financial instruments, financial institutions and services increases economic growth by promoting saving-investment process. For Gurley and Shaw, the process of financial intermediation supports increasing capital accumulation through the “institutionalization of savings and investment” and this fosters economic growth. The gains to the real sector of the economy, therefore, depend on how efficiently the financial sector performs this basic function of financial intermediation. From this respect, the importance of the financial system has been neglected in economic growth literature. The differences in economic performances of countries also come from differences in development of the financial systems of those countries. They wrote in their article:

“Economic development is commonly discussed in terms of wealth, the labor force, output and income. These real or “goods” aspects of development have been the center attention of economic literature to the comparative neglect of financial

⁸⁸ Mark Gertler, “Financial Structure and Aggregate Economic Activity: An Overview”, **Journal of Money, Credit and Banking**, Vol.20, No.3, 1988, pp.561-562.

⁸⁹ Joan Robinson, **The Rate of Interest and Other Essays**, MacMillan, London, 1952.

⁹⁰ Robinson, **op. cit.**, p. 86.

⁹¹ Ang, **op. cit.**, p. 8.

*aspects. Yet development is associated with debt issue at some points in the economic system and corresponding accretions of financial assets elsewhere. It is accompanied, too, by the “institutionalization of saving and investment” that diversifies channels for the flow of loanable funds and multiplies varieties of financial claims. Development also implies, as cause or effect, change in market prices of financial claims and in other terms of trading in loanable funds. Development involves finance as well as goods.”*⁹²

They also assert that financial intermediaries increase the efficiency of investments and decrease the risk by allowing economic agents to hold diversified portfolios. Thus, increased marginal efficiency of investment permits higher growth rates.

Hicks (1969) argue that the United Kingdom’s (UK) financial system played an important role in the Industrial Revolution.⁹³ Industrialization of England was possible because of the use of the financial system to mobilize productive financial capital and the capacity of capital markets to manage liquidity risk. He points out that most of the products produced during the first decade of the industrial revolution were invented much earlier through technological inventions, but lack of long-term finance delayed their manufacture. Many of the existed inventions required large injections and long run commitments of capital. For him, the catalyst responsible for growth in eighteenth-century England was capital market liquidity. Within liquid capital markets, savers can hold liquid assets that they can quickly and easily sell if they seek access to their savings. Simultaneously, capital markets transform these liquid financial instruments into long-term capital investments in illiquid production processes. Because the industrial revolution required large commitments of capital for long periods, the industrial revolution may not have occurred without this

⁹² John G.Gurley and Edward S. Shaw, “Financial Aspects of Economic Development”, **The American Economic Review**, Vol. 45, No. 4, 1955, p. 515.

⁹³John Hicks, **A Theory of Economic History**, Oxford: Clarendon Press, 1969.

liquidity transformation.⁹⁴ Thus, “*The industrial revolution therefore had to wait for the financial revolution...*”⁹⁵

Goldsmith (1969) was the first economist to show the presence of a positive correlation between the size of the financial system and economic growth and he tested this relationship for many countries simultaneously by giving the first empirical evidence on this debate.⁹⁶ Goldsmith analyses the characteristics of the financial structure in the process of economic development by cross country statistics by using data on 35 countries from 1860 to 1963 including both developing and developed countries. He finds that rapid economic growth is dramatically accompanied by rapid financial development. This positive relationship is driven by financial intermediation improving the efficiency rather than the volume of investments.

Goldsmith used the ‘financial interrelations ratio’, measured by the total assets of financial intermediaries divided by the GDP of the corresponding year, as a proxy for financial development in tracing the close relationship between the financial sector and economic development. He identified three basic stages of financial development: countries with a low FIR (financial interrelations ratio), typically in Europe and North America in the mid-18th century to the mid-19th century. The second group had a similarly low FIR but a much bigger role for government and government owned institutions, for example Germany or, even, Russia in the late 19th century. The third group possesses a much higher FIR, typified by a much higher ratio of equities to debt, a higher share of financial institutions of financial assets and a relative decline in the share of banking institutions compared to other financial institutions.

⁹⁴ Levine, “Financial Development and Economic Growth: Views and Agenda”, **op. cit.**, p.692.

⁹⁵ Valerie Bencivenga, Bruce Smith and Ross Star, “Transaction Costs, Technological Choice and Endogenous Growth”, **Journal of Economic Theory**, Vol.67, No.1, October 1995, p.243.

⁹⁶ Raymond W. Goldsmith, **Financial Structure and Development**, Yale University Press, New Haven CT., 1969.

According to his study, the financial structure of the country grows more rapid than the GDP and national wealth. In this way, FIR ratio has a tendency to grow at increasing path, but this path is not sustainable in the long run. When countries reach a certain FIR ratio at which economy operates in a sound financial system, this ratio will remain stable. In most countries, the size and role of financial institutions increases in the ownership of financial assets in the process of financial development. As economies develop, self-financed capital investment first uses bank intermediated debt finance and later to the emergence of equity markets as an additional instrument for raising external funds. Financial structure, the mix of financial intermediaries and markets, changes as countries develop, indicating that equity market development is strongly associated with real development.

Goldsmith also noticed that growth process requires sounder financial system and encourages financial development. Goldsmith's study is classified within the "financial structuralist" literature, which emphasizes structural characteristics of finance in economic development.

Goldsmith's finding has been treated as a corner stone, but there are several drawbacks within Goldsmith's study such as the limited data sample, the ignorance of other influential factors. The study does not examine whether financial development is associated with productivity growth and capital accumulation. Even so, Goldsmith's contribution to financial development and economic growth relation debate is incomplete but important one.

In 1970s, the most influential work on financial development and economic growth has been made by McKinnon and Shaw (1973). They opposed to analyze the effect of finance on economic development by Keynesian view owing to its applicability. McKinnon developed a model which assumes that investment in a given developing economy is mostly self-financed. (The reason is financial repression which will be further explained below.) Investments cannot be realized unless sufficient saving is accumulated. This complementary role between money and physical capital is named "complementarity hypothesis" in McKinnon's

analysis.⁹⁷ Shaw (1973), on the other hand, put forth a “debt-intermediation” view by stating that development in financial institutions provides more investors to reach credits and it also encourages savings and decreases the cost of borrowing and yield capital accumulation.⁹⁸

McKinnon and Shaw (1973) evaluate the financial development and economic growth relation from the perspective of the financial system functions and financial liberalization by emphasizing on financial repression. They see financial development as a process in enhancing economic growth and financial liberalization is a strategy and vital step to reach this goal. For this reason, they provide a theoretical basis in favor of financial liberalization in the process of economic development. According to McKinnon-Shaw theory, through the rational financial institutions by the abolition of “financial repression”, resources will be allocated to more productive areas, investments will increase and economic growth will be spurred.

McKinnon and Shaw argue that any government intervention in existence of financial repression by deposit rate controls and loan rate ceilings cause disequilibrium in the credit market. This causes low interest rates, and investment becomes constrained by a below equilibrium level of savings. Deficient capital and inappropriate reliance of investors may lead self-finance rather than institutional credit. So, abolishing interest rate ceilings leads to an optimal result of maximizing investment and average efficiency of investment.

Not all economists are in favor of financial liberalization. Stiglitz (2000) points out that frequent financial crisis are associated with financial liberalization.⁹⁹ He connects the reasons of more than 80 financial crises that have been experienced in

⁹⁷ Ronald I. McKinnon, **Money and Capital in Economic Development**, Washington, D.C.: Brookings Institution, 1973.

⁹⁸ Edward S. Shaw, **Financial Deepening in Economic Development**. New York: Oxford University Press, 1973.

⁹⁹ Joseph E. Stiglitz, Capital Market Liberalization, Economic Growth and Instability. **World Development**, Vol. 28, No. 6, 2000, pp. 1075-1086.

the last 30 years to financial liberalization. Any government intervention by way of repressing the financial system may reduce market failures and improve the soundness of the overall economy.¹⁰⁰ Keeping interest rates at low levels can raise the average quality of borrowers. Credit constraints can induce issuing more equities to finance investment as they have to self-finance their business activities. Self-finance lowers the cost of capital. Directed credit programs also have positive effect on growth by channeling resources to high technological spill-over sectors. Similarly to Stiglitz, Mankiw (1986) observes that government intervention activities such as providing a credit subsidy and acting as a lender for certain borrowers, may improve the efficiency of credit allocation.¹⁰¹

McKinnon and Shaw didn't construct formal dynamic model for their analysis. After McKinnon and Shaw's analysis, their work extended by Kapur (1976), Mathieson (1980) and Galbis (1977). In Kapur's model, a rise in deposit rate increases real demand for money, and financial intermediaries can extend their money supply on credit basis which leads economic growth.¹⁰² Mathieson (1980) has reached similar conclusions with that of Kapur'.¹⁰³ Galbis (1977) has constructed two sector model to explain the importance of high real rate of interest on economic growth.¹⁰⁴

On the contrary, when it comes to 1980s, neo-structural economists Van Wijnbergen (1983) and Taylor (1983) have criticized the models of followers of McKinnon and Shaw and have introduced different models to analyze the unofficial

¹⁰⁰ Joseph E. Stiglitz, "The Role of the State in Financial Markets" in Bruno, M. And Pleskovic, B.(ed.) **Proceedings of the World Bank Annual Conference on Development Economics**, 1994, **Supplement to The World Bank Economic Review and The World Bank Research Observer**, Washington D.C.: World Bank, 1993, pp. 19-52.

¹⁰¹ Gregory Mankiw, "The Allocation of Credit and Financial Collapse", **Quarterly Journal of Economics**, Vol. 101, No.3, 1986, pp. 455-470.

¹⁰² Basant Kumar Kapur, "Alternative Stabilization Policies for Less-developed Economies", **Journal of Political Economy**, Vol.84, No. 4, 1976, pp. 777-795.

¹⁰³ Donald J. Mathieson, "Financial Reform and Stabilization Policy in a Developing Economy", **Journal of Development Economics**, Vol.7, No. 3, 1980, pp. 359-395.

¹⁰⁴ Vicente Galbis, "Financial intermediation and economic growth in less developed countries:Theoretical approach", **The Journal of Development Studies**, Vol. 13, No. 2, 1977, pp. 58-72.

financial markets i.e. curb markets. For Taylor (1983), households not just hold their wealth as deposit that yields interest rate or assets like gold, cash and real assets; but also value their wealth in curb markets. An increase in deposit interest rate attracts capital to bank deposits and households save their assets in the financial system. This decreases supply of loanable funds in curb markets and reduces investments.¹⁰⁵ However, Fry (1988) contends that curb markets are not essentially as efficient and competitive as official banks and other financial intermediaries.¹⁰⁶ Moreover, Owen and Solis-Fallas (1989) claims that assumption of perfectly efficient intermediation system by neo-structural economists is highly unrealistic.¹⁰⁷

Early economic growth theory suggests that innovations in both financial and real sectors of the economy effects economic development and provide a driving force for long-run, dynamic economic growth. However, innovations or technological improvements are exogenous determinants of the growth process and they are explicitly modeled. With the evolution in the growth literature in the 1980s, a growing theoretical and empirical body of literature shows how financial system allocate resources, mobilize savings, diversify risks, ease transactions and contributes to economic growth. To show the effect of financial system on growth, more complex types of models which incorporate financial institutions into endogenous growth models emerged in the early 1990s. (See e.g. Greenwood and Jovanovic, 1990; Bencivenga and Smith, 1991, 1993; Saint-Paul, 1992; King and Levine, 1993; Pagano, 1993; Bencivenga, Smith and Starr, 1995; Jbili, Enders, and Treichel, 1997; Greenwood and Smith, 1997; Blackburn and Hung, 1998).

The new growth theory or “endogenous growth theory” suggests that financial intermediaries and markets exist endogenously in response to the market frictions and incompleteness underlying that the financial system can provide more efficient

¹⁰⁵ Lance Taylor, **Structuralist Macroeconomics: Applicable Models for the Third World**, New York: Basic Books, 1983.

¹⁰⁶Maxwell J. Fry, **Money, Interest, and Banking in Economic Development**, Baltimore and London: Johns Hopkins University Press, 1988.

¹⁰⁷ P. Dorian Owen, and Otton Solis-Fallas, “Unorganized Money Markets and 'Unproductive' Assets in the New Structuralist Critique of Financial Liberalization”, **Journal of Development Economics**, Vol. 31, No.2, 1989, pp. 341-355.

financial services than individuals. Financial system mitigates market frictions that arise from information and transaction costs, influences saving and investment decisions by evaluating entrepreneurs and allocate funds to most promising ones; hence contributes to long run growth. This view supports finance-led hypothesis that contends financial development leads to economic growth released by Patrick (1966) and supported by McKinnon (1973), King and Levine (1993), Levine et al. (2000), and, Christopoulos and Tsionas (2004). The policy implication of this view is that the liberalization of financial markets increases saving and investment and foster economic growth in developing countries as McKinnon (1973) suggests. However, McKinnon focus only on the *quantity issue* of the investment in the role of financial intermediaries whereas endogenous growth theory stress on the role of financial intermediation in improving efficiency which is the *quality issue* of the investment on economic growth. Moreover, endogenous growth models employed various techniques, such as externalities and quality ladders, to model financial intermediation explicitly rather than taking it for granted as in the McKinnon-Shaw framework.¹⁰⁸

Endogenous financial development and growth models also show that there is an interrelationship between finance and growth. On one hand, provision of financial services by sound financial institutions allows investors to launch their productive investment opportunities more efficiently and this leads to capital accumulation and economic growth. (See e.g. McKinnon (1973), King and Levine (1993), Levine et al. (2000), Neusser and Kugler (1998) Levine, Loayza and Beck (2000) and, Christopoulos and Tsionas (2004)). On the other hand, a growing economy stimulates more demand for financial services that induces expansion in financial sector. (See e.g. Gurley and Shaw (1967), Goldsmith (1969), and Jung (1986)). Other economists postulate that there is bi-directional relationship between financial development and economic growth. For Patrick (1966) who introduces stage development hypothesis, causality runs from finance to growth and then from growth to finance, which has been viewed in more detail in section 1.1.2.

¹⁰⁸ Ang, *op. cit.*, p. 8.

Diamond and Dybvig (1983) postulates that financial system doesn't only decrease the cost of services, but also offers higher returns. In their model, economic agents have two choices in their financial decisions: an *illiquid, high-return* project and a *liquid, low-return* project. If an agents choose to invest in the former, then, that agent receive shocks and may want to access to their savings before the illiquid project yields returns. Those shocks may result savers to invest in low risk- low return project because observing shocks is costly for individuals.¹⁰⁹ In this context, on one hand, it is necessary to provide liquid deposits to savers; on the other hand, banks should satisfy demand for funds to illiquid high return investment. Thus, financial intermediaries can effectively provide liquidity by properly matching the different maturity periods of loans with an advantage of having a large number of borrowers and lenders. This protects savers against liquidity risk while simultaneously facilitating long run investments in high return project.¹¹⁰ Based on the work of Diamond and Dybvig (1983), Bencivenga and Smith (1991) developed an endogenous growth model to show that financial intermediaries decrease liquidity risk and increase mobilization of savings. This ensures an increase in investments with high return, illiquid assets. So, by more efficient resource allocation, financial intermediaries accelerate growth.¹¹¹

Greenwood and Smith (1997) further developed the model of Bencivenga and Smith (1991) by presenting endogenous model.¹¹² They state that banks positively affect economic growth by accelerating capital accumulation process and avoiding unnecessary liquidations before the illiquid, high risk, high return capital investment project produces. They also found bi-directional relationship between finance and growth by demonstrating the links between exchange, specialization and innovation.

¹⁰⁹Douglas W. Diamond and Philip H. Dybvig, "Bank Runs, Deposit Insurance, and Liquidity," **Journal of Political Economy**, Vol.91, No.3, June 1983, pp. 401-19.

¹¹⁰ Levine, "Financial Development and Economic Growth: Views and Agenda", **op. cit.**, p. 693.

¹¹¹ Valerie R .Bencivenga and Bruce D. Smith, "Financial Intermediation and Endogenous Growth", **Review of Economic Studies**, Vol. 58, No.2, Apr. 1991, pp. 195–209.

¹¹² Jeremy Greenwood and Bruce Smith, "Financial Markets in Development, and the Development of Financial Markets," **Journal of Economic Dynamics and Control**, Vol. 21, No. 1, Jan. 1997, pp. 145–81.

Because specialization and innovations require more transactions and each transaction is costly, development in financial sector that lower transaction costs encourages specialization and promote productivity gains. This productivity gains, in turn, may spur development in financial market. ¹¹³

Greenwood and Jovanovic (1990), stress on the role of the financial system in producing better knowledge and pooling of risk on economic growth. ¹¹⁴ They improve a model with dynamic interactions between finance and growth. In their model, capital is assumed to be scarce and many entrepreneurs solicit capital. Financial markets and intermediaries are better than individuals at selecting good investment opportunities. They choose investment projects with technology which carries high risk, but high productivity in the production. This increases the efficiency of capital. In case of which there is no financial intermediation in the economy, individuals will shift toward to low risk, constant technology production with low returns due to decrease the risks. So, by producing and improving information on firms, and pooling risk between different production technologies, financial system encourages high yield investments and provides more efficient resource allocation.

Saint-Paul (1992) emphasize on the role of development in financial markets in increasing the efficiency of investments. He attributed the growth rate differences between countries to difference in those countries' financial market developments. Financial intermediaries encourage specialization to decrease risks associated with investments and this increases the efficiency of capital. ¹¹⁵ King and Levine (1993) also dwell upon the role of financial intermediaries in increasing the efficiency of capital by reducing market frictions and more efficient allocation of resources. In this respect, financial repression reduces the financial services provided to economy and

¹¹³ Levine, "Financial Development and Economic Growth: Views and Agenda", **op. cit.**, p. 701.

¹¹⁴ Jeremy Greenwood and Boyan Jovanovic, "Financial Development, Growth, and the Distribution of Income", **Journal of Political Economy**, Vol. 98, No. 5, Oct. 1990, pp. 1076–1107.

¹¹⁵ Gilles Saint-Paul, "Technological Choice, Financial Markets and Economic Development," **European Economic Review**, Vol. 36, No. 4, May 1992, pp. 763– 81.

decreases improvements in technology and economic growth.¹¹⁶ Pagano (1993) who develops an endogenous growth model to show the effect of financial development on economic growth argues that improvements in risk hedging, pooling and risk diversification enhance savings rates. This encourages new innovative, high-quality projects which positively effects economic growth.

Levine (1997) found that information and transactions costs create an incentive for the emergence of financial markets and institutions.¹¹⁷ Financial systems may affect economic growth by providing functions such as mobilizing saving, easing transactions, allocating resources, facilitating the trading, hedging, diversifying, and pooling of risk and exerting corporate control. These functions affect growth by influencing the rate of capital formation or encouraging technological improvements.¹¹⁸ Levine (2005) also showed that banks improve information acquisition about firms and change the allocation of credit.¹¹⁹

Financial intermediaries improve risk management and share risks among different investment projects. Levine (2005) contends that high return projects are risky and savers may reluctant to invest in risky projects. Financial system such as banks, mutual funds, and securities markets diversify risk and induce a portfolio shift toward investment projects with higher expected returns. By reducing the risks associated with individual projects, firms, industries, regions, and countries, the financial system affect positively long-run economic growth. Obstfeld (1994) and Devereux and Smith (1994) also postulate that internationally integrated stock markets reduce international risk and induce investors to invest in high-return investments. This also have positive effects on growth.¹²⁰

¹¹⁶ Robert G. King and Ross Levine, "Finance and Growth: Schumpeter Might Be Right," **Quarterly Journal of Economics**, Vol. 108, No.3, Aug. 1993, pp. 717–37.

¹¹⁷ Levine, "Financial Development and Economic Growth: Views and Agenda", **op. cit.**, p. 690.

¹¹⁸ See Figure 1.2. in p. 23.

¹¹⁹ Ross Levine, "Finance and Growth: Theory and Evidence" in **Handbook of Economic Growth**, Philippe Aghion and Steven Durlauf, eds., Amsterdam: North Holland Elsevier Publishers, Vol.1, Part 1, 2005, pp. 865-934.

¹²⁰ Maurice Obstfeld, "Risk Taking, Global Diversification, and Growth", **American Economic Review**, Vol. 84, No. 5, 1994, pp. 1310-1329.

For Levine (1997), by increasing liquidity and reducing investment risks, stock markets affect economic growth positively. Acemoglu and Zilibotti (1997) demonstrate the link between cross-sectional risk sharing and economic growth. They assume that risky high return projects require an injection of large initial investment as these projects are indivisible. Savers may avoid holding a portfolio that contains high risk projects in the absence of financial intermediaries that allows individuals to hold a diversified portfolio by reducing and sharing risks. Avoiding from investing high risk-high return projects slows down capital accumulation and economic growth.¹²¹ Krebs (2002) also states that by reducing the variation of firm specific risks increases the total investment return and growth.¹²² In intertemporal risk sharing, Allen and Gale (1997) argue the role of intermediaries in intertemporal risk sharing. They show that if risks cannot be diversified at a particular time, they can be diversified across generations.¹²³

As stated earlier, endogenous growth literature states that financial deepening leads to more efficient allocation of savings to productive investment projects. (See e.g. Greenwood and Jovanovic, 1990; Bencivenga and Smith, 1991). Although economics literature stress on the positive role of financial development on economic growth, some studies points out that financial systems can have severe adverse effects on the economy because financial sector is more fragile than the real sector. This fragility can arise from poor fundamentals of the economy which makes economy vulnerable to financial crises in bad times such as recession or self-fulfilling reasons such as received shocks by agents or random events that makes economy always vulnerable to financial crisis.

Moreover, developments in the financial sector can lead to an expansion in its ability to spread risks. Financial crisis literature is against the financial liberalization in that it may have destabilizing effect by unnecessarily expanding the credit i.e. over

¹²¹Daron Acemoglu, and Fabrizio Zilibotti, "Was Prometheus Unbound by Chance? Risk, Diversification, and Growth", **Journal of Political Economy**, Vol. 105, No. 4, 1997, pp. 709-751.

¹²² Tom Krebs, "Growth and Welfare Effects of Business Cycles in Economies with Idiosyncratic Human Capital Risk", **Review of Economic Dynamics**, Vol. 6, No. 4, 2002, pp. 846-868.

¹²³Franklin Allen, and Douglas Gale, "Financial Markets, Intermediaries, and Intertemporal Smoothing", **Journal of Political Economy**, Vol.105, No.3,1997, pp. 523-546.

lending. This can be result of poorly managed corporate controls, limited information about firms and investment projects that complicate the separation of good investment opportunities from bad ones, existence of insurance against banking failures that forms reckless behaviors in lending process.

Minsky (1975) claims that financial crises arise from the financial system instability may have several adverse effects on the economy.¹²⁴ He assumes that economy is naturally unstable, and constant government intervention is required to achieve stabilization. According to his “financial instability hypothesis” that he developed in 1991, an economy naturally progresses from a robust financial structure to a fragile financial structure.¹²⁵ Rapid economic growth brings the adoption of a more risky behavior and this will transform the economy to a boom phase fuelled by speculative economic activities. As a result of this over-leveraged situation, a crisis is likely to occur due to the default of loan repayments. Consequently, higher financial costs and lower income can increase the risk of default. Banks strand after credit default and bankruptcies will start. At the end of this process, the economy would enter a state of economic recession. Minsky (1991) calls for intervention of central banks and more government spending in order to mitigate these cyclical fluctuations.

Some studies distinguish the effect of financial markets, especially stock market from the financial intermediaries on growth. Economists have several drawbacks about whether stock markets promote economic growth. Keynes (1936) denotes stock markets are more open to speculative activities which distort the stability of the economy.¹²⁶ He assumes stock markets as unstable and has speculative nature which has malign and destabilizing effects on an economy. Kindleberger (1978) also states that in case of over-leveraged situations, instability of expectation and asset speculation can have severe negative results on an economy.¹²⁷ Psychological

¹²⁴ Hyman P. Minsky, **John Maynard Keynes**, New York: Columbia University Press, 1975.

¹²⁵ Hyman P. Minsky, “The Financial Instability Hypothesis: A Clarification” in **Feldstein, M.** (ed.) **The risk of economic crisis** , Chicago and London: University of Chicago Press, 1991, pp. 158-166.

¹²⁶John Maynard Keynes, **The General Theory of Employment, Interest and Money**, Macmillan: Cambridge University Press, 1936

¹²⁷ Charles Poor Kindleberger, **Manias, Panics and Crashes**, New York: Basic Books, 1978.

factors may trigger off speculative behaviors in some economic circumstances. If banking system is not sound enough, then a loss of confidence to financial sector and panic may cause economy to enter a crash. That is, irrational speculation causes asset price bubbles, which will burst and induce economic crises due to fragility of the banking system.¹²⁸ The effect of stock markets on developing and developed countries are different. Singh (1997) contends that expansion of the stock market in developing countries is likely to impede long-term growth.¹²⁹ Because stock markets in developing countries are not sound and there is less financial deepening, developing countries are subject to informational problems, a lack of transparency and disclosure deficiencies can contribute to the fragility of these markets. Hence, stock markets are likely to undermine economic growth rather than promote.¹³⁰

Beside the studies that explain finance and growth relation from different perspectives that link these two variables, there are also other studies that find no theoretical relationship between financial development and economic growth. Some economists didn't convince about the relevance of financial development and economic growth. Their common argument is that financial events have no effect on real economic activities. For instance, Lucas (1988) asserts that economists "*badly over-stress*" the role of financial factors in economic growth.¹³¹

Modigliani and Miller (1958) has developed a model by assuming a world of perfect markets with no information asymmetry and no transaction costs in which real economic decisions are independent of the financial structure.¹³² By using same framework, Fama (1980) postulate that a change in lending decision by any

¹²⁸ Ang, **op. cit.**, p.10.

¹²⁹ Ajit Singh, "Financial Liberalisation, Stockmarkets and Economic Development", **Economic Journal**, Vol. 107, No. 442, 1997, pp. 771-782.

¹³⁰ Ang, **op. cit.**, p.10.

¹³¹ Robert E. Jr. Lucas, "On the Mechanics of Economic Development", **Journal of Monetary Economics**, Vol. 22, No. 1, 1998, pp. 6.

¹³² Franco Modigliani and Merton H. Miller, "The Cost of Capital, Corporation Finance, and the Theory of Investment", **American Economic Review**, Vol. 48, No. 3, 1958, pp. 261-297.

individual bank in a competitive banking sector with equal access to capital cannot change price and real activity in the economy under a general equilibrium setting.¹³³

Development economists approach to finance and growth relation skeptical and they ignore the role of the financial system in their study.¹³⁴ Essays in “pioneers of development economics,” including three Nobel Laureates does not mention finance.¹³⁵ Moreover, in review of development economics, Nicholas Stern (1989) doesn’t discuss the role of finance in economic development, even in a list of omitted topics.¹³⁶

Stressing on the five basic functions of the financial system clarified by Levine (1997) (allocating resources, mobilizing savings, facilitating risk management, exerting corporate control and ease trading of goods, services, contracts), FitzGerald (2006) states that there are three basic characteristics of the financial systems that are regarded as capturing the impact of these five functions on economic growth¹³⁷:

1. The level of financial intermediation
2. The efficiency of financial intermediation
3. The composition of financial intermediation.

The level of financial intermediation is related to the size of a financial system relative to an economy and this characteristic is important for each of the financial functions. An impact of a financial system is greater with the larger financial system because it allows the exploitation of economies of scale as there are significant fixed costs in the operation of financial intermediaries. Financial system can produce better information with positive externalities as more individuals join financial system. This

¹³³ Eugene F. Fama, “Banking in the Theory of Finance”, **Journal of Monetary Economics**, Vol. 6, 1980, pp. 39-57.

¹³⁴ Anand Chandavarkar, “Of Finance and Development: Neglected and Unsettled Questions,” **World Development**, Vol. 20, No.1, Jan. 1992, pp. 133-42.

¹³⁵ Gerald M. Meier and Dudley Seers, **Pioneers in development**, New York: Oxford U. Press, 1984.

¹³⁶ Nicholas Stern, “The Economics of Development: A Survey,” **Economic Journal**, Vol. 99, No. 397, Sept. 1989, pp. 597-685.

¹³⁷ Valpy Fitzgerald, “Financial Development and Economic Growth: A Critical View”, **World Economic and Social Survey**, 2006. pp. 4-5.

channel to economic growth is emphasized in literature by Greenwood and Jovanovic (1990), Bencivenga and Smith (1991). A larger financial system also ease credit constraints and effective at allocating capital and monitoring the use of funds, increase the durability of the economy to external shocks by helping to smooth consumption and investment patterns. Expanding a financial system to more individuals will lead to better allocation of risks, which increase investment activity in both physical and human capital and economic growth.

The efficiency of financial intermediation represents high quality of financial intermediation by composing the size of the financial system and growth. Inefficient financial markets may result to asymmetric information, externalities in financial and imperfect competition, sub-optimal levels of financing and investment, an inefficient allocation of capital, bank runs, fraud or illiquidity which is detrimental for economic growth. These imperfections may be overcome by appropriate oversight of public body with legal and institutional background which foster the efficiency of financial markets and hence contribute to economic growth.

The composition of financial intermediation stresses on the relative dominance of banks or market in financing activities in the economy. Fitzgerald states that *“two important shifts in the composition of financial intermediation relate to the maturity of financing available and the growth of capital markets and institutional investors such as pension funds and insurance companies. The maturity of loans and bonds may affect the extent to which certain investments may be profitably exploited”*.¹³⁸

1.1.4. Measuring Financial Development and Economic Growth

*“What is badly defined is likely to be badly measured...”*¹³⁹

As stated earlier, financial development can be defined as the improvement in quantity, quality and efficiency of financial market and intermediary services. To

¹³⁸ Fitzgerald, **op. cit.**, p. 6.

¹³⁹ Organisation for Economic Co-operation and Development (OECD), **“Handbook on Constructing Composite Indicators: Methodology and User Guide”**, 2005, p. 12.

understand and measure the degree of financial development, one must consider the functions of the financial system and factors that contribute to the financial deepening and efficiency of the provision of financial services. A large theoretical literature shows that banks and financial markets reduce the costs of transactions and acquiring information about firms and managers, enhance resource allocation by providing exerting corporate control, encourage investment in higher return activities by facilitating risk management, improving the liquidity of assets available to savers, and reducing trading costs. Thus, a complete set of financial sector development indicators should cover the ability of banks to research and identify profitable project opportunities, monitor and control managers, ease risk management, and facilitate resource mobilization, or shortly credit intermediation, liquidity management, and risk management characteristics of the financial system.

However, there is no concrete definition of the financial development and measuring financial development is not an easy procedure as it carries out many qualitative components. Since there is no direct measure of financial development, “*Defining appropriate proxies for the degree of financial development is, indeed, one of the challenges faced by empirical researchers*” as Edwards states.¹⁴⁰ For this reason, the selection of key variables to indicate the level of financial development is a challenging problem and researchers use various measures of financial sector development in their empirical studies of finance and economic growth.

Financial Development Report (FDR) 2011 published by the World Economic Forum (WEF) defines financial development as “*the factors, policies, and institutions that lead to effective financial intermediation and markets, as well as deep and broad access to capital and financial services*”.¹⁴¹ This definition gives major importance to well-functioning financial intermediaries and markets and states that financial development is not only related to quantitative measures of financial development, but also qualitative ones. WEF, FDR 2011 has improved an index that

¹⁴⁰ Sebastian Edwards, “Why are Latin America's savings rates so low? An international comparative analysis”, **Journal of Development Economics**, Vol.51, No.1, 1996, pp. 5-44.

¹⁴¹World Economic Forum (WEF), **The Financial Development Report 2011**, New York: USA Inc., 2011, p.3.

measures the degree of financial development including various aspects of development:

1. ***Factors, policies, and institutions***: the foundational characteristics that allow the development of financial intermediaries, markets, instruments, and services.
2. ***Financial intermediation***: the variety, size, depth, and efficiency of the financial intermediaries and markets that provide financial services.
3. ***Financial access***: access by individuals and businesses to different forms of capital and financial services.¹⁴²

From the historical perspective, the most commonly used indicator of financial development was financial depth which defined as “*the ratio of liquid liabilities of the financial system to GDP*”, refers to the size of the financial sector. This is measured by money supply, so called monetary aggregates. Authors initially use indicators which were mainly based on monetary aggregates such as M1 or M2 as these aggregates are widely available (see e. g. Jung, 1986; Liu et al., 1997; Darrat, 1999, Giedeman and Compton, 2009; Anwar and Cooray, 2012). However, this measure of the financial development is a poor proxy as they are related to transaction services of banks rather than an ability of the financial system to channel funds from savers to borrowers. So, researches have shifted from narrower monetary aggregates to broader ones and use M3 to GDP which is the liquid liabilities of the banking system to GDP (see e.g. Dawson 2008; Hassan et al. 2011 or Huang and Lin 2009). By excluding credit to the public sector, this measure has an advantage in showing the role of financial intermediaries in channeling funds to private sector. Even so, this measure only reflects the banking sector, whereas the stock and bonds market must also be taken into account in measuring financial development. The use of financial depth as an indicator of financial development in previous studies relies on the assumption that the size of financial sector is positively associated with the provision and quality of financial services.¹⁴³ But, it is only a quantitative measure of financial development which does not control over the quality of provided financial

¹⁴² WEF, **op. cit.**, p.4.

¹⁴³ Robert G. King and Ross Levine, “Finance and Growth: Schumpeter Might Be Right”, **op.cit.** pp. 718-719.

services. Moreover, monetary aggregates have been criticized because they measure the extent of monetization.

The second proxy used to measure financial development is first applied in the work by King and Levine (1993) which shows a positive strong relationship between financial development and economic growth and financial development may predict the future rates of growth.¹⁴⁴ In their study, they used four measures of financial development:

Liquid liabilities of banks and nonbank institutions as a share of GDP (LQ/GDP) ⇒ measures the size of GDP

Bank ratio, defined as the ratio of bank credit divided by a sum of bank credit and central bank domestic assets ⇒ measures the degree to which private banks versus central bank allocate the credit

The ratio of private credit to domestic credit (PCR/DCR) ⇒ the extent to which the banking system channels funds to the private sector

Private credit as a ratio of GDP (PCR/GDP) ⇒ the extent to which the banking system channels funds to the private sector

These indicators are better financial development measures since commercial banks are more likely to provide better primary financial functions than central banks. Plus, they are better indicator of the size and quality of services provided by the financial system as they focus on credit issued to the private sector.¹⁴⁵

However, Levine (1997) points out that the measure of financial development implemented by King and Levine (1993) has some weaknesses because financial institutions other than banks provide financial functions, too. Furthermore, bank ratio neither capture the role of the financial system in allocating credit, nor assess how well commercial banks perform financial functions. With the development of stock

¹⁴⁴ Ibid.

¹⁴⁵ Thorsten Beck, Ross Levine, and Norman Loayza, Finance and Sources of Growth”, *op.cit.*, pp.262-263.

market, indicators of stock market development has started to use in measuring financial development and role of stock market commonly used measure of stock market development in empirical literature is market capitalization ratio (see e.g. Chakraborty 2010, Shen and Lee 2006; Yu et al. 2012), which refers to “*the overall size of stock market and is defined as the total value of listed shares relative to the size of real economy (GDP)*”. Another two proxies for stock market development that show the liquidity of these markets are “*the total value of traded shares relative to GDP*” which shows the stock market activity (see e.g. Manning 2003; Tang 2006 or Shen et al. 2011) and the turnover ratio defined as “*the total value of traded shares relative to total value of listed shares*” (see e.g. Beck and Levine 2004; Yay and Oktayer 2009 or Liu and Hsu 2006).

Although there is little consensus among researchers on the most appropriate measures for financial development, it must be admitted that these indicators only serve as proxy variables for financial development of a particular country. They associated with several shortcomings and the indicators are still imperfect measures of how well financial intermediaries research firms, monitor managers, mobilize savings, pool risk and ease transactions. Measurement errors undoubtedly remain and data may not be available in some countries. The selection of financial development indicators is largely driven by data availability. Moreover, the financial development measures must be differently used according to the country evaluated as some countries rely more on banking sector whereas other countries rely more on stock markets in channeling funds.

Measuring the other variable, economic growth is easy, on the other hand. In the finance and growth literature, researchers mostly use “*GDP growth*” or “*per capita GDP growth*” measured either in real or nominal terms. Other possible growth indicators are that has been used in empirical researches are “*the rate of capital accumulation per capita*” or “*improvements in economic efficiency*” as used in the pioneering work of King and Levine (1993). But, GDP growth is the most correct and preferred data used in classical growth regressions.

1.2. FINANCIAL DEVELOPMENT AND ECONOMIC GROWTH: EMPIRICAL EVIDENCE

Financial development and economic growth literature consists theoretical approaches, mathematical explanations in the context of endogenous growth models and empirical studies that tests the validity of theoretical approaches on countries basis. These studies had produced different results from each other and there is no consensus on this debate. While some studies suggest that there is no relation between finance and growth, some studies support the relation but direction of causality remains unclear. Nevertheless, most of the empirical studies proved the positive relationship between finance and growth and showed that level of financial development is a good predictor of future rates of economic growth.

For Demirgüç-Kunt and Levine (2008), in the empirical literature, financial development and economic growth relationship has been investigated by using different techniques as the following¹⁴⁶:

- pure cross-country growth regressions
- panel techniques that make use of both the cross-country and time-series dimensions of the data
- microeconomic studies that explore the various channels through which finance may affect economic growth
- individual country case studies

Pure cross country growth regressions uses standard explanatory variables such as physical and human capital to explain the finance-growth nexus. Second line of approach uses panel data to mitigate econometric problems associated with pure cross-country growth regressions even though it has some disadvantages.

¹⁴⁶ Aslı Demirgüç-Kunt and Ross Levine, **Finance, Financial Sector Policies, and Long-Run Growth**, Policy Research Working Paper, The World Bank, Washington, DC, 2008.

Microeconomic studies uses firm and industry level data to show the impact of financial development on firm or industry. Individual country case studies mostly use time series analysis and panel data to assess the finance and growth relation for an individual country.

From 1960s to mid-1980s, different approaches have been used to test finance and growth relation by several models such as correlation analysis and simple ordinary least squares (OLS Method) in the works of Gurley and Shaw (1967), Goldsmith (1969), McKinnon (1973), Shaw (1973), Jung (1986) and temporal systems in Granger (1969), Sims (1972), Geweke (1984). The cross-country analysis of Goldsmith (1969) is one of the first studies that empirically examine the relationship between financial development and growth. By using cross-section data of 35 countries between years 1949–1963 and method of ordinary least squares and graphical analysis, he found a positive relationship between financial development and economic growth. It was Gupta (1984) who first used time series analysis in testing finance and growth relationship.¹⁴⁷ By using quarterly data between years 1960-1980 and VAR analysis and Granger causality test, he discuss the causality issue and found that causality runs from financial development to economic growth. Jung (1986) also studied causality by using annual data of 56 countries and Granger causality test. He found that in developing countries, supply-leading hypothesis of Patrick is more consistent while for developed countries, demand-following hypothesis is valid.¹⁴⁸

Although the studies discussed above have proved the relationship between financial development and economic growth, these studies were econometrically unsophisticated and did not seem to spur much research interest at that time. The theory analyzing the relationship between financial development and growth is initiated much earlier. But most empirical work has been developed since 1990's,

¹⁴⁷ Kanhaya L. Gupta, **Finance and Growth in Developing Countries**, Croom Helm, London, 1984.

¹⁴⁸ Woo S. Jung, "Financial development and economic growth: international evidence" **Economic Development and Cultural Change**, Vol. 34, 1986, pp. 333– 346.

following King and Levine (1993).¹⁴⁹ A pioneering study of King and Levine (1993) is a cross-country study of 80 countries by using panel data of over the period 1960-1989 which examine the relationship between financial development measured by liquid liabilities, and three growth measures (real per capita GDP growth, real per capita capital stock growth, and total productivity growth) all averaged over the sample period. They found statistically significant positive relationship between financial development and three growth measures by concluding that *“the link between growth and financial development is not just a contemporaneous association... Finance does not only follow growth; finance seems importantly to lead economic growth”*.¹⁵⁰ In their work, other factors associated with long-run GDP growth rates, such as trade, initial income, human capital, macroeconomic and political stability were also systematically controlled.

De Gregorio and Guidotti (1995) investigated the relationship between financial development and long run economic growth by using two data sets which includes 98 countries in time period 1960-1985 and 12 Latin countries in time period 1950-1985.¹⁵¹ In their analysis, financial development is expressed as the ratio of bank credits to private sector to Gross Domestic Product (GDP) and they used the OLS method and random effects. The result of the first data set show that there is a positive relationship between financial development and per capita GDP growth. This positive relationship is more relevant in developing countries as the role of financial intermediation is more active in developing countries than developed countries. On the other hand, financial development significantly reduces economic growth for countries in Latin America during time period of high inflation rates. This is the result of unsuccessful experience of liberalization in Latin countries in which financial institutions may have negative effects on growth.

¹⁴⁹ King and Levine, **op. cit.**, p. 717.

¹⁵⁰ King and Levine, **op. cit.** p. 730.

¹⁵¹ Jose De Gregorio and Pablo E. Guidotti, “Financial development and economic growth.”, **World Development**, Vol. 23, 1995, pp. 433–448.

Levine and Zervos (1998) use data of 47 countries over the period 1976-1993 to analyze the effect of stock market and banking development on growth.¹⁵² They use bank credit to the private sector as measure of banking development. To represent stock market development, they use turnover ratio and value traded for stock market liquidity and stock market capitalization for the size of the equity market. The result of their study showed that stock market and banking development leads economic growth, although stock market liquidity measures are found to be robust predictors of future economic growth, but stock market size is not.

While aforementioned studies which were based on cross country analysis suggest that finance sector have an effect on growth and can help to predict growth, these studies do not deal with the causality issue and do not exploit time series properties of the data. Moreover, conclusions based on cross-country analysis are sensitive to the selected countries, estimation methods, data frequency, functional form of the relationship, and proxy measures chosen in the study, raising doubts about the reliability of cross-country regression analysis.¹⁵³ This method observes statistical association between financial development and economic growth but bears no implications of statistical causation. This improper assessment of causal relationship in static cross-section analysis led economists to seek more dynamic time series analysis. Panel analysis that uses both time series analysis and cross-section data avoids biases associated with cross-sectional regressions by taking into account the country specific fixed effect. The formalization of the Granger Representation Theorem by Engle and Granger (1987)¹⁵⁴ has been principal tool to investigate the causality issue where there has been considerable concern in testing the causality relationship between financial development and economic growth. (see e.g. Spears, 1992; Murinde and Eng, 1994; Demetriades and Hussein, 1996; Thornton, 1996; Luintel and Khan, 1999; Darrat, 1999; Ghali, 1999).

¹⁵²Ross Levine and Sara Zervos, "Stock Markets, Banks, and Economic Growth", **American Economic Review**, Vol.88, No.3, 1998, pp. 537–58.

¹⁵³ M. Kabir Hassan, Benito Sanchez and Jung-Suk Yu, "Financial development and economic growth: New evidence from panel data", **The Quarterly Review of Economics and Finance**, Vol. 51, No. 1, 2011, pp. 88-104.

¹⁵⁴ Robert F. Engle and Clive W. J. Granger, "Co-integration and Error Correction: Representation, Estimation, and Testing", **Econometrica**, Vol. 55, No. 2, 1987, pp. 251-276.

Jung (1986) was among the first authors to test the causality issue by using Granger causality test.¹⁵⁵ He used an annual data of per capita GNP and the ratio of currency to M1 and the ratio of M2 to GDP as an economic growth and financial development indicators, respectively for 56 developing and developed countries. The result of the study shows that there is a bi-directional relationship between indicators even though the results were inconclusive because they varied the financial development indicator used and the level of development of the countries.

By contending that cross-section analysis is not sufficient to explain the finance-growth nexus, Demetriades and Hussein (1996) used data of 16 developing countries and Turkey was also included.¹⁵⁶ They utilize Vector Autoregression (VAR), Vector error correction model (VECM), Engle-Granger and Johansen cointegration and Granger causality tests. Their findings showed little evidence to support the view that finance leads economic growth while growth-led finance hypothesis is confirmed in some cases. In addition, they conclude that the bi-directional causality relationship is found in majority of concerned countries. Luintel and Khan (1999) also provide the same findings in their study which includes 10 less developed countries and concluded that there exists bidirectional causation.¹⁵⁷ Neusser and Kugler (1998) analyzed the long-run relationship between manufacturing sector GDP and financial sector GDP by using data of 13 OECD countries over the period 1970 - 1991.¹⁵⁸ By using method of both Johansen maximum likelihood and residual-based panel cointegration tests, they found that some countries provide evidence to finance-led growth hypothesis while some of them support growth-driven finance hypothesis and feedback causality exists in some countries.

¹⁵⁵ Jung, *op.cit.*, p.340.

¹⁵⁶ Panicos O. Demetriades and A. Hussein Khaled, "Does Financial Development Cause Economic Growth? Time Series Evidence from 16 Countries", **Journal of Development Economics**, Vol.51, No.2, 1996, pp. 387-411.

¹⁵⁷ Kul B. Luintel and Mosahid Khan, "A Quantitative Reassessment of the Finance Growth Nexus: Evidence From A Multivariate VAR", **Journal of Development Economics**, Vol. 60, No.2, 1999, pp. 381-405.

¹⁵⁸ Klaus Neusser and Maurice Kugler, "Manufacturing Growth and Financial Development: Evidence from OECD Countries", **Review of Economics and Statistics**, Vol.80, No.4, 1998, pp.636-646.

Odedokun (1996) examined financial development and economic growth with panel data of 71 less developed countries over the period 1960-1980 by method of ordinary least squares.¹⁵⁹ He found that financial development increases economic development approximately at a rate of 85%. Another evaluation is that a positive effect of financial development on growth is more prominent in less developed countries than developing countries.

To overcome some of the econometric problems associated with cross-country studies such as reverse causation, simultaneity and missing variables bias, Levine, Loayza and Beck (2000) and Beck, Levine and Loayza (2000) were the first to implement the GMM panel estimators in the analysis of the financial development-economic growth nexus.¹⁶⁰ The results were very similar to results obtained earlier in pure cross-country analysis. Levine, Loayza and Beck (2000) use panel data of 74 countries averaged over each of the seven 5-year intervals over the period 1960–1995.¹⁶¹ They found that financial development is important for economic growth regardless of the econometric techniques and data set employed. There is a significant link between financial intermediary development and economic growth. This link is not due to potential biases induced by omitted variables, simultaneity, or reverse causation. Beck, Levine and Loayza (2000) also take into account the issue of potential simultaneity by employing cross-sectional instrumental variable estimator and a GMM dynamic panel estimator. In this way, countries' legal origins are used as instruments for financial intermediary development.¹⁶²

Beck and Levine (2004) expanded the work of Levine and Zervos (1998) and analyzed stock markets' role in economic growth by examining the time variability

¹⁵⁹ Odedokun, M.O., "Alternative econometric approaches for analysing the role of the financial sector in economic growth: time-series evidence from LDCs", **Journal of Development Economics**, C.50, 1996, pp. 119–146

¹⁶⁰ The GMM estimator is first proposed by Arellano & Bond (1991) and used in the financial development and economic growth related empirical literature by Levine (1998), Levine (1999), Rousseau & Wachtel (2000) and Levine et al. (2000) and Beck et. al. Following these works, the GMM panel estimators have been increasingly used in the finance-growth literature.

¹⁶¹ Ross Levine, Norman Loayza, and Thorsten Beck, "Financial Intermediation and Growth: Causality and Causes", **Journal of Monetary Economics**, Vol. 46, No.1, 2000, pp.31–77.

¹⁶² Levine, Loayza and Beck, **op. cit.**, p.31.

of data by employing GMM panel estimator with panel data set of 40 countries over the period 1976 – 1998.¹⁶³ They found that both stock market and bank development are jointly significant and contribute to the growth process. Arestis, Demetriades and Luintel (2001) also examined the relationship between stock market development and economic growth by utilizing time-series methods and quarterly data from developed economies.¹⁶⁴ Both banks and stock markets promote economic growth, but the impact of the former is more prominent. They also state that the influence of stock markets on economic growth may have been exaggerated by studies that use cross-country growth analysis.

Arestis and Demetriades (1997) used time-series analysis and Johansen cointegration tests to examine United States and Germany.¹⁶⁵ They observed that development in banking sector affects economic growth while there is no strong evidence of such an effect for the United States, but GDP contributes to both banking system and stock market development, instead.

Benhabib and Spiegel (2000) investigated in which channels financial development affect economic growth.¹⁶⁶ The main question in their study is that does financial development affect economic growth through widely used basic variables or the rates of factor accumulation or total factor productivity growth. They utilize data of Argentina, Chili, Indonesia and Korea over the period 1965-1985 by examining in the context of both neoclassical and endogenous growth models with GMM method. They use indicators such as financial depth, banks, private sector credits over GDP and adding two interactive indicators- relation of GINI coefficient with financial depth and initial income to express financial development more

¹⁶³ Thorsten Beck and Ross Levine, “Stock markets, banks, and growth: panel evidence”, **Journal of Banking and Finance**, Vol. 28, 2004, pp. 423– 442.

¹⁶⁴ Philip Arestis, Panicos O. Demetriades, and Kul B. Luintel, “Financial development and economic growth: The Role of Stock Markets”, **Journal of Money, Credit, and Banking**, Vol. 33, 2001, pp. 16–41.

¹⁶⁵ Philip Arestis and Panicos O. Demetriades, “Financial Development and Economic Growth Assessing The Evidence”, **Economic Journal**, Vol. 107, 1997, pp.783–799.

¹⁶⁶ Jess Benhabib and Mark M. Spiegel, “The Role of Financial Development in Growth and Investment”, **Journal of Economic Growth**, Vol.5, No.4, 2000, pp.341–360.

comprehensively. The result of the study showed that financial development positively affects both investment ratio and total factor productivity.

Rousseau and Wachtel (2000) examined the dynamic relationship between stock market development and economic growth by employing annual data of 47 countries over the period 1980-1995 and use panel VAR technique to overcome econometric problems.¹⁶⁷ They contend that stock markets can provide necessary capital and information for large investment projects by encouraging international portfolio diversification and flows to increase economic performance. The result of their study is consistent with the channels observed above. In addition, study points out the importance of liquidity in market improvement and per capita income.

Xu (2000) examined 41 countries over the period 1960-1993 by VAR analysis and reject the demand following hypothesis that contends financial development follows economic growth and states that financial development has little effect on growth.¹⁶⁸

Calderon and Liu (2003) applied innovative econometric technique and new data set by pooling data of 109 industrial and developing countries from 1960 - 1994 and apply the tests of linear dependence and feedback developed by Geweke (1984) to provide evidence on the causality of finance-growth nexus. They found five important results as following¹⁶⁹:

1. The validity of finance-led growth hypothesis has been confirmed
2. There is a strong evidence to support feedback causality in 87 developing countries and 22 industrial countries when the sample is fall into developing and industrial countries.
3. Financial deepening contributes more to the causal relationship in the developing countries than in the industrial countries.

¹⁶⁷ Peter L. Rousseau and Paul Wachtel, "Inflation Thresholds and the Finance-Growth Nexus", **Journal of International Money and Finance**, Vol.21, 2002, pp.777-793.

¹⁶⁸ Z Xu, "Financial Development, Investment, and Economic Growth", **Economic Inquiry**, Vol.38, No. 2, 2000, pp. 331-344.

¹⁶⁹ Calderon and Liu, **op. cit.**, p.3.

4. The impact of financial development on growth is larger when the sampling interval is longer.
5. Both capital accumulation and TFP are crucial in determining the causality relationship between these variables. The causal relationship from financial development to TFP as well as capital accumulation is stronger in developing, while the converse relationship is stronger in industrial countries.

A study by Christopoulos and Tsionas (2004) suggest that previous studies (Levine et al., 2000; Beck et al., 2000) can produce spurious results because these studies ignore the integration and cointegration properties of the data.¹⁷⁰ Thus, they re-investigated the long-run relationship between financial evolution and growth by applying panel unit root test, panel cointegration analysis, threshold cointegration test and dynamic panel data estimation for a panel-based vector error correction model. The result of the study shows that there is a single equilibrium relation between financial depth, economic growth and selected macroeconomic variables. They also found that there is strong evidence in favor of finance-led growth hypothesis in 10 developing countries that they examine.

Rioja and Valev (2004) showed that the effects of financial development may be non-linear or dependent on certain thresholds.¹⁷¹ That is, finance might affect growth differently in industrialized countries compared to developing countries. Literature observed significant and positive effects for middle and high range of financial development but the result does not hold unambiguously for the countries in the low range.

Another study by Rousseau and Wachtel (2005) states that the effect of financial development on growth not changes only according to development of a country, but

¹⁷⁰ Dimitris K.Christopoulos and Efthymios G. Tsionas, “Financial Development and Economic Growth: Evidence from Panel Unit Root and Cointegration Tests”, **Journal of Development Economics**, Vol. 73, No.1, 2004, pp. 55–74.

¹⁷¹ Felix Rioja and Neven Valev, “Does one size fit all?: A Reexamination of the finance and growth relationship”, **Journal of Development Economics**, Vol.74, No. 2, 2004, pp.429–447.

also on the level of financial development.¹⁷² Their empirical study suggests that while the finance-growth relation holds for middle income countries, it is not significant for low and high income countries. The relationship is positive and significant for middle range of development countries. In a panel study for 84 countries over the period 1905-1995, Rousseau and Wachtel (2007) found that the relationship between financial deepening and growth holds, with the exception of financial crisis periods.¹⁷³

In their industry level analysis, Rajan and Zingales (1998) claimed that industries that are “naturally heavy users” of external finance get more benefit from financial development than industries that are not.¹⁷⁴ They tested whether these industries grow faster in economies with better developed financial system or not. By employing data from the U.S. which industries that “naturally heavy users” of external finance and 36 industries in 42 countries between years 1980-90, they found that an increase in financial development disproportionately accelerate growth of industries that are “naturally heavy users” of external finance.

Wurgler (2000) also used industry-level data of 65 countries over the period 1963-95 and computed an investment elasticity that shows increases investment in growing industries and decreases investment in declining industries. Investment elasticity is a measure of which financial system reallocates flow of credit.¹⁷⁵ He found that in countries with better financial system, financial development increases investment more in growing industries and decrease investment more in declining industries than financially underdeveloped economies.

¹⁷² Peter L. Rousseau and Paul Wachtel, Economic Growth and Financial Depth: Is the Relationship Extinct Already?, **Social Science Research Network**, 2005.

¹⁷³ Peter L. Rousseau and Paul Wachtel, “What is Happening to the Impact of Financial Deepening on Economic Growth?”, **Economic Inquiry**, Vol. 49, No. 1, 2011, pp. 276–288.

¹⁷⁴ Raghuram G. Rajan and Luigi Zingales, “Financial Dependence and Growth”, **American Economic Review** Vol.88, No.3, 1998, pp. 559-586.

¹⁷⁵ Jeffrey Wurgler, ”Financial Markets and the Allocation of Capital”, **Journal of Financial Economics**, Vol.58, No.1, 2000, pp. 187-214.

Demirguc-Kunt and Maksimovic (1998) applied firm level analysis and examined whether financial development affects the degree to which firms are constrained from investing in profitable growth opportunities by focusing on long-term debt and external equity in funding firm growth.¹⁷⁶ The firm level data from 26 countries over the period 1980-91 showed that both development in financial intermediaries and stock market liquidity are positively associated with the excess growth of firms. This study is consistent with the claim of Levine and Zervos (1998) that contends size of the stock market is not related to firm growth. By using extended firm-level sample, Beck, Demirguc-Kunt, Levine and Maksimovic (2001) confirm the findings of Demirguc-Kunt and Maksimovic (1998).¹⁷⁷

The result of the empirical literature and use of regressions on financial development and economic growth on the basis of theoretical models show reliably positive relationship and financial development is a crucial factor in promoting economic growth not only in developed countries, but also in developing countries. Sound financial systems encourage investment and improve economic growth. Countries with better functioning banks and markets grow faster, but the degree to which a country is intermediary-based or market-based does not matter much. The evidence has shown that finance has a more important impact on growth through fostering productivity growth and resource allocation than through pure capital accumulation.¹⁷⁸ The availability of external finance is positively associated with entrepreneurship and higher firm entry as well as with firm dynamism and innovation.¹⁷⁹ Finance allows existing firms to exploit growth and investment opportunities and to achieve larger equilibrium size.¹⁸⁰ Firms can also acquire a more efficient productive asset portfolio with proper financial institutions and they can

¹⁷⁶ Asli Demirgüç-Kunt and Vojislav Maksimovic, "Law, Finance and Firm Growth", **Journal of Finance**, Vol.53, No.6, 1998, pp. 2107-2137.

¹⁷⁷ Asli Demirgüç-Kunt and Vojislav Maksimovic, "Funding Growth in Bank-Based and Market-Based Financial Systems: Evidence From Firm Level Data", **Journal of Financial Economics**, Vol. 65,2001, pp. 337-363.

¹⁷⁸ Beck, Levine and Loayza, **op. cit.**, p. 63.

¹⁷⁹ Thorsten Beck, Asli Demirgüç-Kunt and Vojislav Maksimovic, "Financial and Legal Constraints to Firm Growth: Does Size Matter?" **Journal of Finance**, Vol. 60, 2005, pp. 137-177.

¹⁸⁰ Thorsten Beck et. al., "The determinants of financing obstacles", **Journal of International Money and Finance**, Elsevier, Vol.25, No.6, 2006, pp. 932-952.

choose more efficient organizational forms such as incorporation¹⁸¹ Researches have shown that the impact of financial deepening on firm performance and growth is stronger for small and medium-sized than for large enterprises.¹⁸² The result of the studies prove that examining finance-growth literature by panel data analysis rather than in estimating a cross-sectional and time series analyses separately produce more realistic results.

¹⁸¹ Levine et. al., “Finance, Firm Size and Growth”, **Journal of Money, Banking and Credit** Vol.40, 2008 pp.1379–1405.

¹⁸² Beck, Levine and Loayza, **op. cit.**, p.63.

CHAPTER 2

THE DEVELOPMENT OF THE FINANCIAL SYSTEM AND ECONOMIC GROWTH IN TURKEY

In this chapter, growth process and the financial system of Turkey will be covered by explaining the basic elements of the Turkish financial system in order to understand the financial development and economic growth relation for the case of Turkey. The reason is that the financial system of the country patterns in accordance with that country's economic environment. In this context, functions of the financial system for a given country will be different from other countries as the structure of the financial system is peculiar to a particular country. Thus, it is necessary to evaluate the financial development and economic growth relation according to that country's financial structure. Section 2.1 considers structure of financial system and financial development process of Turkey in banking sector and stock market. Then, section 2.2 evaluates the financial system and economic growth in financial integration process.

2.1. THE DEVELOPMENT OF THE FINANCIAL SYSTEM IN TURKEY

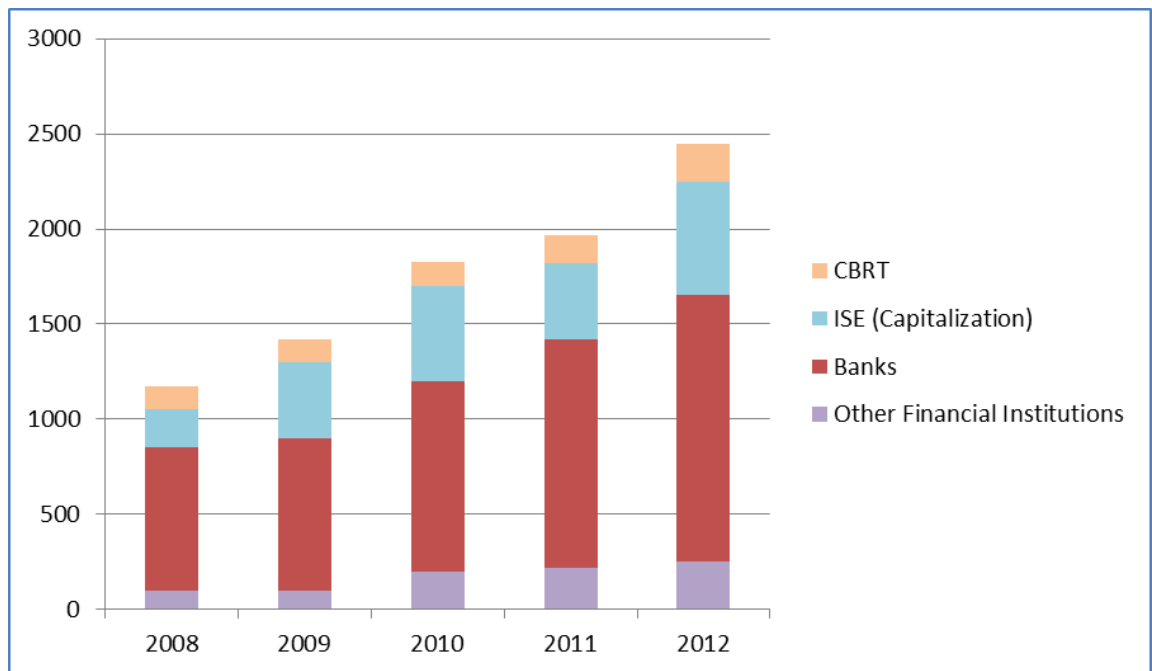
As previously mentioned and several theoretical and empirical studies suggested, the role of financial development in the economy may vary across countries because of the differences in institutional factors and economic structures. (See Rafael La Porta et. al., 1997 and Bell and Rousseau, 2001) This section examines the structure of the Turkish financial system and its operation in the economy by examining Turkish banking sector, stock markets and their relative dominance in the economy from historical perspective. In addition, financial development and growth relationship will be discussed in process of financial integration.

When examining theoretical considerations of the finance and growth nexus in the first chapter of this study, we refer the distinction of financial structure as bank-based

system and market-based system. We investigate relative merits of bank or market-based financial systems in influencing economic growth and ask what kind of financial institutions might maximize economic growth. We found that although banks tend to dominate the financial system at low levels of economic development and stock markets tend to become more active and efficient at higher levels of economic development relative to banks, countries with market-based financial systems do not perform better than those with bank-based systems. This implies that relative dominance of financial components does not matter much. Nevertheless, identifying financial structure of Turkey is crucial in clarifying the operation of the financial system.

The process of transforming savings into investments accrues through the banks and stock markets in Turkey. To see the share of banks and markets in Turkish economy, size of the financial sector in Turkey can be viewed in Graph 2.1 which shows the asset size of the financial sector measured by Turkish liras (TL).

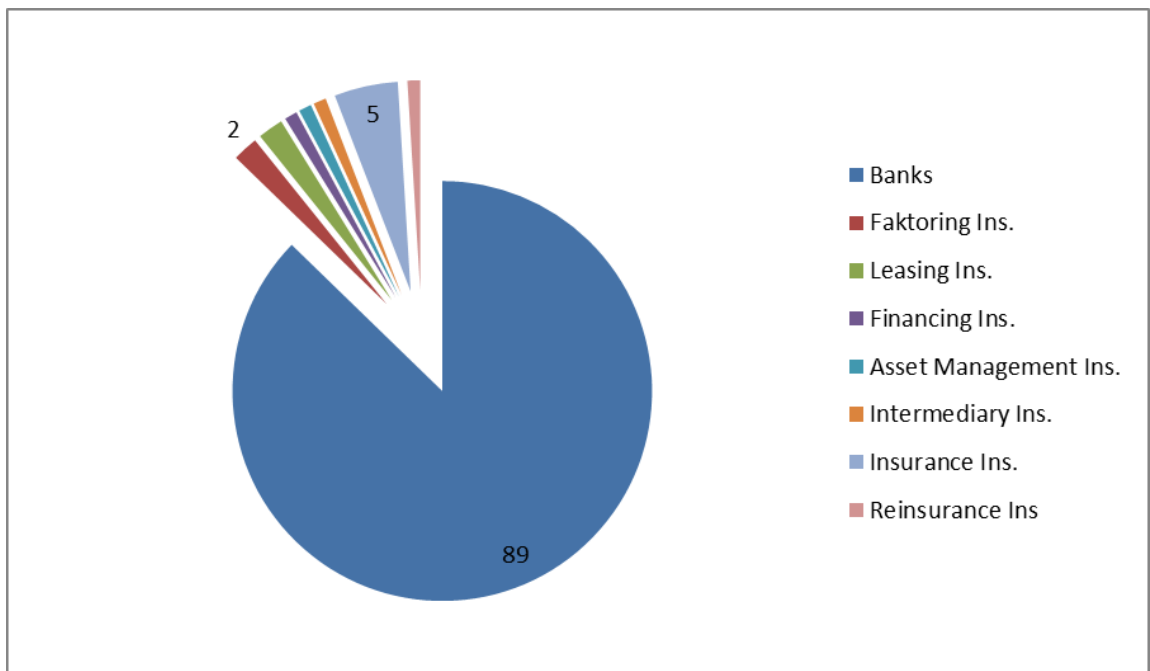
GRAPH 2.1: The Asset Size of the Financial Sector



Source: Arranged by the data from “Financial Market Report 2012”

According to “Financial Market Report” on December 2012 published by Banking Regulation and Supervision Agency (BRSA), total assets of banks has reached to 1,4 trillion TL by growing 12,6% (all values are compared to December of the previous year) while other financial institutions asset size is 238,7 billion TL by growing 11,9%¹⁸³ and capitalization rate of Istanbul Stock Exchange (ISE) appreciate nominally 33,6%.¹⁸⁴

GRAPH 2.2: Distribution of Employment by Financial Institutions



Source: Arranged by the data from “Financial Market Report 2012”

As can be seen from the above figure, the biggest component of the financial system is banking sector in Turkish economy. According to BRSA report published on June 2011, total share of commercial banks in financial sector is 76,2%. Graph 2.2 shows the distribution of employment by financial institutions. As can be seen, 89% of the employees work in the banking sector while other 11% employed in other

¹⁸³ Asset distribution of other financial institutions includes financial leasing, factoring, consumer financial, asset management, financial holdings, insurance, reinsurance, portfolio management firms and intermediary institutions, pension funds, securities mutual funds, securities investment funds.

¹⁸⁴ **Finansal Piyasalar Raporu**, Bankacılık Düzenleme ve Denetleme Kurulu, Sayı 28, Aralık 2012.

financial institutions. These data set proves dominance of banking sector in the financial system and the Turkish financial sector continues to grow.

2.1.1. Banking Sector in Turkey

Turkey has a bank-based financial system and by including the share of Central Bank of the Republic of Turkey (CBRT), banking sector has approximately 90% of the financial assets in the Turkish economy. Along with the banking sector, development of ISE is also desired by the authorities, but it hasn't deepened yet. This consolidates privileged position of banks and strengthens their entity. This section examines Turkish banking sector from historical perspective. History of Turkish banking system can be analyzed under four categories:

- i) Turkish Banking System in period of 1923-1980
- ii) Post-1980: Financial Liberalization and Opening period
- iii) Restructured period between 2002 and 2007
- iv) Period from 2007 to Today

i) Turkish Banking System in period of 1923-1980

After Turkish Republic was founded by Atatürk in 1923, banking system was under control of foreign capital to a large extent. This situation constituted a contradiction between business corporations that predominantly driven by national capital and foreign banks. Thus, **in the period of 1923-1933**, attempts made to develop **the national banking system** in Turkish republic. For that purpose, the first step was taken at İzmir Economic Congress which was convened in February 1923, the new Republic's first and the most important decisions concerning economic system. The economic policies to be implemented would correspond to the specific conditions of Turkish economy and history of the country. As part of decisions, first private bank of the Turkey was founded namely "Türkiye İş Bankası" in 1924. This bank was assigned to provide economic development of the country by lending

industry and trade sectors and undertake an enterprise in those sectors. Again, in line with the suggestions at İzmir Economic Congress, “Sanayi Maden Bankası” created in 1925 which was charged with the duty to build up, finance, and manage the public industry. It took the name of “Türkiye Sanayi ve Kredi Bankası” in 1932, and its business activities were transferred to Sümerbank in 1933. “Emlak and Eytam Bank” was founded in 1927 for the purpose of extending housing loans which its name changed to “Emlak and Kredi Bank” in 1947.

One of the most important events in the period of development national banking system is the foundation of Central Bank of the Turkish Republic in 1930. By 1930, negative effects of the Great Depression caused economic problems in Turkey. Especially the lack of an institution to control money and credit operations was revealed a need for Central Bank.¹⁸⁵ Thus, the establishment of CBRT helped to manage the crisis period. Foundation of local banks as well as the national banks shows that local banking system made a progress in that period.¹⁸⁶ But, most of the 29 local banks that had been founded between years of 1924-1932 were closed in the 1929 Great Depression.¹⁸⁷

Although a liberal economic policy was implemented by encouraging private enterprises for industrialization process during the first decade of the Republic, government assessed that private sector might not undertake its role in development process with insufficient capital, infrastructure and entrepreneurship. In 1930’s, the Turkish economy was characterized by dominance of agriculture sector and lack of industrial development. Moreover, Great Depression in 1929 negatively affected the Turkish economy. In this respect, government developed a strategy for executing economic enterprises and industrial investment publicly. Thus, the period between

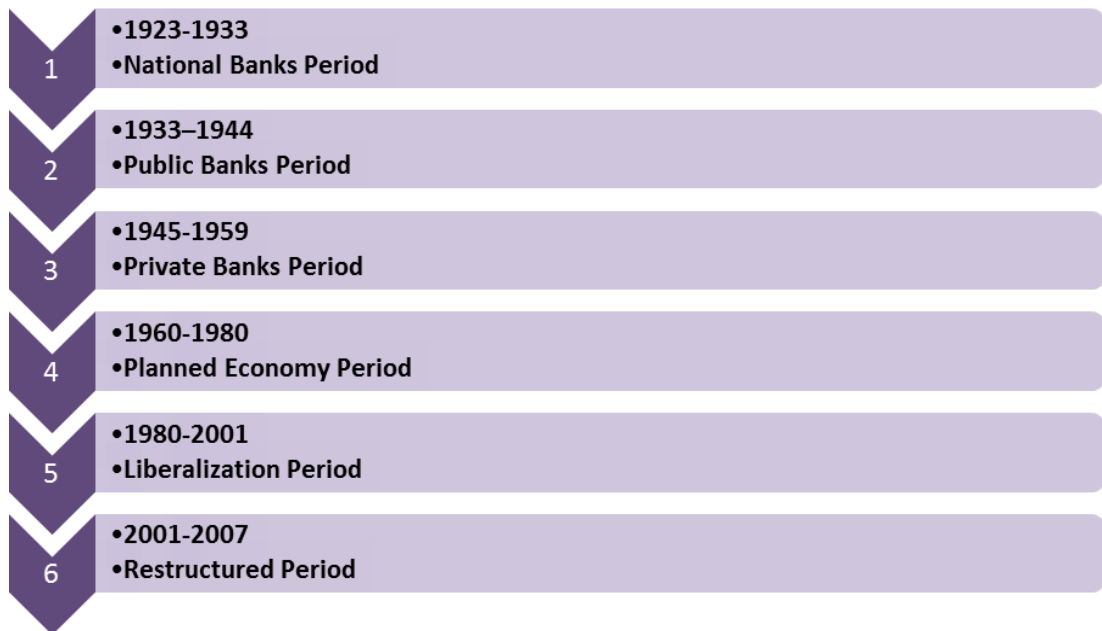
¹⁸⁵ Tuncay Artun, **İşlevi-Gelişimi-Özellikleri ve Sorunlarıyla Türkiye’de Bankacılık**, Tekin Yayınevi, İstanbul, 1983.

¹⁸⁶ See Sumru Bakan, “Osmanlı’dan Günümüze Türk Bankacılık Kesimi”, **İktisat Dergisi**, Vol. 417, 2002, .pp.32, Mehmet Günel, **Türk Bankacılık Sektörünün Sorunları ve Geleceği**, Ankara Ticaret Odası Yayını, Ankara, 2001,p. 11.

¹⁸⁷ Rabia Saliha Tutcuoğlu, “Dünyada Ve Türkiye’de Bireysel Bankacılığın Gelişme Nedenleri Ve Bankacılık Sektörü Açısından Oluşturduğu Riskler”, **Yayınlanmış Yüksek Lisans Tezi**, İstanbul Ticaret Üniversitesi Sosyal Bilimler Enstitüsü, 2010, p.7.

years of **1933–1944** can be named as the “**Public Banks period**”. The etatist policy was accepted as an alternative policy to accelerate industrialization process and state-led planned industrialization was targeted. When implementing state-led planned industrialization, Turkish Republic follows the experiences of Germany and Soviet Union. State economic enterprises and many state banks with specific duties such as Sümerbank (1933), Bank of Municipalities (1935), EtiBank (1935), Maritime Bank

FIGURE 2.1: History of Turkish Banking System



(1937) and Halk Bank (Public Bank, 1938) were founded by the state. Banks were charged to establish, manage, and finance the necessary enterprises in the industrialization plan.¹⁸⁸

The outbreak of the Second World War in this era resulted in an increase in demand for credit by government to meet the needs of public enterprises and defense expenses. In 1942, the required reserve ratio was increased to 15 percent, and investing all of these reserves in government domestic debt instruments became compulsory. This even more tightened the supply of credit which was already limited. A majority of local banks with single branch were closed in the early-1930s.

¹⁸⁸ TBB, 40. Yıl Kitabı, 06.12.2005, www.tbb.org.tr/turkce/arastirmalar, 06.12.2005, p. 7.

The use of credits by government from “Ziraat Bank” decreased credits for agriculture sector, leading to decrease in revenues from agriculture. But when considering the bad times of economic situation worldwide, in this period, the problems of capital accumulation for economic development within the main economic structure were tried to be solved in the most effective way.

After the Second World War, Turkey was in search for a new economic policies. High inflation and speculative atmosphere of war generated affluence class. After the transition to the multiparty political system in 1950, economic policies were discussed the role of public and private sectors in the economic field. Government reassessed the principle of etatism and with the ascendancy of Democrat Party, beside the new etatist policy, liberal policies were also adopted. According to this approach, the government should encourage the private enterprises in promoting industrialization. Thus, the term of **1945-1959** was a period of **developing private banks**. At the first years of this period, private capital accumulation, investments, modern enterprises, national income, population, and agricultural production increased. The need for credit stimulated the emergence of private banks. “Yapı and Kredi Bank” (1944), “Garanti Bank” (1946), “Akbank” (1948), “Pamukbank” (1955), and “Türkiye Sınai and Kalkınma Bankası” (1950) were among the banks established in this period. Banks’ branches quadrupled in number: the number of branches which was 405 in 1944 increased to 1759 by the end of the year 1959.¹⁸⁹ External factors as well as domestic ones were considered in economic decisions and Turkey received a Marshall Plan aid of USD (United State Dollars) 50 million for the first time.¹⁹⁰

During this period, governments re-arranged the laws concerning foreign capital investments and started to encourage foreign investment in Turkey.¹⁹¹ The volume of credits was increased and credits mostly extended to the agriculture sector. An

¹⁸⁹ Metin Coşkun and Mehmet Başer, **Bankacılık Uygulamaları**, Anadolu Üniversitesi Yayınları, No: 1361, Eskişehir, 2002, pp. 27.

¹⁹⁰ Ergül Han, **Türkiye Ekonomisi**, Anadolu Üniversitesi Yayınları, No:1583, Eskişehir, 2001, pp.50-51.

¹⁹¹ Cem Somel, et al., **Türkiye Ekonomisi**, Anadolu Üniversitesi Yayınları No: 1579, Eskişehir,2004, p.10.

export-led industrialization was preferred to the import substitution and private sector was widely promoted in parallel with a new industrialization policy. But after the year of 1953, economic conditions were deteriorated. Utilization of credits by the government from the Central Banks' sources later reflected in high inflation, foreign trade deficits and increasing foreign debts after 1953. Insufficient foreign currency constrained import of inputs which were needed to run factories in full scale. When 1958 came, Turkey was trapped in a bottleneck due to the lack of foreign currency, which was followed by restrictions on imports. Even though The National Protection Law was put into effect, it did not solve the problem. Eventually, negotiations were made with IMF and a stabilization program was accepted on August 4, 1958.¹⁹² In 1958, 1 USD devalued from 2,9 TL to 9 TL, an upper limit was set on the credits extended by the Central Bank, bank credits were frozen and premiums were started to be applied in foreign exchange transactions. Economic problems faced during this period convinced government to take new measures. Government again played a major role in economy as in the post-war period.

Turkey went through unplanned economic problems and unstable growth until 1960. Stabilization program and promotion of private sector in development by new statist approach and liberal policies were unsuccessful. Thus, government left the liberal policies and **planned economy period** started between years **1960-1980**. During the planned period, industrialization policy, public economic enterprises and private sector production were sustained by import-substitution policies. Investment activities provisioned within the scope of "Development Plans" which first one was put into action in 1963.

In this period, economy was characterized by closed economy model to protect the new industries against the foreign competition. Therefore, interest rates and foreign exchange rates were determined independently from the international markets. Government implement negative real credit interest rate policy for the sectors such as industry, energy, transport, public works and mining which given

¹⁹² İlyas Şıklar, **Türkiye Ekonomisi**, Anadolu Üniversitesi Yayınları, Eskişehir, 2001, p. 281.

priority in development plans. On the other hand, as a result of import-substitution policy, low cost of production and financing was necessary. To meet this demand, a foreign exchange policy that causes over-appreciation of TL was performed.

In this atmosphere, the role of banks in Turkish economy was constrained by providing necessary funds to projects in development plans. In this era, seven banks were established- five development and two commercial banks. The development banks were T.C. Turizm Bankası (1962), Sınai Yatırım and Kredi Bankası (1963), Devlet Yatırım Bankası (1964), Türkiye Maden Bankası (1968), and Devlet Sanayi and İşçi Yatırım Bankası (1976); the commercial banks were Amerikan-Türk Dış Ticaret Bankası (1964) and Arap-Türk Bankası (1977). Most of the commercial banks were encouraged to turn into holding banking by government assuming that this type of banking would accelerate private sector investments. This turned banking system into oligopolistic structure. Financial institutions in this term were weak and operated insufficiently because there was no competition and they were not subjected to international banking rules and competitions. The requirement of medium and long term fund and real resources for private sectors to produce couldn't be faced by domestic resources. Thus, government depended mostly on the Central Bank's loans, transfers from the state budget and public sector borrowings. Since these loans were created to a large extent by emission, inflationary pressures had started in the economy.

Despite a rapid trend of development during the planned period, foreign exchange bottleneck faced by Turkey in the 1970s as a result of import-substitution policy methods used in industrialization process. There was a shortage of exports, because newly emerged industries could only meet domestic consumption. Government tried to eliminate this bottleneck by application of convertible TL deposits, but this increased foreign debts. Policies of negative real interest rates and over-appreciated domestic currency affected banking sector negatively, leading to a decrease in savings between the years 1976 and 1980.

ii) Post-1980: Financial Liberalization and Opening period

The period between years 1980-2002 constitutes fluctuations in both Turkish economy and financial sector. Problems resulted from deterioration in balance of payments and need for foreign exchange demand in the mid-1970s necessitated new economic policy pursuit by the Turkish government. In 1980, economic stabilization and structural adjustment program had been announced. According to this program, paradigm of the economic development had changed which targeted

- Open market economy instead of closed economy model,
- Export-oriented production rather than import-substitution policy,
- Flexible exchange rates in place of over-appreciation of TL,
- Positive real interest rates rather than negative real interest rate.

The program eliminated quantitative balance sheet and price controls and emphasized on a free market approach, relying on price mechanism. Flexible exchange rates were necessary for restructuring economy according to free market rules. Positive real interest rates increased savings and capital accumulation to a level that is necessary for sustainable economic growth.

On January 24, 1980, some of the decisions that would be implemented are as follows:¹⁹³

- TL was devalued by 48.6 percent, and USD rose from TL 47.1 to TL 70. On May 1, 1981 foreign exchange rates were started to be determined on daily basis. On December 19, 1983 banks started to play a significant role in determining the exchange rates.
- Foreign exchange market controls were abolished and legal procedures to protect the TL were liberalized.
- Interest rates controls were abandoned and real interest rate policy was implemented.

¹⁹³ Şıklar, **op. cit.**, p.281.

In order to strengthen banking sector, Banking Law No. 3182 in 1985 was put into force in this term. According to this law, banks and residents in Turkey were allowed to hold foreign exchange reserves and open foreign exchange deposit accounts. International supervision and banking standards were introduced and external auditing became compulsory. “Deposit and Insurance Fund” and “Interbank” were established. Regulatory barriers restricting the entry into the banking system were moved and this encouraged entry of new banks and competition among banks. Foreign banks also entered to banking system. In 1986, with the competition among banks, foreign exchange rates were increased. Therefore, the Central Bank put forward another action plan which would be called March 14 Decisions.¹⁹⁴ These decisions controlled banks’ authority to determine the foreign exchange rates freely and dictated that banks were allowed to move in 1 percent margin of the predetermined rate.¹⁹⁵

On the other hand, “Securities Market Act” was put into force in 1982 and ISE started its operations in 1986. In 1987, firms were allowed to issue securities to strengthen the financial market. In the same year, CBRT started open market operations.

Foreign exchange market was established in 1988 and it was unofficial market. In 1989, foreign exchange transactions and capital market movements became free. This allowed Turkish residents to invest in foreign securities and to hold foreign currency accounts abroad while non-residents were permitted to invest freely in Turkish financial markets. In 1990, TL became convertible with no restrictions on international capital flow. In 1992, electronic fund transfer became operational.

In terms of banking system, free market mechanism and the liberalization of the financial markets had significant effects. With the entry of foreign and domestic

¹⁹⁴Öztiin Akgüç, “Türkiye’de Döviz Sorunu”, **Banka ve Ekonomik Yorumlar**, No: 5, May, 1986, p. 10.

¹⁹⁵ Işın Çelebi, **Dışa Açık Büyüme**, e Yayınları, İstanbul, 1991, p. 98.

banks into the sector and the abolishment of the restrictions on the interest rates increased competition. This encouraged banks to serve new products and services to accommodate for the adoption of a new banking system which its features were more than traditional deposit banking system. The number of small and medium size banks increased as a result of free interest rate, flexible exchange rates, free capital movements and improvement in information and communication technologies. The share of large private banks in the economy decreased.

After the year 1989, high inflation and high interest rate period were started and government deficit gradually increased. Government deficit were compensating by public debt and Central Bank funds. To supply necessary funds, CBRT concentrate on emission. Thus, inflation became chronicle issue. Moreover, as a result of high inflation and high interest rate, households shifted their preferences and hold their money in bank accounts. To attract savings of households in deposit accounts, banks further drive up interest rates. When it comes to 1994, banks incurred real losses as a result of an increasing exchange rate and interest rate risk. Government continued to implement expansionary monetary and fiscal policy in spite of the high government deficit. Besides, attempt to reduce interest rate were harmful for the current situation and eventually, economy experienced a crisis. In this term, stress in financial sector increased, interest rates hit record levels, TL depreciated against foreign currency and financial system contracted.

Government was taken new measures with April 5th decisions in 1994 as following:¹⁹⁶

- Procedure of the foreign exchange rates was changed. Foreign exchange rates were to be left free and the Central Bank was to take the average of the rates of the 10 largest banks as fundamental.
- With the aim to decrease the costs of the banks and to return to TL, obligatory reserve ratios were reset to zero, and then to previous level.

¹⁹⁶ Şıklar, **op. cit.**, p. 288.

- Saving deposits were fully taken under the state's insurance coverage.
- Liquidity ratios for the Asset-Backed Securities and foreign exchange deposits were raised to 22 percent.

In 1997, Turkey applied new concepts of budgetary discipline and taxation procedures. New government's priority was to reduce inflation and to have a balanced budget. Accordingly, after new decisions, inflation and interest rates started to decrease, financial instruments based on TL attracted attention again and foreign exchange reserves increased. In the mid of 1998, an agreement that were made with the International Monetary Fund (IMF) limited short positions of banks and futures. An important issue in terms of banking sector was the confiscation of some banks such as Türk Ticaret Bankası (1997), Bank Ekspres (1998), Interbank (1999), Esbank (1999), Yurtbank (1999), Yaşarbank (1999), Sumerbank (1999), Bank Kapital (1999) and Etibank (1999) by Saving Deposit Insurance Fund of Turkey (SDIF). The reason was the difficulty of banks adapting in economic developments. Asia and Russia crisis and the earthquake of 1999 caused Turkish economy to contract and this negatively affected banking sector.

The stand-by agreement or “disinflation program” with IMF was signed in 1999 and implemented in 2000. In the first place, interest rates and inflation showed downward trend through the program. On the other hand, balance of payments started to deteriorate as a result of decrease in international capital inflows. Liquidity risk of banks and exchange rate risks were increased.

The Banking Regulation and Supervision Agency (BRSA) were put into action on August 30, 2000 to control and regulate operations and transactions of the banking system in Turkey. The goals of BRSA was subject banking system to independent supervision and auditing, extending definition of credit to cover participation, managing risk management and reinforcement the structure of incapable banks and

restructuring the banking sector.¹⁹⁷ In this context, banking regulations designated to be compatible with the Basel Committee suggestions.¹⁹⁸

Unrest in banking sector started on November 2000 turn into a crisis as a result of an adverse events in Turkey and the world, liquidity need of the financial system, confidence crisis between market participants. Government overcame November 2000 crisis by IMF credit at a total amount of USD 7,5 billion. But following economic crisis, economic management couldn't be effective in eliminating the effect of crisis, expectations turned into negative and the stability deteriorated again. This resulted even worse crisis occurred on February 19, 2001 which affected real sector by contracting Turkish economy 9,4%. Inflation rate rose from 39% to 69% accompanied by an increase in exchange rates, interest rate and unemployment rate. It can be said that banking sector bears the cost of crisis. Banks incurred loss 77% of their equity capital. This crisis seemed to be financial crisis and banking sector had devastating effects on stock market, too. ISE recorded substantial loss on that date. In 2001, Ulusalbank, Sitebank, Kentbank, Demirbank, Tarişbank, Bayındırbank, İktisat Bankası, EGS Bank and Toprakbank were transferred to SDIF which their debts about USD 17,3 billion. Consequently, **“a transition program for strengthening the economy”** announced on May 2001. Main targets of this program was to meet domestic demand for foreign currency derived from banking system to prevent instability from foreign exchange rates and to take structural measures concerning banking system. Program predicted that well-functioning banking system durable to external and domestic shocks can help sustainable and sound economy.

¹⁹⁷ Reşat Can Akkay, **“Gelişmekte Olan Piyasalarda Finansal Gelişme Ekonomik Büyüme İlişkisi: Türkiye Örneği”**, İstanbul Üniversitesi İktisat Anabilim Dalı Doktora Tezi, İstanbul, 2010. p.140.

¹⁹⁸ Ersin Özince, **“Finansal Sektör-Uluslararası Gelişmeler ve Türkiye Deneyimi”**, **12. Dünya Muhasebe Tarihçileri Kongresi Açılış Bildirisi**, 2008, p.33.

iii) Restructured period between years 2002-2007

2001 crisis created uncertainty in the economy. Firms decreased their activities and investments in real sector, vast majority of them fell into payment problems. In consequence of this situation, a transition program for strengthening the economy reexamined and main goals of this program determined. These goals were to reduce inflation and public debts, provide fiscal discipline, completion of structural reforms and strengthen banking system. Moreover, the issue of restructuring the debts of firms came up and “financial restructuring program” implemented on June 2002 and cover three years starting from this date. In this term, as a consequence of positive conjuncture of the world and well established targets helped to decrease inflation and interest rate, high growth rates achieved and public borrowing made at a lower cost.

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With the 2005 Banking law and regulation, Turkish banking sector considerably adapted to internationally accepted principles and implementations.²⁰⁰ Banking regulations include increasing transparency of bank balance sheets, harmony with international accounting standards, strengthening fiscal structures, describing risk and considering international practices in management structure.²⁰¹ These improvements in banking sector are accompanied by an increasing liquidity in international markets. Fiscal discipline in public sector and achieving inflation target contribute to financial stabilization.

As from May 2001 with program in force, macroeconomic indicators ameliorated according to pre-crisis term. After economic contraction approximately 7,5% in 2001, Turkish economy grows 7,9 %, 5,8%, 9,8% in 2002, 2003, 2004 respectively. Moreover, following 88.6 % inflation in 2001, inflation rates decreased to 30,8%, 13,9% and 13,8% in 2002, 2003, 2004, respectively. Interest rates of domestic debt instruments also decreased in this term. While interest rate of domestic debt

¹⁹⁹ Akkay, **op. cit.** p.140.

²⁰⁰ Ekrem Keskin, Melike Alparslan and E. A. İnan, “**Türk Bankacılık Sektörü**”, Bankacılar Dergisi, Vol. 49, 2004, p.20.

²⁰¹ Keskin, Alparslan and İnan, **op. cit.**, p.76.

instruments was around 76%, this ratio decreased to 56% in 2002, 42,7 in 2003 and 24,8 in 2004. In spite of the improvements in macroeconomic indicators, banking sector didn't show much improvement. For example, in 2001 crisis, banking sector contracted 15,7% and 1,8% in real terms in 2001 and 2002 respectively. In 2003 and 2004, banking sector expanded 3,1% and 7,8% respectively. But the reason was the banks that were transferred to SDIF in 2001. Between years 2004-2007, growth rate of balance sheet of banks was higher than Gross National Product (GNP) growth rates of the country.

After 2004, financial and economic stability attracted attention of foreign banks to Turkish financial market. From 2005 to 2007, the share of foreign capital banks increased from 5% to 24%. Furthermore, functions of the financial system in the economy increased to meet an increasing demand of savers and borrowers. Another reason was removing burden of public fund on banking sector. Through the decreasing domestic debt and domestic dept/GDP ratio, banks were no longer a source for funding government debt. As a result, banks were concentrated on their own activity. The ratio of deposits to GNP rises from 49% to 56% and the ratio of transformation of savings into credit increased from about 40% to 80% from 2002 to 2007. In this era, TL credit ratio to GNP increased more than foreign currency credit to GNP. Moreover, consumer loans in distribution of credit were increased from 14% to 32% which most of the loans used as mortgage credits.²⁰²

iv) Period from 2007 to Today

As stated in previous section, after the turbulence and volatility of the 1990s and early 2000s, Turkey and the world economy exhibited successful macroeconomic indicators nominally and recorded relatively high and stable growth rates in the period between years 2002-2007. Financial sector were also appeared to be sound in functioning their roles. But, during the growth episode of 2002-2007, Turkish economy was vulnerable to rising high current account deficit (CA) which associated

²⁰² Keskin, Alparslan and İnan, **op. cit.**, pp.53-63.

with appreciating currency making economic growth unsustainable after mid-2006. As a result of a decrease in investment and private consumption, deceleration in the growth rate of the Turkish economy had started in mid-2007 before the economy was hit by the crisis. After growing average at 7.3% between 2002 and 2005, GDP growth gradually decelerated to 4.7% in 2007. Reduction in investment and private consumption mainly arose from the volatility in capital flows, ongoing deterioration in the competitiveness of traditional labor intensive export sectors, oil price shock and tightening monetary policy in the second half of 2006.

In the world, tendency of increasing short and long term interest rates, increasing risk premium, rising prices of food, precious metals and energy was also an indicator of coming crisis. On the other hand, negative situation of United States of America (USA) financial markets revealed the end of this growth trend. On June 2007, housing sales in USA decreased at a rate 6,6% and two hedge funds that invest in risky mortgage credits go bankrupt. This bubbles in the economy that created since 2002, popped on July 24, 2007. All international stock markets experienced fast fund outflows, fluctuation in USA mortgage market spread all over the world financial markets. Major USA and European banks incurred serious losses and profits of the banks decreased. This proved that these financial fluctuations are more serious than they appear which eventually lead one of the major crises in the world after 1929 Great Depression.

In 2008, global crisis hit the Turkey hard via financial markets and trade even though it was expected that emerging economies, including Turkey, would not be affected by US subprime mortgage crisis. Growth trend of Turkey slow down starting from 2007. The first channel of the crisis to effect economy included net capital outflows, currency depreciation, a fall in stock prices, rising risk premium and tightening liquidity in the banking sector. Exports slumped result in a massive contraction in industrial output and investment.²⁰³ There was also a loss in

²⁰³Lukasz Rawdanowicz, "The 2008-09 Crisis in Turkey Performance, Policy Responses and Challenges for Sustaining The Recovery", **Oecd Economics Department Working Papers**, No. 819, p. 6.

confidence in business and consumers under the large uncertainties and bad environment all around the world. Households decreased their consumption while businesses reduce their investment and use their inventory in an uncertain environment. A fall in output brought rising unemployment.

According to year 2007, asset size of the Turkish banking sector in 2008 increased about 26% which credits play an important role. Deposits increased 35% according to previous year. Branch and number of the employees increased. Personal loans and consumer credits increased 23,7% and 22,6% respectively. Indicators that show financial soundness appeared to be positive. Nevertheless, net profit of banking sector in 2008 according to previous year decreased 10,5%.

As a result of implemented macroeconomic supporting policies starting from the last quarter of 2008 relieve the effect of crisis, but recession didn't entirely end. Negative effect of global recession to Turkish exports, inefficiency in credit channels, large amount of given credits and their default risk continued to play a role in the economy. In the first quarter of the 2009, economy contracted 13,8%. Following the recession period, in the second quarter of 2009, GDP growth started to grow rapidly. This was driven by the recovery in private consumption, investment activities and slowdown of destocking. Unemployment remained at low levels as a result of nominal wage cuts.

In the first half of 2010, business confidence was achieved as a result of improving financing conditions which can be seen from positive results of industrial production index, consumer confidence index, real sector confidence index and rate of capacity utilization. Credit growth increased with the ample liquidity and low interest rates in country. Global recovery also supported the economy by accelerating exports which finally lead rising capacity utilization and investments. Current account deficit in 2009 were decreased 75,7% according to the June, 2008.

After the economic recovery from the 2008 crisis, Turkish banking system seems to be more resilient to shocks. Global economy enter relatively positive phase with decreasing short term risks although issues of low growth, unemployment, financial fragilities persist. According to BRSA report published on December 2012, the implemented macro prudential policies enabled macro variables to maintain a sustainable balance in 2012 which attributed to the fiscal discipline and national income, the policies towards stimulating domestic savings, flexible monetary policy and implementations limiting the strong loan demand.²⁰⁴ As global markets recover, Turkish financial sector continued to attract the interest of foreign capital. Total assets of banking sector reached TL 1.4 trillion at the end of 2012. Loans continued to be the most important part in banks' portfolio, increasing by 16.4% according to 2011. Banking sector recorded TL 23.6 billion profit at the end of the year 2012. The decline of interest rates had a positive impact on profits by limiting the sector's interest expenses. The 33.5% of total loans are composed of personal loans, 25% are Small and Medium sized Enterprises (SME) loans and 41.6% are corporate and commercial loans. The share of large loans allocated by the banking sector within total loan amount is decreasing, but avoids risks may arise from credit concentration. Growth of financial sector in 2012 also contributed employment. Number of banks as at December 2012 is 49 and banks opened 541 branches in country and 3 abroad.

So far we have examined overview of the Turkish banking sector in the context of historical economic issues of Turkey. It can be inferred that banking system is the most important source of financial activities in Turkey and channels major part of the funds to support investment activities which leads to higher economic growth. Let us now consider the structure of Turkish banking sector and its development process.

TABLE 2.1: Number of Banks between 1980 and 2012

Year	80	85	87	94	99	00	01	02	03	04	05	06	07	08	09	10	11	12
No. of Banks	33	46	52	67	81	79	61	54	50	48	51	50	50	50	48	49	48	49

Source: Arranged by the data from TBB and Financial Markets Report 2012

²⁰⁴ Finansal Piyasalar Raporu, *op. cit.*, p.1.

With the financial liberalization policies after 1980 aimed to financial sector deepening and monetization of the economy. The share of financial assets in GNP steadily increased after 1980. As seen in Table 2.1, the share of financial assets in GNP in 1980 was only 19% while it increased from 58,2% in 1996 to 108,5% in 2002.

TABLE 2.2: Banking Sector Operational Indicators

Number Of	2005	2006	2007	2008	2009	2010	2011	2012
Banks	51	50	50	50	49	49	48	49
Branches	6537	7296	8117	9304	9347	10078	10363	10720
Employee	138724	150793	167760	182667	182468	191180	194619	197976
Deposit Accounts (Thousand)	82958	86131	91063	91101	93731		107596	108699
Credit Customer (Thousand)	29153	30685	35403	36693	38739	41496	43518	47507
Credit Card Customer (Thousand)	25155	25580	27658	25677	25888	27787	28461	31317

Source: Arranged by the data from Financial Markets Report 2012, No.28.

From 1980 to 2001, the number of banks increased from 33 to 79 while after 2001 crisis, some of the banks went bankruptcy and number of banks decreased to 54 in 2002 in Table 2.1. Number of bank branches and staff steadily increases after 2005. On the other hand, an increase in number of bank deposits, credit and credit card customer shows banking sector development in financial intermediation after 2005 which shown in Table 2.2.

When considering investment preferences of residents in Turkey, it can be seen that TL deposit has approximately 60% of investment intermediaries. In Table 2.3, from 2007 to 2012, investment instruments are growing steadily, which indicates a development in size of the financial market. Deposit and current accounts are almost doubled from 672,3 in 2007 to 1257,7 in 2012. Development of TL deposits had been limited as a result of 2008 crisis.

TABLE 2.3: Distribution of Investment Instruments: Residents

BILLION TL	2007	2008	2009	2010	2011	2012
TL Deposit	220,6	280,1	321,2	406,5	429,4	481,7
Foreign Exchange Deposit Account	111,6	141,9	150,4	159,3	189,3	192,3
Precious Metal Acc.	0,2	0,3	1,2	2,4	14,4	18,8
Part. Banks Funds	14,6	18,6	26,1	32,1	34,8	42,5
Government Debt Securities	243,1	269,4	334,5	344,6	326,8	336,2
Eurobond	4,3	4,9	5,3	5,4	6,5	6
Stock	31,1	20,0	40,7	56,0	52,9	72,7
Investment Funds	26,4	24,0	29,6	33,2	29,7	30,2
Bonds and Bills (Private)	0,3	0,4	0,5	2,6	13,2	26,8
Repo	20,1	27,7	43,7	44,2	69,0	50,5
Total	672,3	787,3	953,3	1086,4	1166,0	1257,7

Source: Arranged by the data from Financial Markets Report 2012, No.28

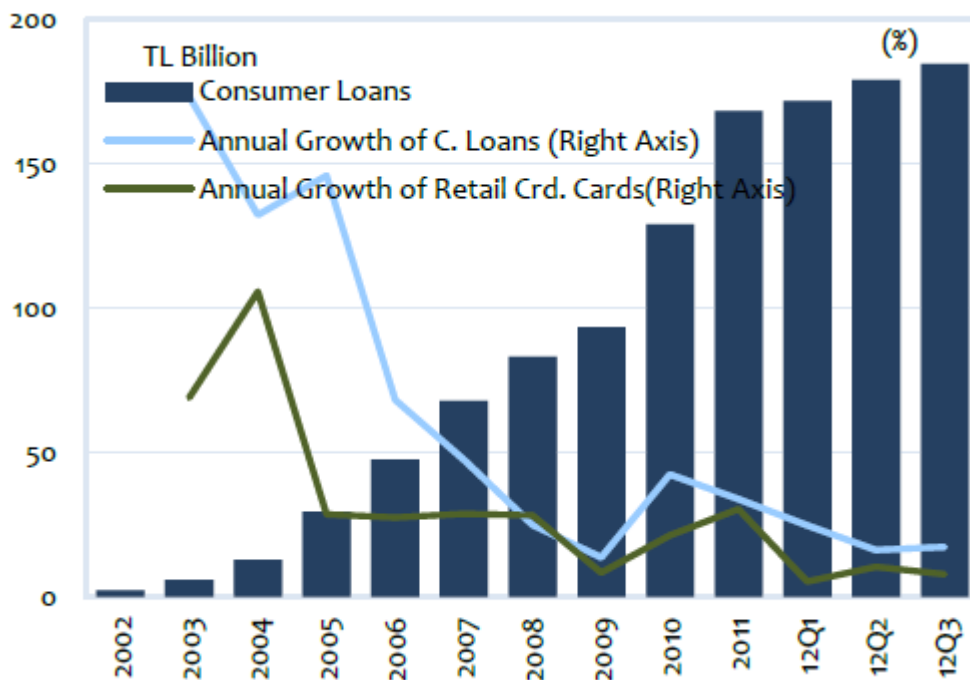
Deposits and other assets that the financial system pools in Table 2.3 transform into credits. The ratio of transformation of these pooled savings into credits is an indicator of banking sector development. Table 2.4 shows the development of personal and commercial loans. According to the table, most of the deposits transform into credits. SME loans have multiplied from 2008 to 2012 which shows the development of enterprises. Commercial and corporate loans have also increased, especially from 2010 to 2011, correspondingly to a development of deposits which can be seen in Table 2.2. Personal loans have substantially increased from 2009 to 2010.

TABLE 2.4: Development of Personal and Commercial Loans

	TL Million					% Distribution				
	2008	2009	2010	2011	2012	2008	2009	2010	2011	2012
SME Loans	84.605	83.271	125.734	162.109	172.499	23,0	21,2	23,9	23,7	23,4
Other Com. and Corp.	165.707	179.435	225.893	296.891	322.480	45,1	45,7	43	43,5	43,7
Personal	117.133	129.915	174.224	223.893	242.218	31,9	33,1	33,1	32,8	32,9
Total	367.445	392.621	525.851	682.893	737.196	100	100	100	100	100

Source: Arranged by the data from Financial Markets Report 2012, No.26, p. 35.

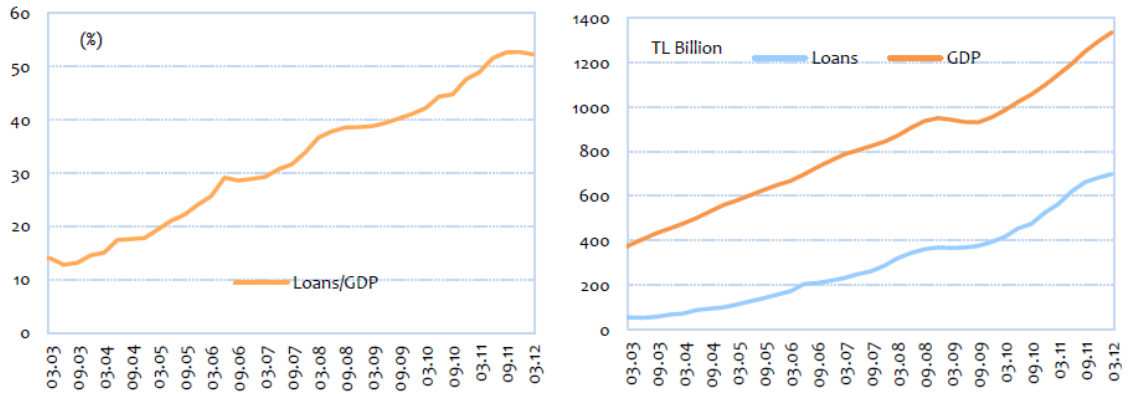
Consumer loans also increased in the last few years. Graph 2.3 shows the development of consumer loans from 2002 to 2012. Consumer loans given by the commercial banks have substantially increased from 2002 to 2012. While the amount of consumer loans was about 5 billion TL, it reached approximately to 200 billion TL in the third quarter of 2012.

GRAPH 2.3: Development of Consumer Loans

Source: BRSA, Turkish Financial System: The Review of 2012 And Trends, p.5.

In conclusion, for the sustainable financial stability and economic growth, the development of loan amount granted by Turkish banking sector is important. From Graph 2.4, for the last 10 years, the ratio of loan amount to GDP increased significantly. Moreover, GDP growth and development in loans lines move in the same direction. When the 2008 crisis period contracted the amount of loans, GDP has also decreased.

GRAPH 2.4: Development of Loans and Economic Growth



Source: BRSA, Financial Markets Report 2012, No.26, p. 16.

2.1.2. Stock Market in Turkey

The most important component of the financial sector following banks is the stock market. Turkish financial market basically consists of money and capital markets. Money market includes assets for short term borrowing and lending such as treasury bills, banker's acceptances, commercial paper, deposits, bills of exchange etc. while capital markets are the markets for the long term buying and selling activities of debt or equity-backed securities. These securities are corporate bonds, stock, Government bonds and Treasury bills, Exchange traded funds, equities, money market instruments and foreign securities. ISE is the only corporation in Turkey for

securities exchange such as bonds, bills, revenue-sharing certificates, private sector bonds as well as international securities.

During the 1980s, legal and institutional regulations supporting stock market development put into effect to create an alternative financial market. In 1981, the Capital Market Law (CML) was enacted and one year later, the main regulatory body, envisaged by the law, the Capital Markets Board (CMB), was established. In October 02, 1984, the Council of Ministers issued the Regulation for the Establishment and Operations of Securities Exchanges, which paved the way for the establishment of the Istanbul Stock Exchange, formally inaugurated at the end of 1985.²⁰⁵ Then, Borsa Istanbul (BIST) established combining ISE and the Istanbul Gold Exchange and the Derivatives Exchange of Turkey which began to operate on April 5, 2013.

Both bonds issued by government and stock of private sector are traded in ISE. After the liberalization in 1980s, government supported privatization and private sector in conducting real activities instead of state-led activities. Bonds issued by government don't have an important role in real investments, but private sector is crucial for supporting real activities. Thus, stock of private sector are the most significant source of real investment after banking sector for economic growth. This section examines stock market performance rather than considering all securities trading in ISE.

ISE which formally began to operate in 1985 recorded considerable improvement. The economic situation of Turkey and prevailing short-term investment in market allowed steady rise in trading volume of securities. Many industrial firms and private sector firms borrowed from ISE to finance their investment activities and some of them resorted to financing based on stocks and initial public offerings.²⁰⁶ Partial liberalization of capital accounts on August 1989 provided ISE growth by allowing

²⁰⁵ İstanbul Stock Exchange, **Markets and Operations**, October 2011, p.7.

²⁰⁶ Rüştü Saraçoğlu, "Financial Liberalization in Turkey", **İktisat İşletme ve Finans Dergisi**, Vol. 132, 1997, pp. 12–13.

nonresidents to invest in domestic securities.²⁰⁷ In 1990s, ISE made a progress in financial integration and joined international organizations. ISE joined World Federation of Exchange in 1992 and US Securities and became internationally recognized stock exchange market in 1993 by Stock Exchange Commission (SEC). This proves an international acceptance of the adequate institutional and legal base of

TABLE 2.5: Outstanding Securities

YEARS	PUBLIC SECTOR			PRIVATE SECTOR			TOTAL		
	BILLION TL	TOTAL SHARE (%)	RATIO TO GNP* (%)	BILLION TL	TOTAL SHARE (%)	RATIO TO GNP* (%)	BILLION TL	TOTAL CHANGE (%)	RATIO TO GNP* (%)
1986	3.1	76,8	5,4	0,9	23,2	1,6	4		7
1987	5.4	71,7	6	2,1	28,3	2,4	7,5	37,3	8,4
1988	8.4	68,9	5,1	3,8	31,1	2,3	12,2	-8,3	7,5
1989	15.5	65,8	6,2	8,1	34,2	3,2	23,5	51,3	9,4
1990	25.4	61,1	5,7	16,1	38,9	3,6	41,5	39,2	9,3
1991	44.7	56,1	5,8	35	43,9	4,5	79,7	10,7	10,3
1992	135	69,0	10	60,7	31,0	4,5	196	45,6	14,5
1993	270	70,7	10,5	112	29,3	4,3	382	15,6	14,8
1994	598	82,0	11,8	131	18	2,6	729	-28,2	14,3
1995	1202	80,3	11,6	295	19,7	2,8	1.498	29,3	14,4
1996	2.849	86,6	14,5	441	13,4	2,2	3.290	24,8	16,7
1997	6093	86,7	15,5	931	13,3	2,4	7.025	12,1	17,8
1998	11.789	86,1	18,3	1.899	13,9	2,9	13.688	27,6	21,2
1999	23.303	86	23,3	3.796	14	3,8	27.099	14,6	27,1
2000	36.802	84,3	27,2	6.868	15,7	5,1	43.670	29,6	32,3
2001	122.930	92,1	57,6	10.517	7,9	4,9	133.447	42,6	62,5
2002	150.939	92	51,3	13.177	8	4,5	164.115	8,3	55,8
2003	196.004	91,6	58,7	18.008	8,4	5,4	214.012	52,7	64,1
2004	227.415	90	56,6	25.186	10	6,3	252.601	22,8	62,8
2005	248.773	88,6	50	31.916	11,4	6,3	280.689	8	56,3
2006	255.240	88,1	33,5	41.059	11,9	5,4	296.298	1,4	38,9
2007	255.310	83,6	33,4	52.055	16,9	6,8	307.365	28,7	40,2
2008	274.827	81,14	24,5	63.859	18,9	5,7	338.686	-15,6	45,7
2009	330.004	82,38	34,6	70.576	17,6	7,4	400.580	15,9	42
2010	352.841	80,83	32	83.707	19,2	7,8	436.548	12,9	39,8
2011	368.778	78,02	28,8	103.898	22	8,1	472.676	-3,4	36,9
2012	386.541	75,36	27,4	126.426	24,6	8,9	512.967	1,1	36,4

Source: Capital Markets Board of Turkey (CMB)

*Ratio to GNP has been changed as ratio to GDP after year 2006 which wrote in italic letters.

²⁰⁷ Abdullah Akyüz, "Türk Sermaye Piyasaları: İlk 20 Yılın Özet Bilançosu", *İktisat İşletme ve Finans Dergisi*, Vol. 201, 2002, p. 6.

ISE. Moreover, using automation system starting from 1994 adopted ISE to developed stock markets.²⁰⁸

However, in 1990s, private sector instruments didn't make a progress in volume and ISE became a financial market that finances government deficit. Public debt instruments again covered substantial part of the portfolio of financial market as well as banks. ISE appeared to be a market in which public securities are in a majority. The reason was substantial public deficits and rising requirement of public sector domestic borrowing that government prefers to finance deficits after late 1980s. An increasing utilization of ISE by government in financing public debt induced private sector to use deposit banks as a source of external financing of their investments and this continued to prevail between 1990 and 2002. In this term, this process proves crowding out effect in Turkish economy.²⁰⁹ In Graph 2.5, the share of public and private sector securities stocks can be seen. From 1986 to 1991, private sector stocks increase its share in total stocks from 23,2% to 43,9%. That means private sector intensively provided fund from ISE. Government's dominance in ISE to finance rising public sector deficit decreased the share of private sector until 18%. The share of private sector exhibited unsteady appearance until 2001 crisis and its share decreased to 7.9. After macroeconomic stability ensured in 2002, the share of private sector rose again and in 2008 crisis, its share decreased to 17,6%.²¹⁰

The development of the stock of securities is shown in above Table 2.5 outstanding securities. Total outstanding securities grew between 1986 and 1994 except year 1988. In 1994, total securities stock decreased 28,2% as a result of increasing exchange rate and interest rate risk prevailed in those years. After 1994, ISE continued to grow until 2002, the crisis period and reached 62,5% of GNP. After 2002 crisis ISE grew again until 2008 financial crisis in which growth rate is

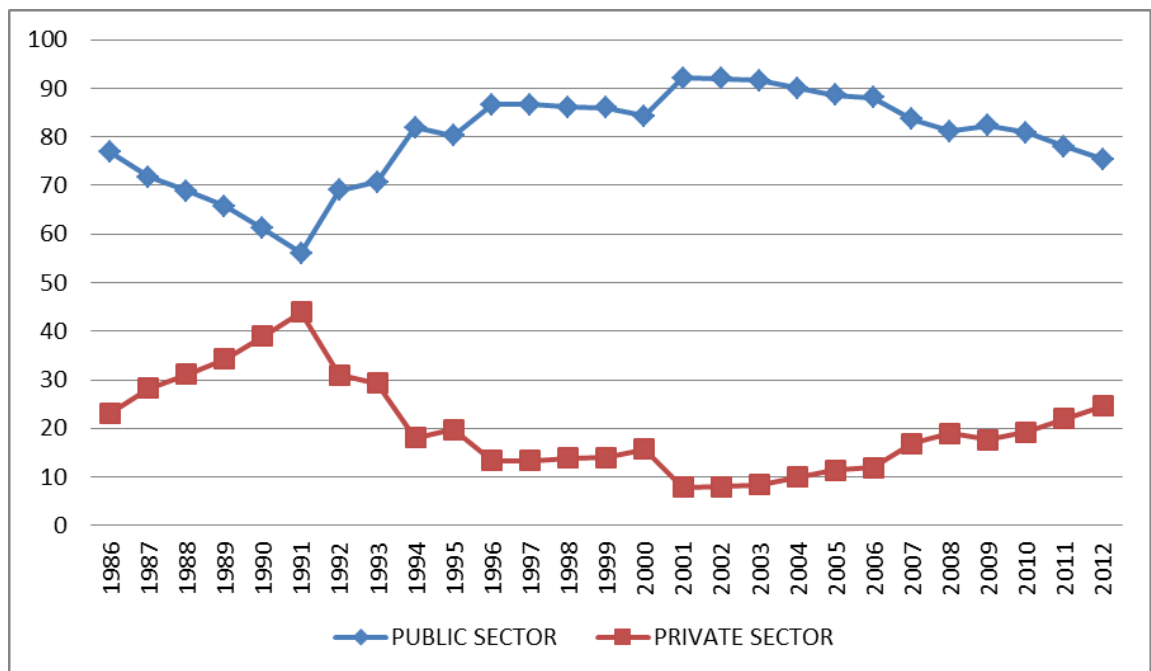
²⁰⁸ Murat Dođu, "Gelişen Hisse Senedi Piyasaları ve Türkiye", **Sermaye Piyasası Kurulu**, Ankara, Vol.27, 1996, p.97.

²⁰⁹ Mehmet Civan and Murat Kayacan, "Türkiye Ekonomisinin Finansman Dengesinin Sermaye Piyasası Açısından İncelenmesi (1990-2002)", **İktisat İşletme ve Finans Dergisi**, Vol.201, 2002, pp. 87-103.

²¹⁰ Capital Markets Board, CMB, Annual Report 2011.

contracted 15,6% and decreased to TL 223,748. ISE index based on 1986 prices also increased from 1,71 million TL in 1986 to 78.208 million TL in 2012, while index decreased in crisis periods, 1999, 2001 and 2008.

GRAPH 2.5: Share of Public and Private Sector Securities in Total



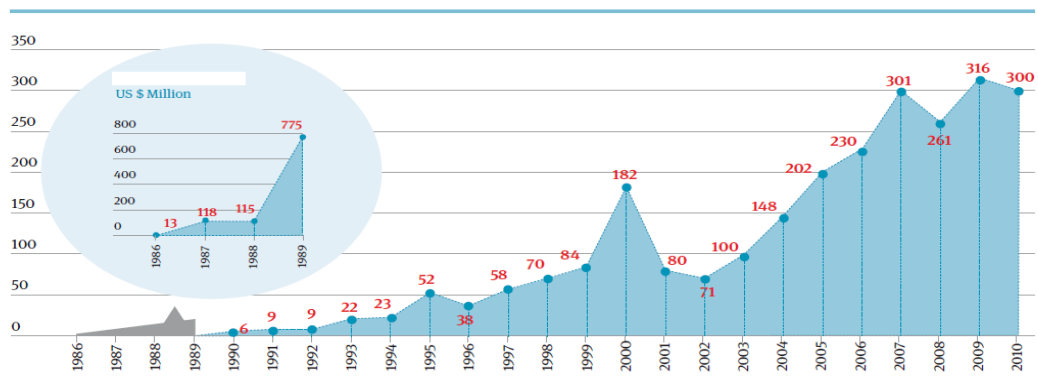
Source: CMB Annual Report 2011

In below Graph 2.6, traded value of ISE between 1986 and 2010 can be seen. Between 1986 and 2010, ISE experienced rapid growth process since its establishment and traded value steadily increased from 13 million USD to 300 billion USD. An increasing traded value deeply affected by 2001 crisis and exhibited sharp fall in 2001 by decreasing to 80 billion USD, contracting 56% in 2001 and 70 billion USD, contracting 12% in 2002 in Table 2.6. Then it rapidly increased after recovery period between 2002 and 2007. Domestic traded value reached 291409 billion USD as at the end of 2007. In 2008 economic crisis, traded value decreased to about 261 billion USD, and after the recovery, it has reached about 316 billion USD.

TABLE 2.6: ISE Trading Volume and ISE-100 Index

Years	No. Of Working Days	Trading Volume		Daily Avg. Trading vol.(Million TL)	ISE Index (1986=100) (TL)
		Million TL	Million USD		
1986	250	0,01	13	0	1,71
1987	249	0,11	118	0	6,73
1988	253	0,15	115	0	3,74
1989	255	2	773	0,01	22,18
1990	247	15	5854	0,06	32,56
1991	247	35	8502	0,14	43,69
1992	251	56	8567	0,22	40,04
1993	246	255	21.770	1	206,83
1994	253	651	23.203	3	272,57
1995	251	2374	52.357	9	400,25
1996	247	3031	37.737	12	975,89
1997	252	9.049	58.104	36	3.451,26
1998	248	18.030	70.396	73	2.597,91
1999	236	36.877	84.034	156	15.208,78
2000	246	111.165	181.934	452	9.437,21
2001	248	93.119	80.400	375	13.782,76
2002	252	106.302	70.756	422	10.369,92
2003	246	146.645	100.165	596	18.625,02
2004	249	208.423	147.755	837	24.971,68
2005	254	269.931	201.763	1063	39.777,70
2006	250	325.131	229.642	1301	39.117,40
2007	252	387.777	300.842	1.539	55.538
2008	251	332.605	261.274	1.325	26.864
2009	252	482.534	316.326	1.915	52.825
2010	250	635.664	425.747	2.543	66.004
2011	253	694.876	423.584	2.380	51.267
2012	253	621.979	347.854	2.458	78.208

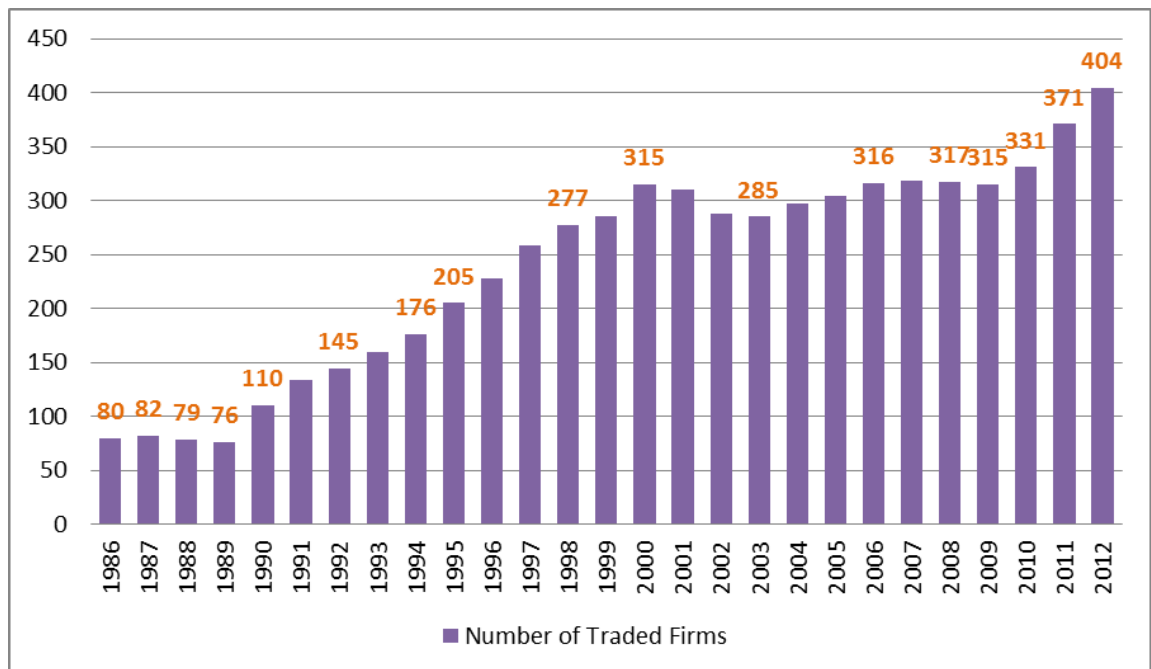
Source: CMB Annual Report 2012

GRAPH 2.6: Yearly Total Traded Value of ISE (USD, Billion)

Source: ISE, "Verilerle IMKB", p.11.

Rising number of quoted firms to stock market or listed firms on ISE shows that aggregate savings of the country channels through capital market in the economy. The number of quoted firms to ISE steadily increased from 80 in 1986 to 404 in 2012 except 2001 crisis period which can be examined in Graph 2.7. Limited initial public offerings and firms exit from ISE resulted unsteady path after 2001 and reached to 316 in 2006.²¹¹ In 2008 crisis, the number of traded firms decreased to 315, and after, steadily rise to 404 until 2012.

GRAPH 2.7: Number of Traded Firms in ISE



Source: Istanbul Stock Exchange

The ratio of market value to GNP indicator helps to see the magnitude of ISE in the economy. Market value shows the market capitalization. Table 2.7 shows total market value of ISE and total market value of ISE/GNP ratio. The ratio of market value of ISE to GNP rose from 1,39% to 13,85% from 1986 to 1990. Macroeconomic instability caused unsteady growth path of market value/GNP ratio during 1990s. After 2001 crisis, in 2002, market value/GNP ratio decreased to 20,5% and total market value was 56.370 million TL. After 2002, stock market started to

²¹¹ Doğu, *op. cit.*, pp. 8-9.

recover and it almost multiplied its total market value from 56.370 to 96.073 million TL. In 2008 crisis, total market value fall to 182.025 million TL. In 2009, total market value quickly recovered by increasing to 350,761 million TL.

TABLE 2.7: Main Indicators of the ISE Equities Market

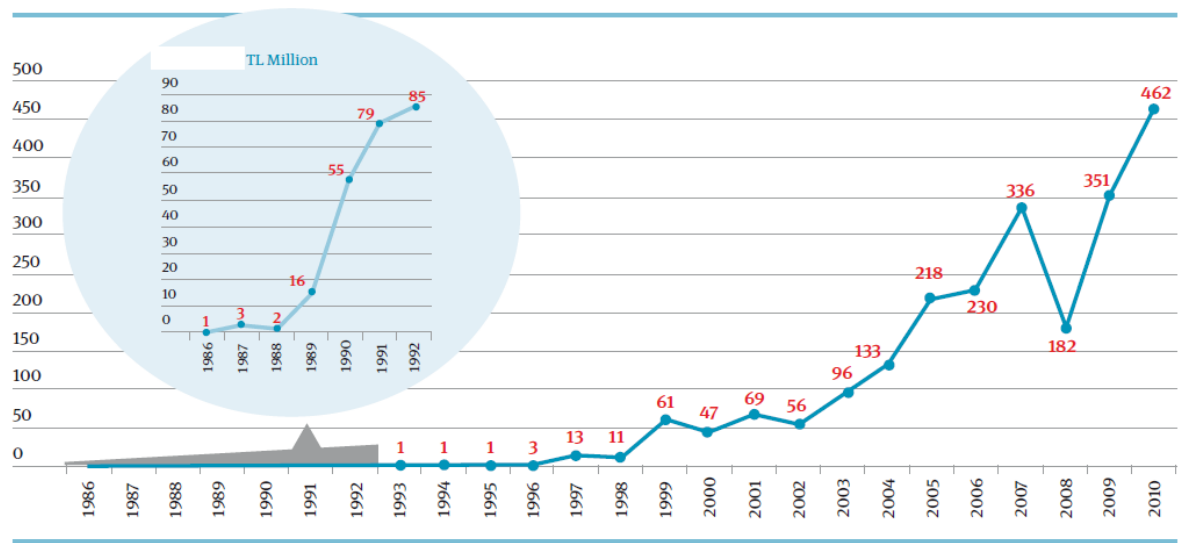
YEARS	Number of Traded firms	P/E Ratio (%)	Total Market Value (Million TL)	Total Market Value/GNP	Turnover Ratio (%)
1986	80	5,07	0,71	1,39	1,23
1987	82	15,86	3,18	4,24	3,31
1988	79	4,97	2	1,55	7,28
1989	76	15,74	16	6,95	11,17
1990	110	23,97	55	13,85	27,72
1991	134	15,88	79	12,45	44,90
1992	145	11,39	85	7,70	66,50
1993	160	25,75	546	27,34	46,79
1994	176	24,83	836	21,50	77,80
1995	205	9,23	1265	16,10	187,73
1996	228	12,15	3275	21,87	92,81
1997	258	24,39	12.654	43,05	73,27
1998	277	8,84	10.612	19,83	170,53
1999	285	37,52	61.137	78,10	60,36
2000	315	16,82	46.692	37,18	238,46
2001	310	108,33	68.603	38,87	135,73
2002	288	195,92	56.370	20,50	188,58
2003	285	14,54	96.073	26,94	152,64
2004	297	14,18	132.556	30,90	211,89
2005	304	17,19	218.318	44,88	123,64
2006	316	22,02	230.038	39,95	140,90
2007	327	11,9	335.948	-	129,7
2008	326	5,8	182.025	-	135,1
2009	325	16,8	350.761	-	178,7
2010	350	13,3	472.553	-	150,6
2011	373	11,9	381.152	-	115,8
2012	395	12,5	550.051	-	113,1

Source: CMB Annual Report 2012

In Table 2.7 market capitalization moves with the Price-Earnings ratio (P/E value) and followed fairly unsteady path with the P/E value. While total market value was 23,97 billion USD in 1990, it decreased to 9,9 billion USD in 1992, and similarly from 114,2 billion USD in 1999, decreased to 34,4 billion USD at the end of 2002.

After 2002, market capitalization increased until 162,8 billion USD in 2005 and 163,8 billion USD in 2006. By the way, market value of quoted firms to ISE increased associated with the appreciation of TL against USD in 2005. Market capitalization can also be seen from Graph 2.8.

GRAPH 2.8: ISE Market Capitalization (Billion TL)

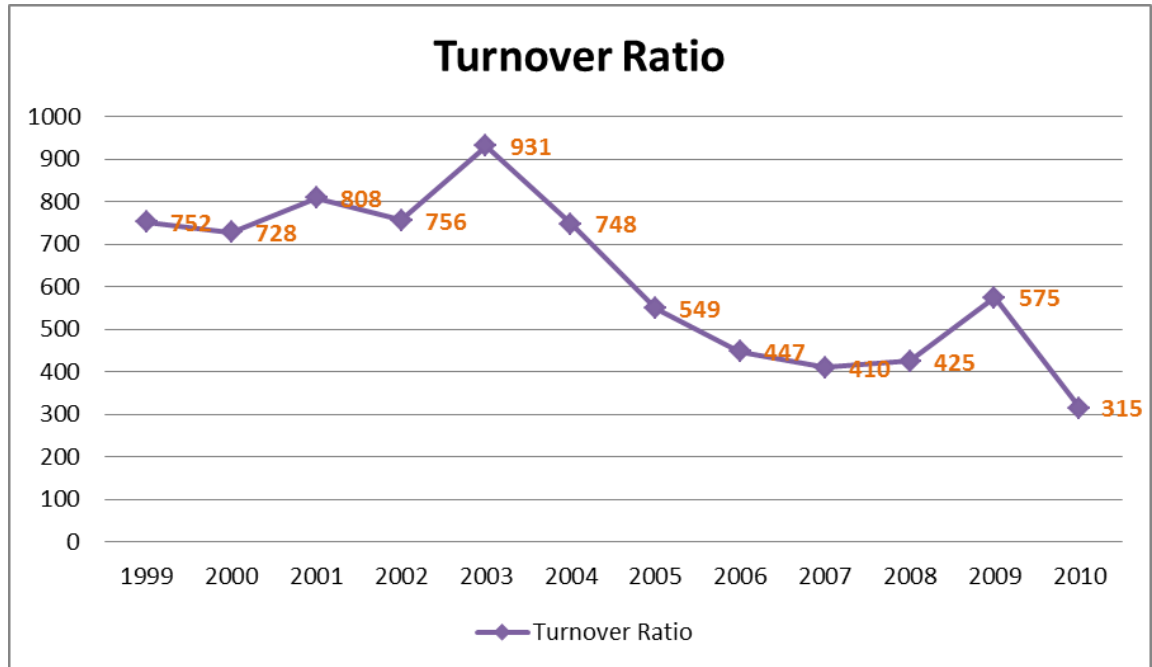


Source: “Verilerle IMKB”, p.13.

Turnover ratio derived as the ratio of total trading volume over average market capitalization reveals speculative motives behind the market. Beside the low liquidity risk, high level of turnover ratio indicates that investors choose to get short-term returns rather than long-term return and speculative gains prevails in developing markets.²¹² From 1986 to 1989, low turnover ratio was dominant while with the capital market liberalization after 1989, ISE was more exposed to changing international speculative capital. The turnover ratio shown in Table 2.7 in 1986 rapidly rose from 1,23% to 27,72% in 1990. This ratio continued to grow and climbed 187% in 1995, 188% in 2000, 211% in 2004 and maintained its high value after 2004 by proving that financial deepening hasn’t been achieved for ISE yet. Turnover ratio can also be seen shown in Graph 2.9.

²¹² Doğu, *op. cit.*, p.8.

GRAPH 2.9: Turnover Ratio (1999-2010)



Source: Arranged from the data of ISE

Value Turnover Ratio: Traded Value / Daily Average Market Capitalization Calculated on the Basis of Stocks Kept in Custody at Central Registry Agency.

To see and compare the position of ISE in global, developed and developing securities markets, Table 2.8 shows the number of traded companies in global, developed and developing countries compared to ISE between years 1986 and 2007. When number of traded companies was 80 in 1986, the ratio of ISE/Developing countries was 0.83%. In 2007, this ratio increased to 1.27%, and number of traded countries increased to 319. In this context, ISE showed performance over the average.²¹³

²¹³ Akkay, *op. cit.*, p. 160.

TABLE 2.8: Number of Traded Companies (1986-2007)

YEARS	Global	Developed	Developing	ISE	Developed/ Global (%)	ISE/ Developing (%)
1986	28.173	18.555	9.618	80	34,14	0,83
1987	29.278	18.265	11.013	82	37,62	0,74
1988	29.270	17.805	11.465	79	39,17	0,69
1989	25.925	17.216	8.709	76	33,59	0,87
1990	25.424	16.323	9.101	110	35,8	1,21
1991	26.093	16.239	9.854	134	37,76	1,36
1992	27.706	16.976	10.730	145	38,73	1,35
1993	28.895	17.012	11.883	160	41,12	1,35
1994	33.473	18.505	14.968	176	44,72	1,18
1995	36.602	18.648	17.954	205	49,05	1,14
1996	40.191	20.242	19.949	228	49,64	1,14
1997	40.880	20.805	20.075	258	49,11	1,29
1998	47.465	21.111	26.354	277	55,52	1,05
1999	48.557	22.277	26.280	285	54,12	1,08
2000	49.933	23.996	25.937	315	51,94	1,21
2001	48.220	23.340	24.880	310	51,6	1,25
2002	48.375	24.099	24.276	288	50,18	1,19
2003	49.855	24.414	25.441	284	51,03	1,12
2004	48.806	24.824	23.982	296	49,14	1,23
2005	49.946	25.337	24.609	302	49,27	1,23
2006	50.212	25.954	24.258	314	48,31	1,29
2007	51.322	26.251	25.071	319	48,85	1,27

Source: Global Capital Markets, journal of ISE Vol. 11, No. 41.

Table 2.9 demonstrates the market values of those groups of countries comparatively between 1986 and 2007 measured by USD. Developing markets composes 3,7% of global markets while ISE is 0,014% of global market in 1986. The share of ISE in global markets increased to 0,44 % in 2007 which shows a considerable progress. From 1986 to 2007, market size of ISE increased from 938 million USD to 286,572 million USD. A high value of market size in 2005 indicates an appreciation of TL against USD and increasing liquidity in the world.²¹⁴

²¹⁴ Akkay, *op. cit.*, pp.157-158.

TABLE 2.9: Market Values (USD, Million)

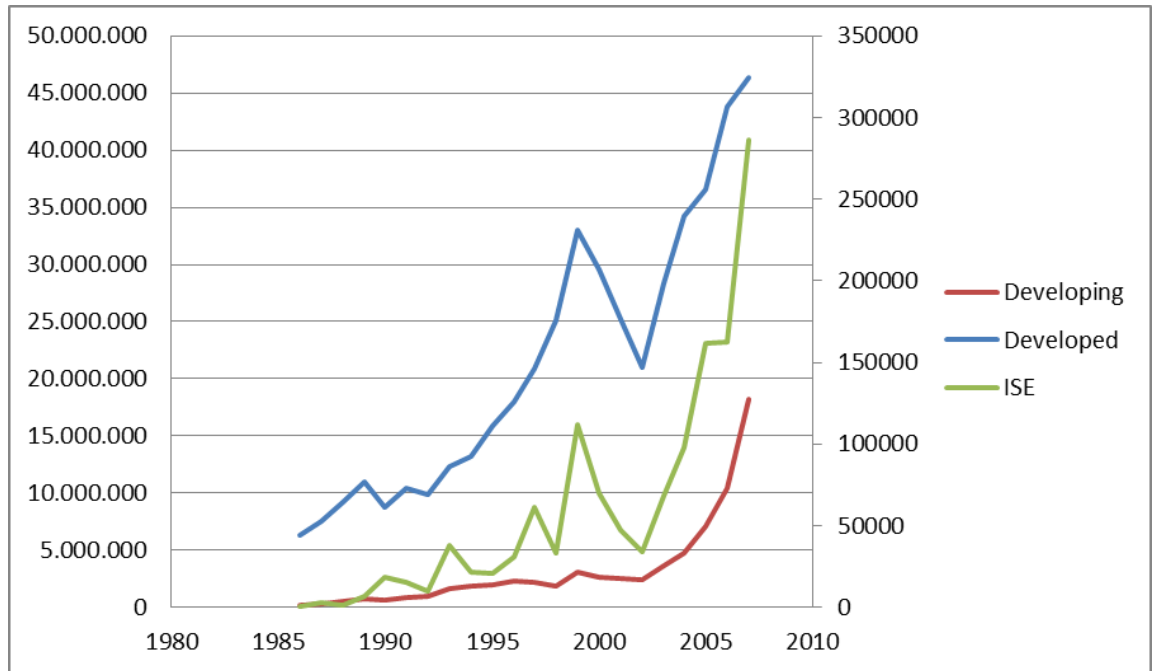
YEARS	Global	Developed	Developing	ISE
1986	6.514.199	6.275.582	238.617	938
1987	7.830.778	7.511.072	319.706	3.125
1988	9.728.493	9.245.358	483.135	1.128
1989	11.712.673	10.967.395	745.278	6.756
1990	9.398.391	8.784.770	613.621	18.737
1991	11.342.089	10.434.218	907.871	15.564
1992	10.923.343	9.923.024	1.000.319	9.922
1993	14.016.023	12.327.242	1.688.781	37.824
1994	15.124.051	13.210.778	1.913.273	21.785
1995	17.788.071	15.859.021	1.929.050	20.782
1996	20.412.135	17.982.088	2.272.184	30.797
1997	23.087.006	20.923.911	2.163.095	61.348
1998	26.964.463	25.065.373	1.899.090	33.473
1999	36.030.810	32.956.939	3.073.871	112.276
2000	32.260.433	29.520.707	2.691.452	69.659
2001	27.818.618	25.246.554	2.572.064	47.689
2002	23.391.914	20.955.876	2.436.038	33.958
2003	31.947.703	28.290.981	3.656.722	68.379
2004	38.904.018	34.173.600	4.730.418	98.299
2005	43.642.048	36.538.248	7.103.800	161.537
2006	54.194.991	43.736.409	10.458.582	162.399
2007	64.563.414	46.300.864	18.262.550	286.572

Source: Global Capital Markets, Journal of ISE Vol. 11, No. 41.

Graph 2.10 shows market values of developed, developing and ISE. Periods of rises and falls in ISE move in the same direction with the global markets indicates speculative movements of ISE and insufficient financial deepening. After the 2001 crisis, these fluctuations decreased which can be associated with an increase in financial deepening.

When comparing ISE with the global markets, it can be seen from Table 2.10 that listed companies in ISE fall behind the global and developing countries such as Germany, England, Brazil, Malaysia, China, Core while ISE has a better position than Greece, Italy, Ireland, India, Luxembourg and Norway. But this doesn't mean that Turkey has a better stock market than Luxembourg or Mexico has more developed stock market than Turkey. Because the number of firms in those countries varies substantially according to the population of those countries.

GRAPH 2.10: Market Values of Developed & Developing countries and ISE



ISE is the 23rd country out of 51 country with 222 billion USD total trading volume in 2006 which above the Greece, Mexico, Austria, Argentina and Malaysia. ISE has a high turnover ratio reaching 168,5% in 2005 and 141,3% in 2006 which carries ISE to the above of the ranking. As stated earlier, this indicates speculative earnings that arise from short-term yields as well as high liquidity of market. It can be referred from this section that the role of ISE in Turkish financial sector is limited resulted from deficiency of supply and demand. As a matter of fact, legal structure of capital markets is adequate to international norms, compatible with EU regulations; there are sound institutions to contribute coordinate process and functional mechanisms that protect investor. Moreover, ISE intensively uses data processing technologies. But, relatively low levels of market capitalization, high trading volume and turnover ratio indicate speculative earnings in ISE. Thus, ISE doesn't have an important role in funding real sector and economic growth.²¹⁵

²¹⁵ Türkiye Sermaye Piyasası Aracı Kuruluşları Birliği (TSPAKB), "Türkiye Sermaye Piyasası", Türkiye İktisat Kongresi, 5-9 May 2004, İzmir, <http://www.tbb.org.tr>, pp.11-44.

TABLE 2.10: Main Indicators of World Stock Markets

Stock Market	2005					2006					
	Number of Comp.	Trade Volume (Bil. USD)	Domestic Market Capitalization (Bil. USD)	Turn over Ratio	Market Capitalization/ GNP	Number of Comp.	Trade Volume (Bil. USD)	2005-2006 % Change (Trade d Volume)	Domestic Market Capitalization (Bil. USD)	2005-2006 % Change (Market Capitalization)	Turn over Ratio
USA											
Argentina	104	6,9	47,6	11,2%	26,9%	106	5,3	- 23,0%	51,2	7,7%	7,2%
Colombia	98	9,4	50,5	24,1%	40,5%	94	14,8	57,6%	56,2	11,3%	28,8%
Mexico	326	56,7	239,1	27,2%	30,8%	335	96,4	70,1%	348,3	45,7%	29,6%
Nasdaq	3.164	10.086,7	3.604,0	250,4%	28,9%	3.133	11.807,5	17,1%	3.865,0	7,2%	269,9%
NYSE	2.270	17.858,4	13.632,3	99,1%	109,2%	2.280	21.790,6	22,0%	15.421,2	13,1%	134,3%
ASIA-PACIFIC											
Australia	1.714	672,4	804,0	84,0%	118,2%	1.829	859,6	27,8%	1.095,9	36,3%	88,4%
China	544	154,3	115,7	128,9%	5,1%	579	422,6	174,0%	227,9	97,1%	251,7%
Malaysia	1.019	51,6	180,5	28,3%	137,8%	1.025	75,2	45,7%	235,6	30,5%	36,2%
Korea	1.616	1.210,7	718,0	206,9%	90,0%	1.689	1.342,1	10,9%	834,4	16,2%	171,4%
India	1.034	314,7	516,0	75,6%	65,9%	1.156	423,6	34,6%	774,1	50,0%	67,8%
Tokio	2.351	4.481,7	4.572,9	115,3%	107,4%	2.416	5.822,8	29,9%	4.614,1	0,9%	125,8%
EUROPE-AFRICA-MIDDLE EAST											
Athens	304	65,1	145,1	48,8%	67,9%	290	107,9	65,7%	208,3	43,5%	58,6%
Spain		1.566,1	959,9	161,2%	90,0%		1.933,8	23,5%	1.322,9	37,8%	167,0%
Italy	282	1.293,7	798,1	160,0%	47,7%	311	1.591,2	23,0%	1.026,5	28,6%	162,9%
Germany	764	1.915,3	1.221,1	149,4%	46,1%	760	2.737,2	42,9%	1.637,6	34,1%	173,7%
Ireland	66	67,4	114,1	59,5%	60,3%	70	81,7	21,1%	163,3	43,1%	59,6%
ISE	304	199,2	161,5	168,5%	44,6%	316	222,7	11,8%	162,4	0,5%	141,3%
London	3.091	5.677,7	3.058,2	110,1%	145,0%	3.256	7.571,7	33,4%	3.794,3	24,1%	124,8%
Luxembourg	245	0,3	51,2	0,5%	148,3%	260	0,3	- 20,1%	79,5	55,2%	0,3%
Oslo	219	234,4	191,0	118,8%	67,9%	229	405,9	73,2%	279,9	46,6%	144,3%
Vienna	111	46,5	126,3	41,6%	43,7%	113	82,0	76,6%	192,8	52,7%	50,2%

Source: World Federation of Exchanges

2.2. EVALUATION OF THE FINANCIAL SYSTEM AND ECONOMIC GROWTH IN PROCESS OF FINANCIAL LIBERALIZATION IN TURKEY

In many developing and developed countries, policies that constrain capital movements extensively implemented prior to 1980. To prevent mobilization of capital, countries constrained or prohibited citizens to hold foreign exchange, to open foreign currency account abroad or to buy bonds, stocks and bills of foreign firms. Observations from the world economies show that policies intended to restrict capital movements were only effective in the short run, and effectiveness of restricting policies decreases in the long run.²¹⁶ These policies deteriorate operation of the financial system and cause difficulties in foreign trade and financing real sector. Thus, inefficient financial system may not contribute to economic growth.

The dominance of the Neoclassical paradigm in 1980s helped the financial liberalization and financial integration process by stating that foreign savings are crucial for real investments and economic growth in case of insufficient domestic savings. According to neoclassical paradigm, as a result of free capital movements, capital would be directed from countries with excess savings to the developing countries in which capital bottleneck. The flow of excess savings to developing countries continues until the interest rate of developing countries fall to international interest rate level. Financial integration of developing economies to global economy provides globalization of production. Thus, after 1980s, most of the developing, closed economies started to implement financial liberalization policies to integrate global economies by abolishing financial repression policies, eliminating constraints on financial markets, minimizing capital controls, smoothing strict policies on foreign capitals, etc.. Considering the fact that financial improvements can be obtained faster than real sector and financial development is determinant of

²¹⁶ Ahmet Turgut, “**Finansal entegrasyon ve finansal krizler: Türkiye örneği (1994,2000 ve 2001 krizleri)**”, Selçuk Üniversitesi İktisat Anabilim Dalı Doktora tezi, Karaman, 2006.

economic growth, with the liberalization of financial markets, financial integration process still continues in developing economies and Turkey.

Turkey put into practice macroeconomic stabilization and liberalization policies simultaneously in 1980. Primarily, foreign trade and domestic financial markets were liberalized. Afterwards, foreign exchange transactions and capital movements became free in 1989 and financial integration process of Turkish economy to global economy started. Expectations of Turkish economy from liberalization was²¹⁷

- Extending credit volume by transferring domestic and foreign savings to the financial system,
- Through a fall in domestic interest rate determined in domestic financial markets, decreasing the cost of capital and converging to international interest rate,
- With the low cost of capital and extended credit volume, increasing fixed investments and contributing to economic growth.

To utilize all benefits from financial liberalization, it is expected to ensure financial deepening and widening or more comprehensively, financial development in Turkish economy by increasing quantity, variety and efficiency of financial institutions and instruments. In this context, legal and institutional reforms and measures had been applied to complete integration process. These reforms which directly affect the financial system from 1980 to 1989 are as following:²¹⁸

- Changing exchange rate policy from fixed exchange rate to flexible exchange rate,
- Removing government controls over interest rates,
- Legislating “Capital Market Law” in 1981 and establishing “Capital Markets Board” in 1982,
- Issuing domestic government bonds to finance public deficit,
- Establishing markets within Central Bank such as interbank money market in 1986 to ensure efficiency in banking sector, open market operations in 1987

²¹⁷Erinç Yeldan, “Türkiye Ekonomisinde Dış Borç Sorunu ve Kalkınma Stratejileri Açısından Analizi”, *Çalışma ve Toplum Dergisi*, Vol. 1, 2004, p. 12.

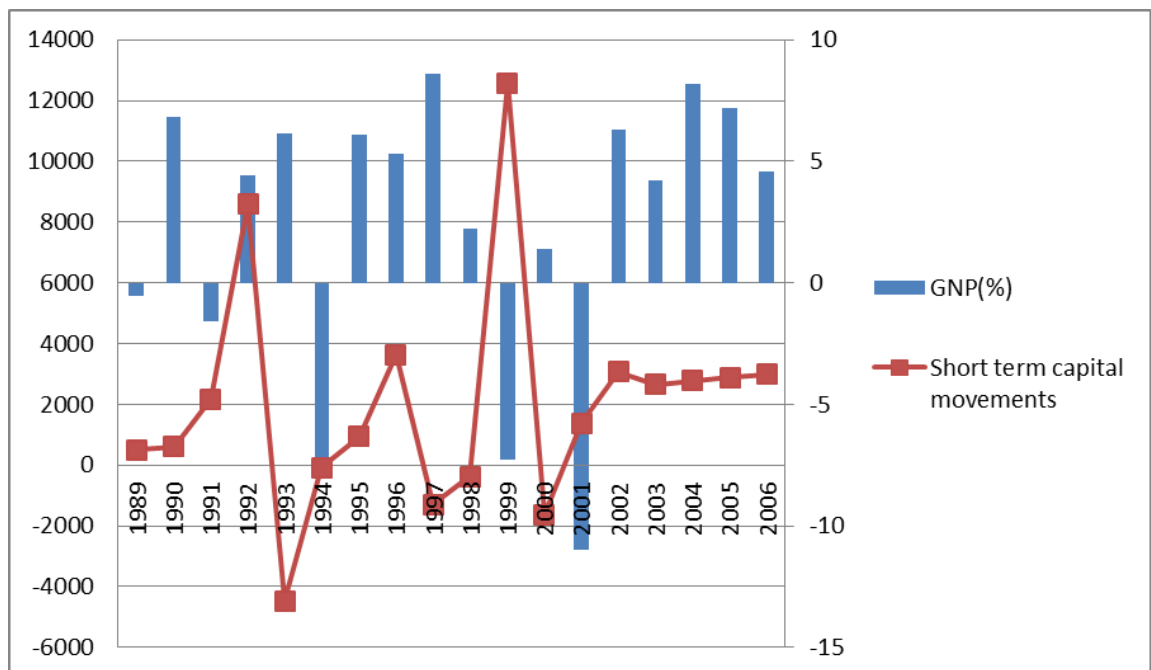
²¹⁸ Akkay, *op. cit.*, pp. 170-178.

to control money supply, effective foreign exchange market in 1988 to effectively use foreign exchange reserves,

- Liberalization of capital movements,
- Reforms and regulations related to banking sector to create competitive market.²¹⁹

With free capital movements in 1989 and convertibility of TL against other currencies, the Turkish financial system completely opened to global markets. As stated earlier, expectations from this reforms was transforming domestic and international savings into investments with lower cost of capital by rendering the financial system to be more effective and flexible. Theoretically, flow of foreign savings to Turkey expected to decrease interest rate, thereby cost of investment. But, cost of investment didn't fall and real interest rates reached very high levels after financial liberalization.

GRAPH 2.11: Short term Capital Movements and GNP Growth



²¹⁹ For the details of the reforms and regulations, see AKKAY, *op. cit.*, pp. 170-178.

Domestic and international liberalization of a developing country in inflationary environment brought serious economic problems after 1989. When instability in public finance was raising inflationary pressures after financial liberalization, Turkish economy was excluded to independently determine and implement appropriate money, interest and exchange rate policies against external shocks. Financial liberalization process made domestic economy to be a yield for international capital and economic structure became dependent on hot money inflows. Being dependent on hot money inflows in determining interest rate and exchange rates deteriorated the effectiveness of monetary and fiscal policies. In this context, economic growth fluctuated according to capital inflows and outflows. The economic growth and short term capital movements moved together after 1989 in Graph 2.11.²²⁰ Short term foreign capital inflow and outflows, corresponding increasing speculative transactions, interest rates and uncontrolled international capital movements created instability and uncertainty in terms of real and financial economy and become an obstacle for economic growth. GNP growth rate of 7,9% in 1990 decreased to 1,1% after 1991 and continued to fluctuate after this period, as seen in Graph 2.12. Consumption expenditures and volume of investments were also fluctuated and public investments decreased after liberalization.²²¹ Policies implemented during this period increased economic fluctuations and Turkish economy faced domestic and external economic crises after 1990s.

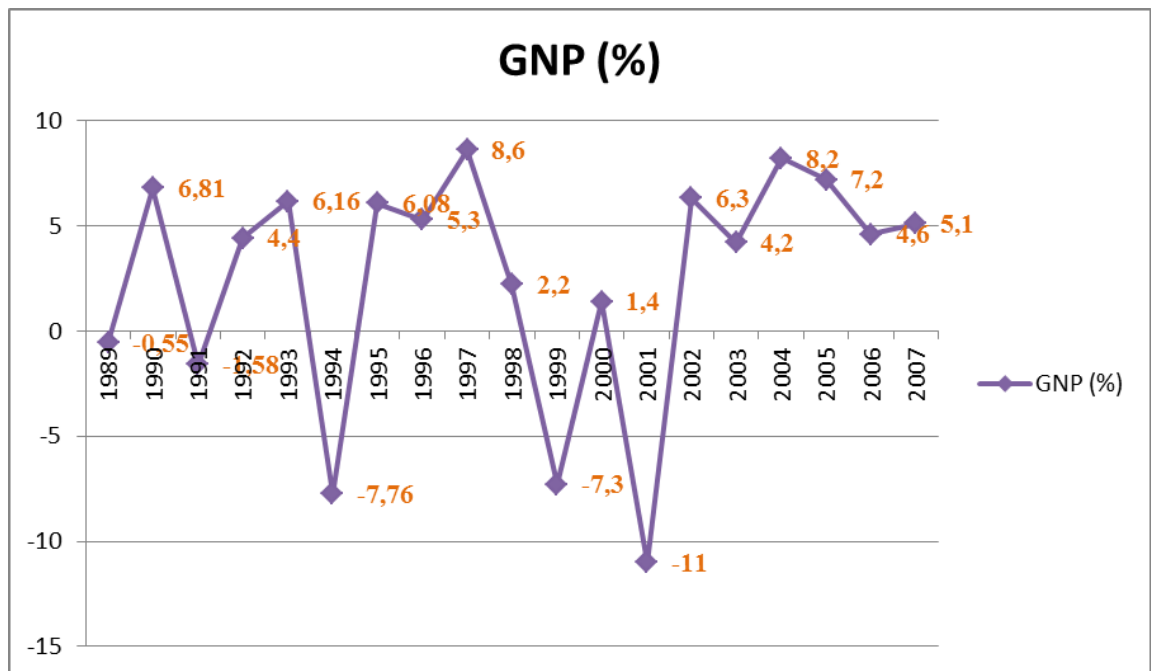
Another expected result with financial liberalization in Turkey was to meet saving-investment deficit. As seen in Graph 2.13, the ratio of aggregate domestic savings to GNP was closely moved with the ratio of aggregate investments to GNP ratio until external financial liberalization in 1989. After 1989, although aggregate savings rose, the gap between aggregate domestic saving and investment ratio increased which mainly resulted from foreign savings. In the following years, the

²²⁰ Sinan Sönmez, “Türk İktisat Politikalarındaki Çıpa: Dış Borçlanma”, **İktisadi Kalkınma Kriz ve İstikrar İktisat Üzerine Yazılar – II**, Edited by Ahmet Haşim KÖSE, Fikret ŞENSES, Erinç YELDAN, İletişim Yayınları, İstanbul, 2004, p. 337.

²²¹ Oguz Yıldırım, “Türk Bankacılık Sektöründe Yasanan Finansal Krizler (1980 – 2002)”, **İktisat Dergisi**, Vol. 453, İstanbul, 2004, p.3.

ratio of aggregate savings to GNP gradually decreased. Moreover, a sharp fall in aggregate investments following 1989 may be attributed to an increase in real interest rates, uncertainty and macroeconomic instability in those years

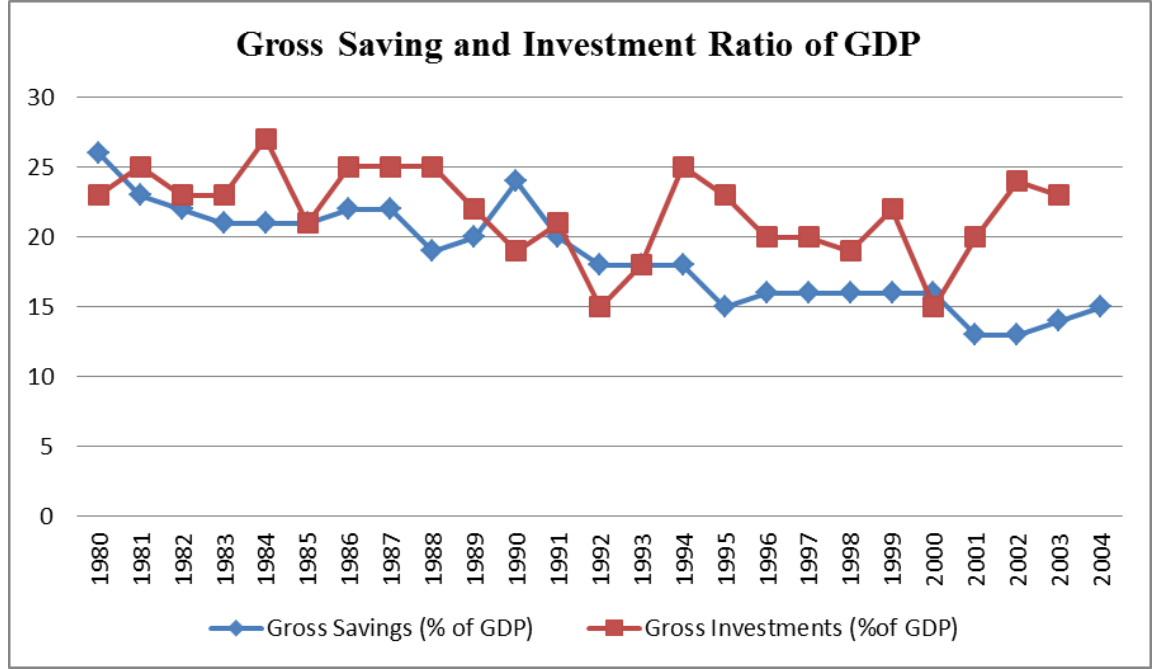
GRAPH 2.12: GNP Growth Rate



Above-mentioned results of financial liberalization lay ground for the 1994 and 2001 economic crisis in Turkey. Balance of trade deteriorated, exports decreased, TL over appreciated and current account deficit reached 6,4 billion USD in 1993. At the beginning of 1994, short term funds exited from Turkish financial sector and production capacity suddenly decreased. The reason of crisis can be attributed to the timing of financial liberalization. Benefits of domestic and international liberalization used for rising public debt financing. Domestic financial liberalization in the existence of public debts increased nominal and real interest rates. Liberalization of international markets without obtaining a positive result from domestic liberalization resulted to ensure foreign capital inflow to country with high

interest rate and low foreign exchange rate. This was not sustainable in the long run and resulted to a crisis.²²²

GRAPH 2.13: Gross Saving and Investment Ratio of GDP



Speculative attacks which arose from liquidity need of market and high foreign exchange demand resulted to November 2000 crisis. The IMF program only prevented the deepening of the crisis. This crisis transformed into crisis on February 2001, in which economy contracted 9,4%. The most widely accepted explanation for the economic crisis in Turkey focused on budget deficit and size of public sector borrowing requirement. Especially, as the degree of financial liberalization increases, intensity of capital movement, short term funds increases. This caused spread of negative effects between financial markets, extension of instabilities, increasing financial fragility and panic which transform into financial crisis.²²³

²²² Nedret Demirci, “**Finansal Krizlerin Anatomisi, Modern Kriz Teorileri Işığında Gelişmekte Olan Ülkeler ve Türkiye**”, Sermaye Piyasası Kurulu Yayınları, Doktora tezi, Vol. 186, Ankara, 2005, p. 170.

²²³ Tülay Arın, “Türkiye’de Mali Küreselleşme ve Mali Birikimle Reel Birikimin Birbirinden Kopması”, **İktisat Üzerine Yazılar 1. Küresel Düzen: Devlet ve Sınıflar**, Korkut Boratav’a

In May 2001, “a transition program for strengthening the economy” was announced. Main targets of this program were to implement effective monetary policy for inflation, strengthening financial sector, to strictly perform fiscal policy, to take effective, flexible, transparent structural measures. Beside the benefits of this program, global liquidity abundance, consistent CBRT policies to combat inflation, laws and regulations in banking sector, better risk management in financial sector positively affected economy between 2002 and 2007. In this term, GNP increased from 230 to 660 billion USD and per capita income rose from 3300 USD to 9300 USD. Inflation decreased from 30% to 8%.

TABLE 2.11: Financial Assets and Liabilities of Households

TL BILLION	2004	2005	2006	2007	2008	2009	2010	2011	2012
Financial Assets	190,7	216,3	256	281,8	353,8	402	450	514,3	541,9
Ind. Pension Funds	0,3	1,2	2,8	4,6	6	9,1	12	14,3	17,2
Stock	12,4	15,8	15,7	17,5	10,8	24,5	32,6	30	34,7
Private Sector Debt Instruments	-	-	-	-	-	-	-	4,9	9,6
Public Debt S. (GS+Eurobond)	41	33,3	27,7	19,2	19,7	13	8,4	10,3	17,4
Real Pers. Savings Dep., Participation Fund, Precious Metal Dep. Account	124,6	150,2	188,8	221,1	278,4	307	352	405,4	421,1
Money in Circulation	12,4	18,2	24,4	25	29,3	34,3	45,2	49,4	51,9
Financial Liabilities	18,1	39	60,6	84,1	102,5	118	159	206,3	223
Consumer Loans	12,8	29,7	48	68,9	85,2	97,4	132	171,6	182,7
Credit Card Debt Balance	4,4	7,5	10,7	12,6	14,7	19,1	23,2	29,6	34,7
Con. Financing Comp. Loans	0,9	1,8	1,4	1,7	1,6	1,7	2,9	4,4	4,9
Liabilities/GDP	3,2	6	8	10	10,8	12,5	14,5	15,9	-

Source: Arranged by the data from BRSA Financial Markets Report 2012, No.26, p. 13.

The global positive economic environment disrupted by 2008 financial crisis which then turned into global financial crisis, as stated earlier. Turkish banking sector and stock market were negatively affected by this crisis. It can be inferred

from this crisis that in present the financial system, economic issues of foreign countries rapidly affects other countries as a result of financial integration.²²⁴

Table 2.11 shows financial assets and liabilities of households. There are differentiations in financial asset composition since new incentive policies supports the creation of new financial products. As can be seen, despite the 2008 economic crisis, the amount of financial assets continued to grow. While stock market development decreased from 17.5 billion TL to 10.8 billion TL, banking sector assets such as consumer loans hasn't been affected as stock market. The amount of consumer loans increased from 68.9 in 2007 to 85.2 billion TL in 2008, and it still continue to grow.

In recent years, financial market integration process of domestic and international markets bring financial crisis fact. These crises which begin with sudden outflow of capital caused depreciation of capital, deterioration of balance sheet, loss of confidence, deficit in financing production and spread all over the world.²²⁵ Stiglitz states that short-term capital movements played an important role in recently experienced economic crises. On the one hand, liberalization of the financial system remarkably increases capital movements; on the other hand it results in contagious and drastic financial crises. Developing countries that experienced both financial liberalization and financial crisis created skepticism about benefits of financial liberalization.

When evaluating 1994, 2000 and 2001 crisis, this section has reached following statements: capital inflows expand CBRT reserves and policies in those years increased supply of domestic currency, TL. Abundance of TL decreased interest rates and yield from foreign capital. Thus, capital outflows started and TL reserves of CBRT have contracted. This time, interest rates increased and crisis period started. Prior to all crises, TL was over appreciated and this decreased exports and increased

²²⁴ Akkay, *op. cit.*, p. 191.

²²⁵ Ahmet Turgut, “**Finansal entegrasyon ve finansal krizler: Türkiye örneği (1994,2000 ve 2001 krizleri)**”, Selçuk Üniversitesi İktisat Anabilim Dalı Doktora tezi, Karaman, 2006.

imports, resulting in foreign trade and current account deficit. Policies implemented during these crises were also ineffective. On the other hand, 2008 crisis was external shock to Turkish economy which shows the effect of financial integration of our economy to global economy and vulnerability of the financial system from outside shocks.

Prior to 1980, public ownership in banking sector was dominant and finance sector except banks couldn't be improved in saving-investment activities. Thus, quantity and variety of financial institutions didn't increase and development of the Turkish financial system was insufficient. Assuming that financial liberalization policies contribute to economic growth and development, implementation of domestic and international liberalization policies gradually started in 1980s. However, GDP growth of Turkey after 1980s decreased when compared with period prior to 1980. It is argued that low economic growth and macroeconomic instability comes from uncontrolled and badly managed financial liberalization policies of government in literature and timing for liberalization was also wrong. As stated above, to attract foreign capital or sustaining capital inflows, interest rates increased and considerable part of GDP went to interest payments. Crises which arose as a result of financial liberalization created uncertainty, loss of confidence in firms, decrease in investment and production which leads to low economic growth. But, foreign direct investments contributed to economic growth and employment. Nevertheless, variety and number of financial intermediaries and instruments has increased, financial markets widen and the financial system has developed after 1980.

CHAPTER 3

AN EMPIRICAL STUDY ON THE RELATIONSHIP BETWEEN FINANCIAL DEVELOPMENT AND ECONOMIC GROWTH FOR TURKEY

The aim of this chapter is to empirically analyze the direction of causation between variables and determine the effect of financial development on economic growth between 1988 and 2012 by using time series analysis for Turkey. This term constitutes the period after completion of the financial liberalization period in which the effect of financial development on growth is more apparent. First section 3.1 shows related empirical studies for the Turkish economy. Section 3.2 empirically studies the finance and growth relation for Turkey by using proper econometric packages.

3.1. RELATED STUDIES FOR TURKEY

Although empirical studies that investigate the relationship between financial development and economic growth have been initiated much earlier, related studies for Turkey started in 2000. The issues of the existence of relationship and the direction of causation between financial development and economic growth are not clear in empirical studies for Turkey, as in the studies for other economies. Table 3.1 shows empirical studies on the financial development and economic growth for Turkey by showing used data, tested period, used methods and indicators, the direction of causation and the existence of the relationship.

TABLE 3.1: Related empirical Studies on the Relationship between Financial development and Economic Growth for Turkey

AUTHOR AND YEAR OF THE STDY	PERIOD AND METHOD OF THE STUDY	INDICATORS	DIRECTION OF THE CAUSATION	EXISTENCE OF THE RELATIONSHIP
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Kar and Pentecost (2000)	<p>1963-1995</p> <ul style="list-style-type: none"> • VECM • Co integration Test • Granger causality tests 	<ul style="list-style-type: none"> • Domestic Credits/GNP • M2/GNP • Bank Deposits Liabilities/Income • Private Sector Credits/Domestic Credits • Private Sector Credits/Income • Per capita GNP 	<p>Bidirectional Relationship</p> <p>F.D. ↔E.G.</p>	Positive
Kar (2001)	<p>1963–1995</p> <ul style="list-style-type: none"> • Dickey-Fuller (DF) Unit Root test • Johansen Co integration Test • VECM • Granger Causality Test 	<ul style="list-style-type: none"> • Domestic Credits/GNP • M2/GNP • Bank Deposits Liabilities/Income • Private Sector Credits/Domestic Credits • Private Sector Credits/Income • Per capita GNP 	<p>Bidirectional Relationship</p> <p>F.D. ↔E.G.</p>	Positive
Doğan (2002)	<p>1982–1998</p> <ul style="list-style-type: none"> • Seasonality Analysis • Augmented Dickey-Fuller (ADF) unit Root Test • Co integration and Granger Causality Analysis 	<ul style="list-style-type: none"> • M2 • M2/CDP • M3/GDP • Real GDP 	<p>F.D. →E.G.</p>	Positive
Çetintaş and Barışık (2003)	<p>1989–2000</p> <ul style="list-style-type: none"> • ADF Unit Root Test • Engle-Granger and Johansen Co integration Analysis 	<ul style="list-style-type: none"> • Credits given to private sector by deposit banks • Total market Capitalization • Per capita GDP 	<p>F.D. →E.G.</p>	Positive

	<ul style="list-style-type: none"> • Error Correction Causality Analysis 			
Aslan and Küçükaksoy (2006)	<p>1970–2004</p> <ul style="list-style-type: none"> • Granger Causality Test • Granger Causality Test according to VAR model 	<ul style="list-style-type: none"> • Per capita GNP • Logarithm of Credit volume of private sector 	F.D. →E.G.	Positive
Demir, Öztürk and Albeni (2007)	<p>1995–2005</p> <ul style="list-style-type: none"> • ADF Unit Root Test • Johansen co integration Analysis • Error Correction Model and Causality Test 	<ul style="list-style-type: none"> • Commercial Credits given to private sector/GNP • Total market capitalization/GDP • Real GDP 	Limited Relationship F.D. ↔E.G.	Ambiguous
Halicioğlu (2007)	<p>1968-2005 Bound Testing (ARDL)</p>	M2 Bank Deposits/National Income	Bidirectional Relationship F.D. ↔E.G.	Positive relationship between some indicators
Altunç (2008)	<p>1970–2006</p> <ul style="list-style-type: none"> • ADF and Phillips Peron (PP) Unit Root Tests • Johansen Co integration test • VAR analysis • Granger Causality test according to VECM 	<ul style="list-style-type: none"> • M2/GDP • Credits to real Sector • Total financial assets/GDP • Securities/GDP • Growth rate of per capita GDP 	Relationship changing according to different indicators	Positive

Yücel (2009)	1997–2007 Principal components Analysis	<ul style="list-style-type: none"> • Stocks investments/ISE index • Trading volume of ISE/nominal GDP • Total trading volume of ISE/ISE index • ISE index/GDP 	F.D. →E.G.	Positive
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Kar and Pentecost (2000) are the first researchers to examine the relationship between financial development and economic growth for Turkey. They state that it is not possible to reach such a conclusion that supply leading or demand following causality exist for Turkey, but demand following causality is more dominant than the other.²²⁶ Similar results obtained by Kar (2001) who found positive, long run relationship between financial development and economic growth but direction of causality remained unclear.²²⁷

According to Doğan's analysis in 2002, there is no balanced relationship between financial deepening and economic growth. Granger causality tests showed positive relationship between variables.²²⁸ Çetintaş and Barışık (2003) state that money market and banking sector developments are positively related to economic growth but this relationship is indirect.²²⁹ Aslan and Küçükaksoy (2006) found that supply

²²⁶ Muhsin Kar and Eric. J. Pentecost, "Financial Development and Economic Growth in Turkey: Further Evidence on Causality Issue", Loughborough University Department of Economics, **Economic Research Paper**, No: 00/27, 2000, pp.4-13.

²²⁷ Muhsin Kar , "Finansal Kalkınma ve Ekonomik Büyüme Arasındaki Nedensellik İlişkisi: Türkiye Örneği", **Dokuz Eylül Üniversitesi İşletme Fakültesi Dergisi**, 2001, Vol: 2, No: 2, p. 163.

²²⁸ Harun Doğan, "Finansal Derinleşme ve Ekonomik Büyüme İlişkisi: Türkiye Örneği", **İktisat, İşletme ve Finans**, No.190, 2002, p. 69.

²²⁹ Hakan Çetintaş and Salih Barışık, "Türkiye" de Bankalar, Sermaye Piyasası ve Ekonomik Büyüme: Koentegrasyon ve Nedensellik Analizi (1989-2000)", **İMKB Dergisi**, 2003, Vol. 7, p.15.

leading hypothesis is more consistent in the financial development and economic growth relationship.²³⁰

Demir, Öztürk and Albeni (2007) studied the effects of both banking sector and stock market on industry and economy. While they found long run relationship, the relationship between variables indicating funding of industry and economic activities is not clear.²³¹ Halıcıoğlu (2007) assessed only one long run relationship between selected variables, and found both short and long run relationship from financial development to economic growth.²³² For Altunç (2008), the contribution of financial development to economic growth occurs through technological innovations and capital accumulation channels.²³³

Empirical literature on Turkish economy reached different conclusions as a result of differences in used method, indicators and periods, as in international empirical studies. In other words, the existence and degree of the relationship and the direction of the causation between financial development and economic growth for Turkey are controversial and there is no consensus on these issues.

3.2. ECONOMETRIC ANALYSIS FOR THE FINANCIAL DEVELOPMENT AND ECONOMIC GROWTH FOR TURKEY

In this chapter, an econometric study by using time series analysis for Turkey is provided to better understand the relationship between financial development and economic growth. Analysis of this period will be carried out by using the most

²³⁰Özgür Aslan and İsmail Küçükaksoy, “Finansal Gelişme ve Ekonomik Büyüme İlişkisi: Türkiye Ekonomisi Üzerine Ekonometrik Bir Uygulama”, **İstanbul Üniversitesi İktisat Fakültesi Ekonometri ve İstatistik Dergisi**, 2006, Vol. 4, pp. 12-28.

²³¹ Yusuf Demir, Erdoğan Öztürk and Mesut Albeni, “Türkiye’de finansal piyasalar ile ekonomik büyüme ilişkisi”, **Karamanoğlu Mehmetbey Üniversitesi İktisadi ve İdari Bilimler Fakültesi Dergisi**, Vol.13, 2007, pp.438-455.

²³² Ferda Halıcıoğlu, “The Financial Development and Economic Growth Nexus for Turkey”, **MRPA Paper**, No: 3566, 2007, pp.1-10.

²³³ Ömer Faruk Altunç, “Türkiye’de Finansal Gelişme Ve Ekonomik Büyüme Arasındaki Nedenselliğin Ampirik Bir Analizi”, **Eskişehir Osmangazi İBBF Dergisi**, 2008, pp.113-127.

proper econometric techniques that has been used in the literature for the financial development and economic growth relation. Following the literature such as Filer, Hanousek and Campos (1999); Kularatne (2001); Ünalmiş (2002) and Azman-Saini and Smith (2006), Vector Auto regression Model (VAR) and Granger causality test will be used.

In this section, primarily, the data set and econometric methodology are explained. During our analysis, the theoretical explanations of each test and their application which will be used in our analysis will be explained briefly. Then, according to selected econometric methodology, analysis will be applied and results of the analysis will be introduced and interpreted.

3.2.1. Data

Time series analysis covers quarterly data of the 1988Q1-2012Q4 period for Turkey which obtained from Electronic Data Distribution System (EDDS) of the CBRT²³⁴ and proxies are calculated accordingly. In econometric analysis, Eviews 5.1 econometric package program is used. The data set can be viewed in Appendix 1 at the end of the study. Following the literature, selected economic growth and financial development indicators that selected are shown as below.

TABLE 3.2: Selected Economic Growth and Financial Development Measures

VARIABLE	INDICATOR	ABBREVIATION
<i>Economic Growth</i>	Real GDP	LGDP
<i>Financial Development</i>	Private Credit/GDP	LPRY
	Private Credit/Domestic Credit	LPCDC

²³⁴ Central Bank of Turkish Republic (CBRT), Electronic Data Distribution System (EDDS), <http://evds.tcmb.gov.tr/yeni/cbt-uk.html>.

As used in many empirical researches, real GDP series at constant prices measured by TL (GDP is based on 1987 prices) used as a proxy for economic growth. However, measuring financial development is not easy as economic growth and there is no direct measure of it. To evaluate the impact of financial sector on economic growth, we seek an indicator corresponds to the Turkish financial structure. Thus, we primarily choose PRIVATE CREDIT, which equals to the value of credits by financial intermediaries to the private sector divided by GDP. It excludes credits issued by the central banks. The reason behind to select this indicator is that credits given to private sector is more efficiently transformed into investments when compared with public sector credits. Thus, this measure shows the banking sector development and also used in Levine's empirical study on finance and growth nexus.²³⁵ Secondly, private credit as a share of domestic credit is chosen for robustness of our results. These two indicators measure the financial development in the context of banking sector. The process of transforming savings into investments mainly occurs through the banking sector in the Turkish financial system. Stock market development which can be measured as total traded volume, ISE 100 index etc., on the other hand, is not included in our analysis. Because stock market deepening is not provided. Stock market activities are mainly speculative and don't have an important role in supporting investment activities.

3.2.2. Methodology

As stated earlier, although there are many methods used in country specific studies for both Turkey and the other countries, generally co integration, VAR analysis and related tests are intensively preferred. VAR model is used to analyze and predict economic relations, causality between variables and enable to put forward the effect of financial development with the aid of impulse-response functions. Therefore, the methodology of this thesis based upon the VAR model to relate the financial development and economic growth. In this section, required

²³⁵ Beck, Levine and Loayza, "Finance and the Sources of Growth", *op. cit.*, p. 267.

standard econometric tests and methods will be explained briefly. In section 3.2.3, empirical results of the study will be interpreted. These tests and methods are as follows;

- Unit Root Tests
- Cointegration Test
- VAR Model
- Granger Causality Test
- Impulse-Response Analysis
- Variance Decomposition

3.2.2.1. Unit Root Tests

Asteriou states that time series data is accepted to be stationary if “*it exhibits mean reversion in that it fluctuates around a constant long-run mean, has a finite variance that is time invariant and has a theoretical correlogram that diminishes as the lag length increases*”.²³⁶ In studying time series analysis, it is important to work with stationary time series in econometric analysis. Because in nonstationary time series, each set of time series data have a particular episode. Any temporary shock occurs in nonstationary time series causes a permanent memory in series. Thus, we can study its behavior only for the time period under consideration and it is not possible to generalize it to other time periods. Therefore, for the purpose of forecasting, such nonstationary time series may be of little practical value.²³⁷ Using nonstationary time series analysis in regression may produce spurious results with high ratio of t statistics and R^2 even though there is no statistically meaningful relation between variables.²³⁸

²³⁶ Dimitrios Asteriou, **Applied Econometrics: A Modern Approach Using Eviews and Microfit**, Palgrave MacMillan, 2006, p. 247.

²³⁷ Damodar Gujarati, **Basic Econometrics**, McGrawHill Companies, 2004, p.798.

²³⁸ Walter Enders, **Applied Econometrics Time Series**, Newyork, John Wiley&Sons, 2004, p.171

Unit root test is widely used method to reveal the stationarity properties of the particular time series. There are many tests to find the unit root in econometric studies. Among them, Dickey-Fuller, Augmented Dickey-Fuller (ADF) and Phillips-Perron (PP) tests are the most widely used ones in testing the presence of unit roots. In our analysis, we are going to use ADF and PP unit root tests.

Augmented Dickey-Fuller Test

ADF test is used to test the existence of unit root when there is autocorrelation in the series and lagged terms of the dependent variable are included in the equation. The following three models represent pure random walk, random walk with drift and random walk with drift and trend used in Augmented Dickey Fuller tests²³⁹:

$$\Delta Y_t = \delta Y_{t-1} + \alpha_i \sum_{i=1}^m \Delta Y_{t-i} + \varepsilon_t \quad (3.1)$$

$$\Delta Y_t = a_1 + \delta Y_{t-1} + \alpha_i \sum_{i=1}^m \Delta Y_{t-i} + \varepsilon_t \quad (3.2)$$

$$\Delta Y_t = a_1 + a_2 t + \delta Y_{t-1} + \alpha_1 \sum_{i=1}^m \Delta Y_{t-i} + \varepsilon_t \quad (3.3)$$

where $\delta = \Phi - 1$.

ADF test, tests whether coefficient δ is statistically zero or not. The null hypothesis and alternative hypothesis are shown as below.

$$H_0 : \delta = 0 \quad (\text{Nonstationary, there is a unit root})$$

$$H_1 : \delta < 0 \quad (\text{Stationary, there is no unit root})$$

Then, the result of ADF test statistic (t statistic of lagged dependent variable) must be compared with the MacKinnon critical values at 1%, 5% and 10% levels of

²³⁹ Dimitrios Asteriou and Stephen G. Hall, **Applied Econometrics**, Palgrave MacMillian, 2007.

significance. If the ADF test statistic is less than the critical value, we reject the null hypothesis H_0 and conclude that there is no unit root and series are stationary.

ADF t statistic < McKinnon Critical values \Rightarrow Stationary

But if the critical value is higher than McKinnon critical values, H_0 cannot be rejected. In this case, we take difference of the series and test whether these series are stationary. If series are found to be stationary, then we say that that series are integrated of order 1. This process continues until we reach to the series at levels. During this analysis, if a nonstationary series is found at order (d-1), we conclude that the series in examination are integrated of order d, I (d).

Phillips-Perron Unit Root Test

ADF unit root test predicts that error terms have normal distribution and constant variance. Phillips and Perron (1988) relaxed the assumptions of DF unit root test with a new method that they developed.²⁴⁰ It offers an alternative method for correcting serial correlation in unit root testing. The PP test does not require specifying the form of the serial correlation of ΔY_t under the null hypothesis. In their analysis, they use the standard DF or ADF test, but modify the t-ratio so that the serial correlation does not affect the asymptotic distribution of the test statistic. PP test allows for a very wide class of weakly dependent and possibly heterogeneously distributed data.²⁴¹ Moreover, PP test is more effective in grasping the potential confusion of the structural breaks in the series than the ADF and other tests. Thus, PP test has complementary features to that of ADF test.

The following model is used in PP test:

²⁴⁰ Aziz Kutlar, **Ekonometrik Zaman Serileri**, Pearson Education Yayıncılık, İstanbul, 2000, p. 171.

²⁴¹ Peter C. B. Phillips and Pierre Perron, "Testing For A Unit Root In Time Series Regression", **Biometrika**, Vol. 75, No. 2, 1988, pp. 335-346.

$$\Delta Y_t = \alpha_0 + \beta Y_{t-1} + e_t \quad (3.4)$$

In the above model, β coefficient has a corrected t statistic of coefficient δ in the ADF model. Again, the null hypothesis and alternative hypothesis for PP test is,

$$H_0 : \beta = 0$$

$$H_1 : \beta < 0$$

If the PP test statistic is less than the critical value, we reject the null hypothesis and conclude that the series is stationary and there is no unit root. If the PP test statistic is higher than the critical value, we accept the null hypothesis that the series are nonstationary and there is a unit root.

3.2.2.2. Cointegration Analysis

We see that when variables in the analysis are non-stationary, we can take their differences for d times to make them stationary, integrated of order d, I (d). However, if two variables are integrated of the same order and they are non-stationary, the linear combination cancels out the stochastic trends in the two series, and linear combination of these two variables may be stationary which is called cointegration.²⁴² In other words, two variables will be cointegrated if they have a long-term, or equilibrium, relationship between them. In the case of possible cointegration relationship, taking difference of the series will result in loss of information.

A number of methods for testing cointegration are proposed in the literature such as the Engle-Granger cointegration test, augmented Engle-granger cointegration test, Johansen cointegration test. Although the two-step method cointegration test proposed by Engle and Granger is easier, it has important drawbacks. Because,

²⁴² Gujarati, **op. cit.**, p. 822.

Engle-Granger cointegration test does not consider the existence of one or more cointegrated vectors. If there are more than one cointegration vectors, Engle-Granger cointegration test will be invalidated. Whereas, Johansen cointegration method tests how many cointegrated vector between variables following the VAR model which all variables are accepted to be exogenous.²⁴³

Johansen Cointegration Test

If the series are integrated of the same order, Johansen cointegration test to detect long run relationship between the series can be applied. Johansen (1988) suggest a method for determining how many cointegration vectors there are and estimating the relationships. This test is a multivariate generalization of the Dickey-Fuller test²⁴⁴:

$$\Delta Y_t = (a_1 - 1)Y_{t-1} + \varepsilon_t \quad (3.5)$$

Standard DF test concerned with establishing whether the coefficient of Y_{t-1} is significantly negative. When this equation is generalized to n variables and VAR model, related cointegration test becomes

$$\Delta x_t = \mu + \pi x_{t-1} + \sum_{i=1}^{p-1} \Gamma_i \Delta x_{t-i} + \varepsilon_t \quad (3.6)$$

where x_t and x_{t-1} are $n \times 1$ vectors, μ is $(n \times 1)$ constant vectors, p is number of lags, Γ is coefficient matrix of related variables' first difference of x vector lag, π includes long term relationships and coefficient matrix of the level of variables, and ε_t is error term of the VAR model. Johansen cointegration test try to find the rank of π matrix, and rank of π matrix is equal to number of independent

²⁴³ Utku Utkulu, "How to Estimate Long Run Relationships in Economics: An Overview of Recent Approaches", *Dokuz Eylül Üniversitesi İİBF Dergisi*, Vol. 12, No. 2, 1997, pp. 9-10.

²⁴⁴ Søren Johansen, "Statistical Analysis of Cointegration Vectors", *Journal of Economic Dynamics and Control*, Vol.12, 1988, pp.231–254.

cointegration vectors. ²⁴⁵ If the rank of π matrix is 0, then, we say that there is no cointegration between variables.

In Johansen's test procedure, there are two test statistics²⁴⁶;

- the trace statistics and
- the maximum Eigen value statistic.

The trace statistic tests the null hypothesis: “there is at most r cointegrating relations” against the alternative of “ m cointegrating relations” (the series are stationary),

$r = 0, 1, \dots, m - 1$. The maximum Eigen value statistic tests the null hypothesis: “there are r cointegrating relations”.

3.2.2.3. Vector Autoregression Analysis

As stated earlier, VAR model is one of the most successful and easy to use models for the analysis of multivariate time series which developed by Sims. Its success in describing and forecasting the dynamic behavior of economic and financial time series is proven by many studies. VAR is an extension of the univariate autoregressive model (AR) to dynamic multivariate. ²⁴⁷

VAR models are dynamic systems of equations which examine the inter-relationships between economic variables, using minimal assumptions about the underlying structure of the economy. They aim to provide good statistical representations of the past interactions between variables.

²⁴⁵ Walter Enders, **Applied Econometric Series**, Second Edition, John Wiley and Sons, 2004, pp. 181-184.

²⁴⁶ Søren Johansen, “Estimating and Testing Cointegration Vectors In Gaussian Vector Autoregressive Models”, **Econometrica**, Vol. 59, 1991, pp. 1551–1580.

²⁴⁷ Christopher A. Sims and Eric M. Leeper, “Towards a Modern Macroeconomic Model Usable for Policy Analysis”, **NBER Working Paper**, No: 4761, 1994, p. 2.

For Zivot and Wang, “VAR model is also used for structural inference and policy analysis. In structural analysis, certain assumptions about the causal structure of the data under investigation are imposed, and the resulting causal impacts of unexpected shocks or innovations to specified variables on the variables in the model are summarized. These causal impacts are usually summarized with impulse response functions and forecast error variance decompositions.”²⁴⁸

Two variable standard VAR model can be expressed as below,

$$y_t = a_1 + \sum_1^p b_{1i} y_{t-i} + \sum_1^p b_{2i} x_{t-i} + v_{1t} \quad (3.7)$$

$$x_t = c_1 + \sum_1^p d_{1i} y_{t-i} + \sum_1^p d_{2i} x_{t-2} + v_{2t} \quad (3.8)$$

In above model, p is lag length, v_{1t} and v_{2t} has zero means, constant variances, and is individually serially uncorrelated. At this point, we should test whether one of the lagged endogenous variables has an effect on the other endogenous variable by using the standard F-test under the assumption of variable stationarity. To test whether x_t has an effect on y_t , the null hypothesis and alternative hypothesis is

$$H_0 : b_{1i} = 0$$

H_1 : one of the b_{1i} 's is different from zero,

respectively, where $I=1,2,\dots,p$. If the null hypothesis is rejected, we can conclude that has x_t effect on y_t . Similarly, in testing whether y_t has an effect on x_t or not, the null hypothesis is and alternative hypothesis

$$H_0 : b_{2i} = 0$$

²⁴⁸ Eric Zivot and Jiahui Wang, **Modeling Financial Time Series with S-PLUS**, Springer Science, Business Media Incorporated, 2006, p. 383.

H_1 :one of the b_{2i} 's is different from zero,

respectively, where $I=1,2,\dots,p$. If the null hypothesis is rejected, we can conclude that y_t has effect on x_t .²⁴⁹

3.2.2.4. Vector Error Correction Model and Causality Test

If the variables are stationary at their level, standard Granger causality test can be applied by using following equations²⁵⁰:

$$Y_t = a_0 + \sum_{i=1}^k b_i Y_{t-i} + \sum_{i=1}^1 c_i X_{t-i} + u_t \quad (3.9)$$

$$X_t = d_0 + \sum_{i=1}^m e_i X_{t-i} + \sum_{i=1}^n f_i Y_{t-i} + v_t \quad (3.10)$$

where a_0 is constant parameter, u_t is white noise process error term. According to the equation 3.9, if the null hypothesis which claims that c_i (coefficient vector of lagged variable of X) is equal to zero, then, we conclude that “variable X is Granger cause of variable Y”. The same process is also valid for equation 3.10. Apart from these, if the null hypothesis for both equations is rejected, this means there is a bi-directional relationship. Similarly, if the null hypothesis for both equations cannot be rejected, then, there is no causality relationship between variables.

If the variables are nonstationary, but integrated of the same order, and there is no cointegration relationship between them, VAR model must be used to determine the causal relationship. Granger causality test based on VAR model is as follows:

²⁴⁹ Esen Kılıç, “An Empirical Analysis of the Relationship between Financial Deepening and Economic Growth: The Case of Turkey”, Master Thesis, Middle East Technical University, The Department of Economics , 2008, pp. 58-59.

²⁵⁰ Clive Granger, “Investigating Causal Relations by Econometric Models and Cross-spectral Methods”, *Econometrica*, Vol. 37, No. 3, 1969, pp. 424–438.

$$\Delta Y_t = a_0 + \sum_{i=1}^k b_i \Delta Y_{t-i} + \sum_{i=1}^1 c_i \Delta X_{t-i} + u_t \quad (3.11)$$

$$\Delta X_t = d_0 + \sum_{i=1}^m e_i \Delta X_{t-i} + \sum_{i=1}^n f_i \Delta Y_{t-i} + v_t \quad (3.12)$$

The symbol of Δ shows that first differences of the variables is taken. Similar to standard Granger causality test, for the equation (3.11), if the null hypothesis which claims that c_i (coefficient vector of lagged variable of ΔX) is equal to zero, then, “variable X is Granger cause of variable Y”. The same process is valid for equation 3.12, too.

As Granger stated, if there is a cointegration relationship between the variables, this implies that there is at least one causal relationship between variables. If the series have cointegrating relationship and series are nonstationary, using standard VAR analysis will not be reliable. In this situation, VECM can be formed instead of a differenced VAR model.

The following model is an example to the VECM²⁵¹

$$\Delta x_t = \mu_{11} + \sum_{i=1}^{p-1} \theta_{1i} \Delta z_{t-i} + \sum_{i=1}^{p-1} \gamma_{1i} \Delta x_{t-i} + \beta_{11} EC_{t-1} + u_{1t} \quad (3.13)$$

$$\Delta z_t = \mu_{21} + \sum_{i=1}^{p-1} \theta_{2i} \Delta z_{t-i} + \sum_{i=1}^{p-1} \gamma_{2i} \Delta x_{t-i} + \beta_{21} EC_{t-1} + u_{2t} \quad (3.14)$$

where u_{1t} and u_{2t} are stationary error terms, Δx_{t-i} and Δz_{t-i} are stationary variables and EC_{t-1} is the error correction term. Error correction parameter β keeps model dynamic in equilibrium and force variables to converge the long run rate. Statistically significant error correction coefficient shows the existence of deviation and the magnitude of the coefficient shows the converging speed to long run rate. In practice, error correction parameter must lie between 0 and 1 and be statistically significant. In

²⁵¹ Kılıç, **op. cit.**, pp. 59-60.

this case, variables will converge to their long run value. Deviations from the long run value will be corrected according to the magnitude of the error correction parameter coefficient.²⁵²

In this study, VAR analysis will be predicted instead of VECM owing to the fact that series are integrated of same order and have no cointegration relationship between them.

3.2.3. Empirical Results

In this study, to find out the relationship between financial development and economic growth, VAR model is predicted. As a first step, the properties of the data set will be introduced and stationarity of variables GDP, PRY, and PCDC will be determined.

The proxy of economic growth is a natural logarithm of real GDP series (LNGDP). For financial development indicators, natural logarithms of selected variables PRY (LNPRY), and PCDC (LNPCDC) are also taken.

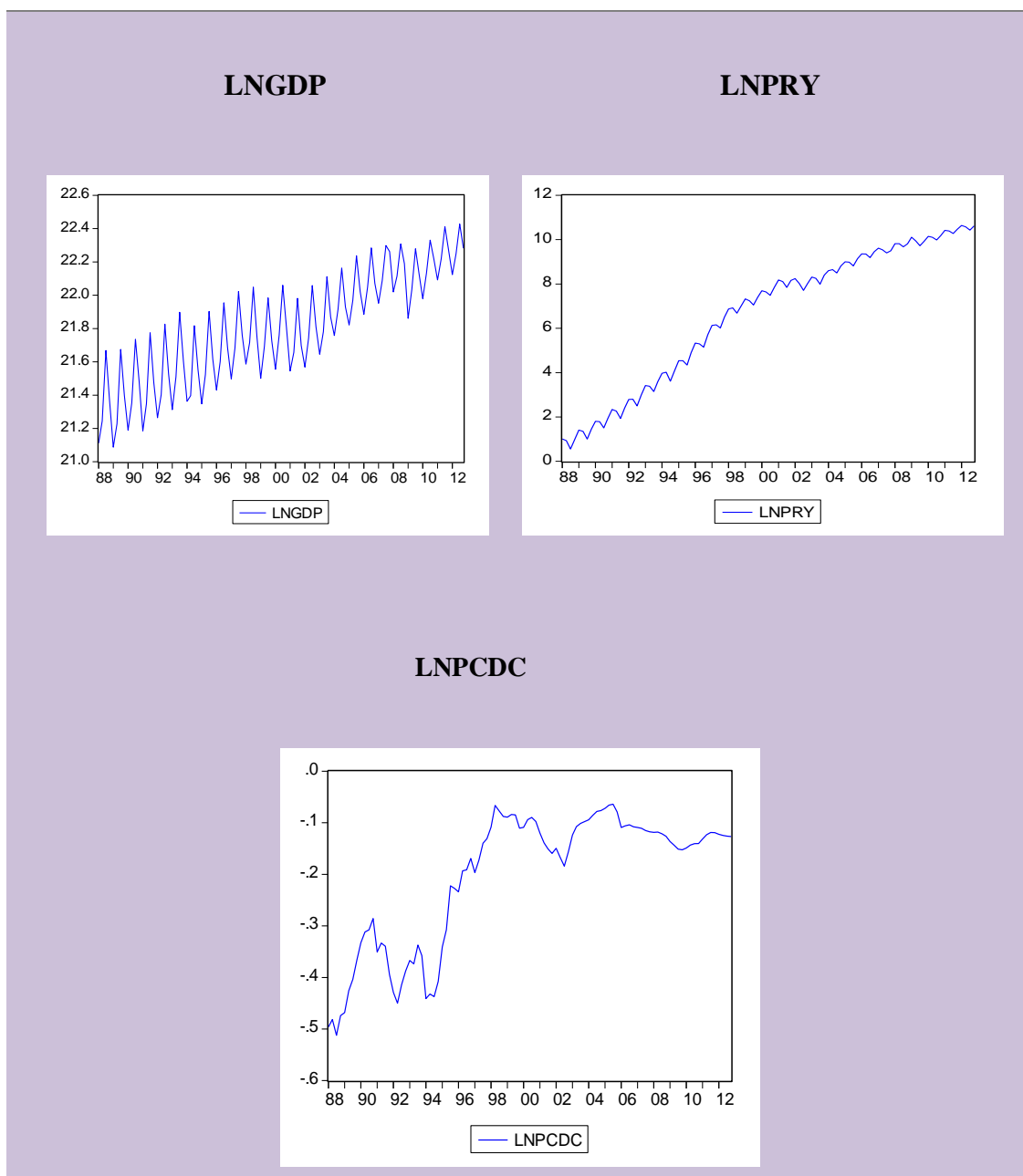
In below graphs, line graphs of the selected variables are shown. The impression we get from the below graphs are that, all of the time series seem to be trending upward, albeit with fluctuations.

It is obvious that

- LNGDP has a constant and trend,
- LNPRY has a constant and trend,
- LNPCDC has a constant and trend.

²⁵² Seyfettin Tartan and Metin Berber, “Kamu Kesimi Büyüklüğü ve Ekonomik Büyüme ilişkisi: Çoklu Koentegrasyon Analizi”, **Cumhuriyet Üniversitesi İİBF Dergisi**, Vol.5, No.2, 2004, p. 24.

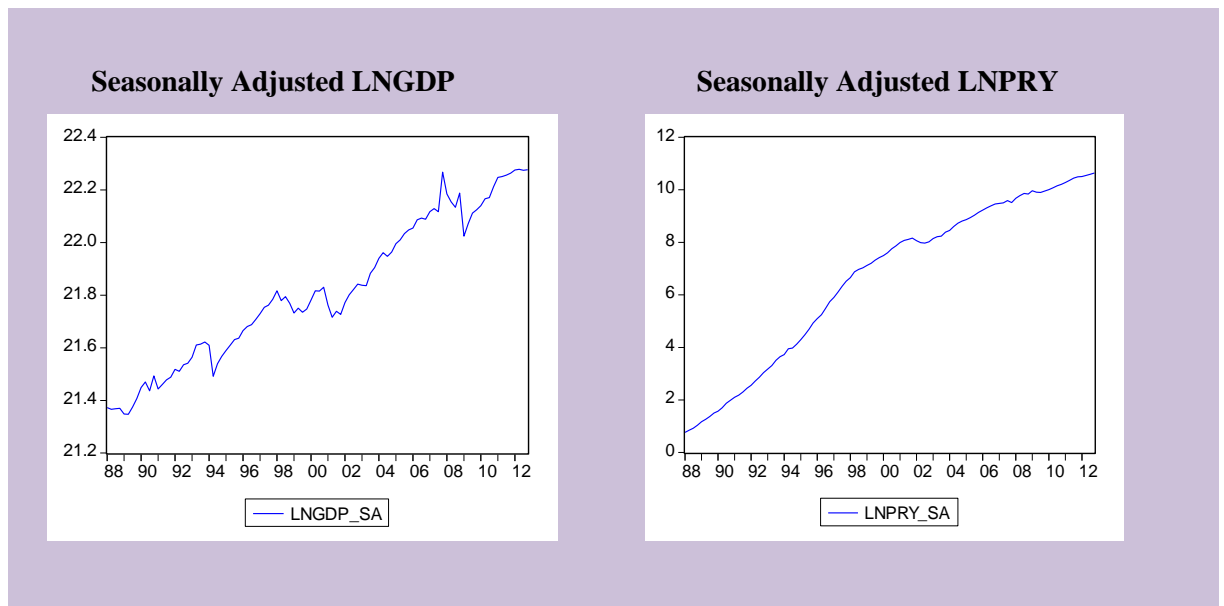
GRAPH 3.1: Properties of Data Sets



It can also be seen that LNGDP and LNPRY variables exhibit seasonality features while LNPCDC does not. Thus, since the data frequency is quarterly, they should be seasonally adjusted. This can be done by Census X-12 seasonal adjustment program in Eviews. With this technique, seasonal parts of the data are removed. Seasonally

adjusted real LNGDP and LNPRY series are shown in Graph 3.2. As can be seen from Graph 3.2, Gross domestic product at current prices (GDP at current prices) has seasonality and it is smoothed. The same technique is also applied for LNPRY.

GRAPH 3.2: Seasonally Adjusted Data Sets



As it is mentioned before, order of integration of each series should be determined to be able to apply VAR or VEC methodologies. Our next step is to observe the stationarity properties of the data set and test whether there is a unit root or not by using ADF and PP Unit Root tests.

3.2.3.1. Stationarity Analysis

To be able to apply VAR or VECM, order of integration of each series should be determined methodologies. Appropriate lag lengths are determined according to Akaike Information Criterion (AIC). The following Table 3.3 shows the ADF test results of each series at their levels and at first differences.

TABLE 3.3: ADF Test Results

ADF test at levels and first difference		LNGDP(<i>constant</i>)	LNPRY(<i>Constant, Linear</i>)	LPCDC(<i>constant, trend</i>)
ADF at levels	ADF test statistic	-0.571013	-0.564311	-1.601820
	P Value	0.8709	0.9787	0.7848
ADF at first difference	ADF test statistic	-17.74413	-12.68918	-7.948575
	P value	0.0000*	0.0000*	0.0000*
* denotes rejection of the null hypothesis that there is unit root at 1%, 5% and 10% significance levels.				

According to the ADF test results, each series have unit root at their levels and they are stationary when first differences are taken. According to ADF unit root test, it can be said that all variables are integrated of order one, I (1).

Since our data sets are affected by structural reforms and crises periods and exhibit huge deviations from the current state, there may be structural breaks. PP test is better at grasping the potential confusion of the structural breaks in the series than the ADF and other tests. Thus, in our analysis, we are going to use PP unit root test as it is more suitable for analyzing the data set of the Turkey.

In the below Table 3.4, the unit root test results of each series at level and first differences have been shown.

TABLE 3.4: Phillips-Perron Test Results

PP test at levels and first difference		LNGDP(<i>none</i>)	LNPRY(<i>intercept</i>)	LNPCDC(<i>intercept and trend</i>)
PP at levels	PP test statistic	0.349838	0.476789	-1.719102
	P Value	0.7841	0.9991	0.7355
	Bandwidth	14	16	4
PP at first difference	PP test statistic	-17.74413	-12.68918	-7.948575
	P value	0.0000*	0.0000*	0.0000*
	Bandwidth	13	15	3
* denotes rejection of the null hypothesis that there is unit root at 1%, 5% and 10% significance levels.				

When PP test statistics at levels for each series are compared with McKinnon critical values, PP test statistics are higher than the critical values which prove all series have a unit root. But when their first differences are taken, PP test statistics are less than the McKinnon critical values and we reject the null hypothesis that there is a unit root. Thus, it can be seen that each series have a unit root at levels, but they are stationary when their first differences are taken. We can conclude that according to Phillips-Perron unit root test, all variables are integrated of order 1, I (1).²⁵³

3.2.3.2. Johansen Cointegration Test

The second step before predicting VAR model is to test whether variables are cointegrated or not. The choice of Johansen test to find Cointegration relationship is based on its allowance the interactions between economic variables which have relationship between them and observes the error structure of the data set. Moreover, it doesn't require determination about endogeneity of the variables.²⁵⁴

²⁵³ Eviews outputs related to PP unit root test can be seen in Appendix-2.

²⁵⁴ Matimur Rahman and Muhammad Mustafa, "Dynamics of Real Exports and Real Economic Growths in 13 Selected Asian Countries", **Journal of Economic Development**, 1997, Vol. 22, No. 2, 1997, pp. 81-95.

Prior to Johansen analysis, optimum lag length is chosen by evaluating Sequential Modified Likelihood Ratio (LR), the Final Prediction Error (FPE), Akaike Information Criterion (AIC), the Schwarz Information Criterion (SC) and the Hannan-Quinn Information Criterion (HQ). Obtained results are as in the Table 3.5.

TABLE 3.5: VAR Lag Order Selection Criteria for Cointegration Test

Lag	LogL	LR	FPE	AIC	SC	HQ
0	7.342773	NA	0.000183	-0.094408	-0.012176	-0.06121
1	549.6375	1037.433	1.69e-09	-11.68777	-11.35884	-11.55501
2	589.0304	72.79113*	8.71e10*	-12.34849*	-11.77286*	-12.11616*
3	593.0609	7.184900	9.72e-10	-12.24045	-11.41813	-11.90856
4	598.8162	9.883982	1.05e-09	-12.16992	-11.10090	-11.73845
5	602.5217	6.122126	1.18e-09	-12.05482	-10.73910	-11.52378
6	607.3961	7.735477	1.30e-09	-11.96513	-10.40272	-11.33453
7	613.8044	9.751804	1.39e-09	-11.90879	-10.09968	-11.17862
8	615.9843	3.175095	1.63e-09	-11.76053	-9.704722	-10.93079

* indicates lag order selected by the criterion

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

FPE: Final prediction error

AIC: Akaike information criterion

SC: Schwarz information criterion

HQ: Hannan-Quinn information criterion

From the table, the model that minimizes criteria is chosen according to LR, FPE, AIC, SC and HQ produce same results. From the lag length selection analysis, lag length of 2 is found to be optimal. In the context of optimal lag order selection

criteria, Johansen Cointegration test results according to Trace and Maximum Eigen statistics are below in Table 3.6.²⁵⁵

TABLE 3.6: Cointegration Test Results
Selected number of cointegrating Relations by model (0,05 level*)

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

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

Table 3.6 shows number of cointegrated vectors according to trace and maximum Eigen test. For the hypothesis of $H_0 : r = 0$ which claims that there is no cointegration between variables is accepted and null hypothesis is not rejected. The hypothesis of $H_0 : r \leq 1$ which claims that there is at most 1 cointegration relation between variables is rejected. According to these results, there is no cointegration relationship between variables. Thus, there is no long run relationship between variables GDP, PRY and PCDC.

3.2.3.3. Vector Autoregression Model and Granger Causality Test Results

If variables of X and Y are nonstationary, but there is no cointegration between variables, then, VAR analysis should be applied in order to reveal the short term relationship between variables as stated in section 3.2.2.4. According to Phillips-

²⁵⁵ Eviews output of Cointegration test results according to each variable has been shown in Appendix-2.

Perron unit root test and Johansen cointegration test results, GDP, PRY, and PCDC variables are integrated of order 1, I(1), and there is no cointegration relationship between variables.

VAR analysis composes three parts: impulse-response analysis, variance decomposition and Granger causality test. While there is a prediction for future is valid for impulse-response analysis and variance decomposition, Granger causality analysis interprets the causality for the term period under consideration in analysis. In this study, after predicting VAR model, Granger causality test, variance decomposition and impulse-response analysis will be made.

VAR analysis equations which shows the short term relationship between gross domestic product and private credits and share of private credits to domestic credits is as follows:

$$LNGDP_t = \alpha_1 + \sum_{i=1}^p \beta_{1i} LNGDP_{t-i} + \sum_{i=1}^p \gamma_{1i} LNPRY_{t-i} + \sum_{i=1}^p \lambda_{1i} LNPCDC_{t-i} + u_{1t} \quad (3.15)$$

$$LNPRY_t = \alpha_2 + \sum_{i=1}^p \beta_{2i} LNGDP_{t-i} + \sum_{i=1}^p \gamma_{2i} LNPRY_{t-i} + \sum_{i=1}^p \lambda_{2i} LNPCDC_{t-i} + u_{2t} \quad (3.16)$$

$$LNPCDC_t = \alpha_3 + \sum_{i=1}^p \beta_{3i} LNGDP_{t-i} + \sum_{i=1}^p \gamma_{3i} LNPRY_{t-i} + \sum_{i=1}^p \lambda_{3i} LNPCDC_{t-i} + u_{3t} \quad (3.17)$$

Here, p denotes lag length, u_{1t} , u_{2t} and u_{3t} denotes random error term and shocks. Random error terms have zero mean and covariance and have constant and normally distributed variance. The assumption of VAR analysis which states that error terms are unrelated to their lag values does not constrain the model. Because, by increasing the lag lengths of variables, the problem of autocorrelation can be overcome.

TABLE 3.7: VAR Lag Order Selection Criteria for VAR model

Lag	LogL	LR	FPE	AIC	SC	HQ
0	512.6875	NA	2.74e-09	-11.20192	-11.11915	-11.16853
1	572.9032	115.1378*	8.89e10*	-12.32754*	-11.99644*	-12.19396*
2	576.6121	6.847206	9.99e-10	-12.21126	-11.63183	-11.97749
3	579.9752	5.986993	1.13e-09	-12.08737	-11.25961	-11.75342
4	585.9623	10.26363	1.21e-09	-12.02115	-10.94507	-11.58702
5	591.6691	9.406721	1.31e-09	-11.94877	-10.62436	-11.41445
6	598.6434	11.03629	1.38e-09	-11.90425	-10.33151	-11.26975
7	600.0696	2.162895	1.65e-09	-11.73779	-9.916731	-11.00311
8	605.9116	8.474096	1.79e-09	-11.66839	-9.598998	-10.83352

Before forming the VAR model, lag lengths of each model must be determined. By considering VAR model lag length p , the model named as p th order reduced VAR and shown as VAR(p). All variables in the model are accepted as an endogenous variables and VAR model do not dichotomize variables. In this way, there is no need to determine whether variables are exogenous or endogenous.²⁵⁶ From Table 3.7, according to LR, FPE, AIC, SC and HQ criteria, lag length is determined as 1.

Now, VAR analysis can be applied after determining lag length. Our predicted VAR(1) model for the equations above by using GDP, PRY and PCDC time series for Turkey between 1988Q1-2012Q4, VAR(1) is as seen in Table 3.8.

Before analyzing the VAR (1) test results, it is necessary to reveal the causality issue between variables by using the Granger causality analysis. Causal relationships state the significance of the structural shocks. In this way, variables ranks from exogenous to endogenous ones. This ranking is crucial for policy analysis according

²⁵⁶ Russell Davidson and James G. MacKinnon, **Estimation and Inference in Econometrics**, Oxford University Press, 1993, p. 685.

to the VAR model by using impulse-response analysis and variance decomposition.

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TABLE 3.8: VAR (1) Model Results

	DLNGDP	DLNPCDC	DLNPRY
DLNGDP(-1)	-0.224513 (0.11137) [-2.01594]	0.064741 (0.07402) [0.87463]	1.136762 (0.14277) [7.96230]
DLNPCDC(-1)	0.262072 (0.16518) [1.58660]	0.168600 (0.10979) [1.53573]	-0.212891 (0.21175) [-1.00539]
DLNPRY(-1)	0.013447 (0.06089) [0.22084]	0.043009 (0.04047) [1.06279]	0.773406 (0.07805) [9.90864]
C	0.009020 (0.00731) [1.23409]	-0.001922 (0.00486) [-0.39571]	0.012726 (0.00937) [1.35820]
Adj. R-squared	0.045863	0.032635	0.565625
F-statistic	2.554174	2.090785	43.10313

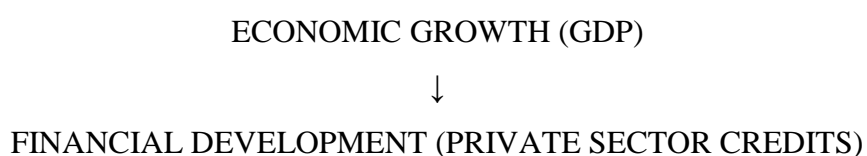
Table 3.9 shows the VAR Granger causality/block Exogeneity Wald test results. It estimates the χ square value of the coefficient on the lagged endogenous variables. The hypothesis in this test is that the lagged endogenous variables do not Granger causes the dependent variable.

²⁵⁷ Enders, *op. cit.*, pp. 181-184.

TABLE 3.9: VAR Granger Causality/Block Exogeneity Wald Tests

Dependent variable: D(LNPRY)		
<i>Excluded</i>	<i>Chi-Square</i>	<i>Probability</i>
D(LNPCDC)	1.010818	0.3147
D(LNGDP)	63.39825	0.0000*
All	65.55588	0.0000
Dependent variable: D(LNPCDC)		
D(LNPRY)	1.129518	0.2879
D(LNGDP)	0.764973	0.3818
All	1.341242	0.5114
Dependent variable: D(LNGDP)		
D(LNPRY)	0.048772	0.8252
D(LNPCDC)	2.517299	0.1126
All	3.348460	0.1875

According to VAR Granger Causality Test, credits to private sector and the ratio of private credits to domestic credits does not have an effect on GDP in the short run. But, GDP has an effect on private sector credits. Thus,



Returning back to the VAR (1) model results in Table 3.8, the relationship between two variables can be examined in below regression:

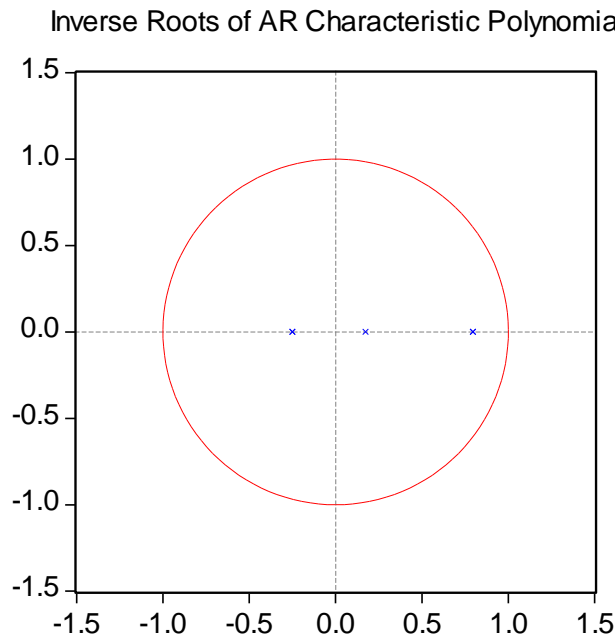
$$\mathbf{DLNPRY=0.012726+1.136762DLNGDP (-1)}$$

The regression implies that a one TL increase in GDP will cause approximately TL 1.1367 increase in private sector credits/GDP. This supports the view of **demand-following hypothesis** which states that a rise in economic growth creates demand for more financial services by the economic agents.

3.2.3.4. Diagnostic Test Results of VAR model

After estimating the model, it is necessary to test whether the model is stationary or not by doing related tests to the error terms. To reach long run and stationary equilibrium point of the variables in the model, the estimated model must also be stationary. The stationarity or stability properties of the model depend on the Eigen value of coefficient matrix. If all Eigen value of coefficient matrix, or all characteristic roots lay inside the unit circle, then all of the variables are stationary.²⁵⁸ The necessary and sufficient condition for stability is verified for our VAR model. Because all inverse roots of the AR characteristic polynomial are in the unit circle as can be seen in Graph 3.6.

FIGURE 3.1: Inverse Roots of Characteristic Polynomial



²⁵⁸ David Hendry and Katarina Juselius, "Explaining Cointegration Analysis: PartII", Discussion Papers, Department of Economics, **University of Copenhagen**, No.00-20, 2000, p.10.

To assess the validity of the modeling assumptions in applying VAR model, autocorrelation LM and white heteroskedasticity tests should be applied. According to the autocorrelation LM test in Table 3.10, there is no serial correlation in error terms. The test results of the white heteroskedasticity test also shows that variance is constant over time and $p=0,1036>0,05$. Thus, the estimated VAR model has been successful in diagnostic tests, and satisfies the stationarity condition. Now, we can examine the impulse-response analysis and variance decomposition tests.

TABLE 3.10: Autocorrelation LM Test

VAR Residual Serial Correlation LM Tests		
H0: no serial correlation at lag order h		
Date: 07/17/13 Time: 09:48		
Sample: 1988Q1 2012Q4		
Included observations: 98		
Lags	LM-Stat	Prob
1	5.547108	0.7842
2	3.026422	0.9632
3	7.486566	0.5866
4	9.349246	0.4057
5	11.77283	0.2264
6	12.05374	0.2103
7	3.636294	0.9337
8	7.563926	0.5786
9	8.894311	0.4471
10	12.93692	0.1655
11	7.724414	0.5621
12	4.490140	0.8763

Probs from chi-square with 9 df.

TABLE 3.11: White Heteroskedasticity Test

VAR Residual Heteroskedasticity Tests:
No Cross Terms (only levels and squares)

Date: 07/17/13 Time: 09:48

Sample: 1988Q1 2012Q4

Included observations: 98

Joint test:

Chi-sq	df	Prob.
47.00635	36	0.1036

3.2.3.5. Impulse Response Analysis and Variance Decompositions

After estimating the VAR model, instead of interpreting every single parameter, obtained residuals from the VAR model can be prudentially analyzed by using impulse response function and variance decomposition analysis.²⁵⁹

Impulse Response Analysis

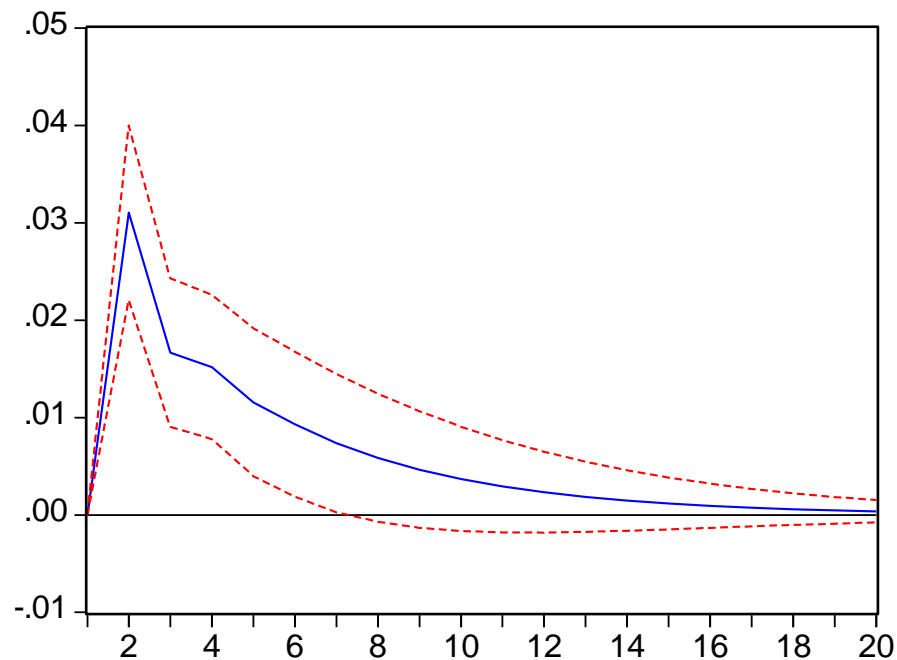
Basically, impulse response function tracks the impact of any variable on others in the system. An impulse response function traces the effect of a one standard deviation shock to one of the innovations on current and future values of the endogenous variables. A shock to the i -th variable directly affects the i -th variable, and is also transmitted to all of the endogenous variables through the dynamic

²⁵⁹ Burcu Özcan and Ayşe Arı, “Finansal Gelişme ve Ekonomik Büyüme Arasındaki İlişkinin Ampirik Bir Analizi: Türkiye Örneği, **Business and Economics Research Journal**, Vol. 2, No. 1, 2011, p. 136.

structure of the VAR.²⁶⁰ Impulse-response analysis is an essential tool in empirical causal analysis and policy effectiveness analysis.

GRAPH 3.3: Impulse-Response Analysis

Response of DLNPRY_SA to Cholesky
One S.D. DLNGDP_SA Innovation



Impulse-response analysis graph can be seen from Graph 3.3. On the horizontal axis, the selected period is 20 which means how far in the future we want to check the reaction of variables to each other. In the next 20 period (as we take quarterly data, 20 period means 20 quarter which makes 60 months or 5 years) how do variable LNPRY and LNGDP react to each other. Vertical axis shows the size of response. The line below the figures discriminates positive and negative responses. Above of the line shows positive response to one standard deviation shock and below of the line shows negative response to one standard deviation shock.

²⁶⁰ Norman Swanson and Clive Granger, "Impulse Response Functions Based on the Causal Approach to Residual Orthogonalization in Vector Autoregressions", **Journal of the American Statistical Association**, Vol. 92, 1997, pp. 357-367.

The response of LNPRY to LNGDP can be observed in Graph 3.3. Against one standard deviation shock from LNGDP, LNPRY responds to this shock positively in the first two periods. After second period, the reaction is again positive but decreasing until 18th period. In the next periods, response fades and converges to its long run equilibrium. It can be inferred that LNPRY always responds positively to shocks coming from LNGDP.

Variance Decomposition

Variance decomposition separates the variation in an endogenous variable into the component shocks to the VAR. Thus, the variance decomposition provides information about the relative importance of each random innovation in affecting the variables in the VAR.²⁶¹

In Table 3.12, variance decomposition results of each variable are presented. When we consider private sector credits DLNPRY, after 10th period, 37% of variance of the forecasting error is determined by real GDP, 5% is determined by PCDC and 57% is determined by itself. This is consistent with our finding in Granger causality test which states that economic growth has an effect on financial development. Variance decomposition result for DLNPCDC shows that 91% of variance of the forecasting error is determined by LNPCDC which states that there is no relation of PCDC with other variables. On the other hand, for DLNGDP variable, 31% variance of the forecasting error is explained by DLNPRY.

²⁶¹ Mehmet Mucuk and Mustafa Tahir Demirsel, "Türkiye'de Doğrudan Yabancı Yatırımlar ve Ekonomik Performans", *Selçuk Üniversitesi Sosyal Bilimler Enstitüsü Dergisi*, Vol. 21, 2009, pp. 371.

TABLE 3.12: Variance Decomposition

Variance Decomposition of DLNPRY_SA:				
Period	S.E.	DLNPRY_...	DLNPCDC	DLNGDP_...
1	0.045210	100.0000	0.000000	0.000000
2	0.056508	68.10608	1.738620	30.15530
3	0.061672	63.89963	3.489630	32.61074
4	0.064865	60.69556	4.346131	34.95831
5	0.066780	59.18065	4.839202	35.98015
6	0.067965	58.26883	5.120772	36.61040
7	0.068702	57.73329	5.289506	36.97721
8	0.069162	57.40557	5.392167	37.20226
9	0.069451	57.20363	5.455554	37.34082
10	0.069632	57.07792	5.494986	37.42709

Variance Decomposition of DLNPCDC:				
Period	S.E.	DLNPRY_...	DLNPCDC	DLNGDP_...
1	0.023440	6.869706	93.13029	0.000000
2	0.023997	7.065013	92.39264	0.542347
3	0.024095	7.259450	91.93954	0.801011
4	0.024141	7.351029	91.65429	0.994676
5	0.024169	7.410149	91.47772	1.112132
6	0.024186	7.446378	91.36654	1.187078
7	0.024197	7.469274	91.29667	1.234058
8	0.024204	7.483662	91.25265	1.263685
9	0.024208	7.492732	91.22492	1.282346
10	0.024211	7.498447	91.20744	1.294109

Variance Decomposition of DLNGDP_SA:				
Period	S.E.	DLNPRY_...	DLNPCDC	DLNGDP_...
1	0.035267	30.72702	9.362173	59.91081
2	0.036568	31.84294	9.626516	58.53055
3	0.036652	31.75575	9.601014	58.64324
4	0.036661	31.77983	9.605427	58.61474
5	0.036665	31.77582	9.605739	58.61844
6	0.036667	31.77684	9.606281	58.61688
7	0.036669	31.77676	9.606524	58.61671
8	0.036669	31.77686	9.606691	58.61645
9	0.036670	31.77689	9.606793	58.61632
10	0.036670	31.77692	9.606858	58.61623

Cholesky Ordering: DLNPRY_SA DLNPCDC DLNGDP_SA				
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Briefly, the result of this econometric study suggests that there is no long run relationship between financial development and economic growth, as expected. Following the classical and neoclassical assumption of dichotomy, real variables in

the economy are determined purely by real factors, not by monetary factors. Thus, nominal factors only influence financial side of the economy, not the real side. But in the short run, there is a relationship between financial and real sector. The direction of the causal relationship is from economic growth to financial development. Most of the country based, time series empirical analysis produced the same results as have stated earlier. We found consistent result with this trend in financial development and economic growth literature. It can be said that, demand-following hypothesis is valid in financial development and economic growth relation for Turkey. Moreover, our three hypotheses related to financial development and economic growth has been verified. Our hypothesis and empirical results are listed in conclusion part.

CONCLUSION

This thesis examined the theoretical link between financial development and economic growth and evaluated this relationship for the case of Turkey in process of financial liberalization. An empirical study is conducted by using econometric analysis by the quarterly time series data of Turkey between years 1988:1-2012:4. In the light of the Turkish economic structure and empirical results that we reached, this part interprets the financial development and economic growth relationship for Turkey.

Determination of the direction and degree of the relationship between the financial system and real sector is significant for countries with regard to economic policies. As a matter of fact, the role of sound, effective and developed financial system is crucial in capital accumulation, sustainable production, technological improvements and innovation financing in industrial, agricultural and information sectors. Thus, developing countries with less developed financial system should apply economic policies towards financial sector development. These development policies may be implemented according to the direction of this relationship. While supply-leading relationship may lead to financial sector liberalization policies, demand-following relationship may require more emphasis on growth-enhancing policies.

Financial system exhibits different structure and mechanism than the real sector. Financial sector is not as competitive as real sector. Thus, regulation, supervision and interventions are generally mandatory for the financial system. Therefore, the assumptions of neoclassical economics are likely to be invalid for financial sector and government intervention may require in some cases. In this context, the hypotheses of Keynesian, neoclassical and endogenous approach show differences in finance and growth nexus. While financial development is an indirect source for economic growth in neoclassical model, the role of the financial system is treated as one of the main factors for economic growth in endogenous growth models. Keynes,

on the other hand, has cautious view on finance and growth relationship by assuming that there are market imperfections and insufficient relation between saving-investment-interest rate channels. As investments depend on expected profitability of projects driven by animal spirits, and saving is a function of income, development of the financial system occurs after ensuring economic growth. Thus, financial repression policies implemented globally until 1970s according to proposition of the Keynesian view.

After the stagflation crisis in 1970s, international debt crisis revealed the neoclassical vision again which advocates financial liberalization. Developed and developing countries started to adopt economic liberalization policies. It can be inferred that policies implemented to the financial system depend on the global conjuncture. In fact, in accordance with Keynesian view, financial repression policies implemented, public sector dominated in banking sector, financial widening prevented, real interest rates hold in high rates and closed economy system worked in Turkish economy until 1980s. After the changing global conjuncture, Turkish economy opened up to the world, and liberalization policies started to be implemented. The expectation was an integration of domestic economy to global world; utilize external sources and an increase in investments to promote economic growth.

In the light of these theoretical considerations, inferences about financial development and economic growth from this study can be listed as follows:

- By considering the Turkish financial system, Turkey has a bank-based financial system and banking sector is the most important source in transforming savings into investments. Banking sector collects approximately 75% share of the total savings in the economy and credit/deposit ratio is 106% which indicates transformation of deposits into credits in 2012. On the other hand, stock market collects approximately 12-13% of the total savings in the economy in 2012. According to these findings, it is obvious that the role of stock market is very little when compared with banking sector.

- Some of the studies debated relative merits of the bank-based or market-based systems in process of economic growth. While some of them stress on the success of securities market in encouraging long run economic growth by financing industries that face continuous technological improvements, others advocates the banks-based financial system as banks form long run relationship with firms, monitor their investment activities and produce better improvement in resource allocation and corporate governance. But, the basic problem is not relative dominance of banks or markets. What matters for growth is to provide an economic environment that financial intermediaries and markets operate efficiently by sound financial services.

- After the completion of international liberalization in 1989, implementation of policies continued to ensure financial integration of Turkish financial sector to global world. But, required regulation, supervision, risk management and structural problems of the economy could not be achieved and solved. Government perceives financial development as a financing source of their rough and populist economic policies. High returns in financial sector are used for financing high budget deficit. High public debt and liquidity need of the government lead banking sector to operate inefficiently in the financial system. To meet an increasing demand for liquidity of government, banks borrow from households and lend to government with high interest rates. Thus, banking sector could not do its duty as a financial intermediary and operate inefficiently. As a result, banking sector affected by domestic and global economic crises in 1994, 2001 and 2008. Whereas, banking sector had to ensure financial and fiscal discipline to fulfill its functions efficiently in the economy. By this means, our hypothesis which states that “Theoretically, policies implemented for financial liberalization after 1980s had been a negative factor for economic growth” is verified.

- Besides this, stock market could not be an important chain in deposit-credit channel when compared with banking sector. The reason can be the existence of better regulated banking system even though it experienced problems after 1980s. As can be observed from the high turnover ratio, stock market in Turkey is used for short term speculative earnings, rather than providing liquidity for investments. Thus, stock market in Turkey is not deepened yet. Literature also refers to openness of stock market to manipulations, speculations and prevalent information asymmetry. For this reason, more prudential and interventionist policies may be applied until a desirable level of deepening is provided in stock market. Moreover, a remarkable progress in stock market in the last few years shouldn't be neglected. By 2012:4, the preference of stock market by nonresidents and residents as an investment instrument has increased to 8,4% and 1,3% , respectively according to previous period.

- It is possible to say that financial crises are signals of inefficiency and insufficient deepening of the financial sector. Accordingly, after the 2001 financial crisis, government took necessary measures by implementing risk-oriented supervision and management in banking sector. As a result of independent supervision, regulations to strengthen the equity and financial structure, decreasing public debt, economy started to recover. Structural transformation of the banking sector provides efficient operation of banking sector in the economy. BRSA played a major role in these improvements. After the global financial crisis in 2008, the banking sector continued to grow and profit rates continued to rise. This can be the result of the structural measures taken by government and BRSA.

- Policy makers may implement policies toward financial sector deepening and ensure the financial system to operate in free market mechanism, while managing the possible problems in the short run by appropriate policies in Turkey. These policies may be moderate constraining policies until ensuring

the facilitation of better conditions for the healthy operation of the stock market in the economy.

- Empirical studies on the relationship between financial development and economic growth reached distinctive results as they test different countries and used several econometric methodologies, time periods, data sets and indicators. Results of the empirical studies are identical to tested country, and changes according to the selected indicator of the financial development and economic growth. As countries differ in economic policies, macroeconomic situation, financial institutions, results of the empirical studies cannot be generalized to other countries. Thus, it is necessary to analyze the financial development and economic growth relationship by country-case studies or panel data and evaluate results according to those countries economic situation, financial institutions and implemented policies. In addition, the most appropriate time span, data set, indicators and econometric methodology which best suits and reflects the features of the country must be chosen.
- According to the results of empirical part of our study, our main three hypotheses are verified. Our first hypothesis, “The banking sector development and economic growth is positively related after 1980s” is confirmed. The result of the VAR (1) model showed that there is a significant and positive relationship between private credits and real GDP. Diagnostic test results also support the stationarity of the model for the tested time period.
- Hypothesis 2, “There is a short run relationship between financial development and economic growth, but there is no long run relationship between variables” is confirmed. According to Johansen cointegration results, there are no cointegrating vectors between variables. There is no long run relationship between variables. But, VAR Granger causality test results reveal

short-term relationship between credits given to private sector and real GDP after 1980s.

- Lastly, the third hypothesis “The causality between financial development and economic growth runs from economic growth to financial development for Turkey” is confirmed as a result of Granger causality test which revealed that although there is no short run relationship between the ratio of private credits to domestic credits, there is a significant short run relationship between credits given to private sector and real GDP which causality runs from GDP to private credits for the period after 1980s. Following the classical and neoclassical assumption of dichotomy, real variables in the economy are determined purely by real factors, not by monetary factors. In the long run, financial sector development does not have an effect on economic growth. The empirical result of this thesis confirms the demand-following hypothesis, a causal relationship from economic growth to financial development for Turkey between 1988 and 2012. In this pattern, financial sector responding passively to growth in the real economy. As the real sector grows, increased demand for financial services induces expansion in the financial sector.

- We can interpret the regression results as follows:
As the direction of causation runs from economic growth to financial development, the source of increasing banking sector credits is economic growth in Turkey. Additionally, extended banking credits in the last few years are not the source of investments in Turkey. The source of investments can be attributed to retained earnings, owners’ equity and foreign capital in Turkey and investment decisions of firms is an increasing function of these factors. Firms mostly use bank credits to meet their current expenses and maintain their business transactions. Besides, an increasing share of consumer credits in private sector credits indicate that most of the bank credits are used as personal loans by households that do not contribute to production.

- The financial system is not an engine of economic growth as it is claimed by endogenous growth theory. But financial system contributes to sustainable growth by providing liquidity when needed. Thus, sound financial system is necessary for healthy economic growth. From a more comprehensive perspective, policy makers should attach more importance to economic development than economic growth as Turkey is a developing country. Unless the provision of sound economic, social and political structure is completed, it is not possible to benefit from the developments of the financial system and economic growth.

BIBLIOGRAPHY

- AFŞAR, A.: 2007 “Finansal Gelişme ile Ekonomik Büyüme Arasındaki İlişki”, **Muhasebe ve Finansman Dergisi**, No.36, pp. 188-198.
- AGHION, P., HOWITT: 1992 P. “A Model of Growth through Creative Destruction,” **Econometrica**, 60/2, pp. 323-51.
- AGHION, P., HOWITT: 2009 P. **The Economics of Growth**, The MIT Press, London.
- AKGÜÇ, Ö.: 1986 “Türkiye’de Döviz Sorunu”, **Banka ve Ekonomik Yorumlar**, No: 5.
- ALLEN, F., D. GALE: 1999 **Comparing Financial Systems**, Cambridge, MA: MIT Press.
- AKKAY, R. C.: 2010 “Gelişmekte Olan Piyasalarda Finansal Gelişme Ekonomik Büyüme İlişkisi: Türkiye Örneği”, İstanbul Üniversitesi İktisat Anabilim dalı Doktora tezi, İstanbul.
- AKYÜZ A.: 2002 “Türk Sermaye Piyasaları: İlk 20 Yılım Özet Bilançosu”, **İktisat İşletme ve Finans Dergisi**, No. 201, pp. 5-9.
- ALTUNÇ, Ö. F.: 2008 “Türkiye’de Finansal Gelişme ve Ekonomik Büyüme arasındaki Nedenselliğin Ampirik bir Analizi”, **Eskişehir Osmangazi İBBF Dergisi**, pp. 113-127.
- ANG, J. B.: 2008 “A Survey of Recent Developments in the Literature of Finance and Growth”, **Journal of Economic Surveys**, Vol. 22, pp. 538-540.
- ARESTIS, P., P.O. DEMETRIADES: 1997 “Financial Development and Economic Growth Assessing the Evidence”, **Economic Journal**, Vol.107, pp.783-799.

- ARESTIS, P., P.O.
DEMETRIADES, , K.
LUIINTEL,: 2001 “Financial Development and Economic Growth: The Role of Stock Markets”, **Journal of Money, Credit, and Banking**, 33/1, pp. 16-41.
- ARIN, T.: 2004 “Türkiye’de Mali Küreselleşme ve Mali Birikimle Reel Birikimin Birbirinden Kopması”, **1. Küresel Düzen: Devlet ve Sınıflar, İktisat Üzerine Yazılar**, Korkut Boratav’a Armagan, Edited by Ahmet Haşim KÖSE, Fikret ŞENSES, Erinç YELDAN, İletişim Yayınları, İstanbul.
- ARROW, K. J: 1964 “The Role of Securities in the Optimal Allocation of Risk Bearing,” **Review of Economic Studies**, Vol.2, pp. 91-96.
- ARTUN, T.: 1983 **İşlevi-Gelişimi-Özellikleri ve Sorunlarıyla Türkiye’de Bankacılık**, Tekin Yayınevi, İstanbul.
- ASLAN, Ö., İ.
KÜÇÜKAKSOY: 2006 “Finansal Gelişme ve Ekonomik Büyüme İlişkisi: Türkiye Ekonomisi Üzerine Ekonometrik Bir Uygulama”, **İstanbul Üniversitesi İktisat Fakültesi Ekonometri ve İstatistik Dergisi**, Vol. 4, pp. 12-28.
- ASTERIOU, D.: 2006 **Applied Econometrics: A Modern Approach Using Eviews and Microfit**, Palgrave MacMillan.
- ASTERIOU, D., S. G.
HALL: 2007 **Applied Econometrics**, Palgrave MacMillian.
- ATJE, R., B.
JOVANOVIĆ,: 1993 “Stock markets and development”, **European Economic Review**, Elsevier, 37/2-3, pp. 632-640.
- BAKAN, S.: 2002 “Osmanlı’dan Günümüze Türk Bankacılık Kesimi”, **İktisat Dergisi**, No. 417, pp. 31–39.
- BARRO R.J.: 1991 “Economic Growth in a Cross Section of Countries”, **Quarterly Journal of Economics**, Vol.106 , pp.407-443

- BECK, T. et. al.: 2006 “The Determinants of Financing Obstacles”, **Journal of International Money and Finance**, 25/6, pp. 932-952.
- BECK, T. et. al.: 2008 “Finance, Firm Size, and Growth”, **Journal of Money, Banking and Credit**, 40/7, pp. 1379-1405.
- BECK, T., A.
DEMİRĞÜÇ-KUNT, V.
MAKSIMOVIC: 2005 “Financial and Legal Constraints to Firm Growth: Does Size Matter?”, **Journal of Finance**, 60/1, pp. 137-177.
- BECK, T., R. LEVINE: 2004 “Stock Markets, Banks, and Growth: Panel Evidence”, **Journal of Banking and Finance**, 28/3, pp. 423-442.
- BECK, T., R. LEVINE,
N. LOAYZA: 2000 “Finance and the Sources of Growth”, **Journal of Financial Economics**, 58/1, pp. 261-300.
- BELL, C., P. L.
ROUSSSEAU: 2001 “Post-Independence India: A Case of Finance Lend Industrialization”, **Journal of Development Economics**, Vol. 65.
- CLAESSENS, S., L.
LAEVEN: 2003 “Financial Development, Property Rights, and Growth”, **Journal of Finance**, 58/6, pp. 2401-2436.
- BENHABIB, J., M.M.
SPIEGEL: 2000 “The Role of Financial Development in Growth and Investment”, **Journal of Economic Growth**, 5/4, pp.341-360.
- BENCIVENGA,
VALERIE R., D.
BRUCE: 1991 “Financial Intermediation and Endogenous Growth,” **Review of Economic Studies**, 58/2, pp. 195-209.
- BERNANKE, B., M.
GERTLER: 1989 “Agency Costs, Net Worth, and Business Fluctuations,” **American Economic Review**, 79/1, pp. 14-31.
- BERTHELEMY, J.C., A.
VAROUDAKIS: 1995 **Thresholds in financial development and economic growth**, The Manchester School Supplement.
- BERTHELEMY, J.C., A.
VAROUDAKIS: 1996 “Economic Growth, Convergence Clubs, and the Role of Financial Development,” **Oxford Economic Papers**,

48/2, pp. 300-328.

- BHIDE, A.: 1993 “The Hidden Costs of Stock Market Liquidity”, **Journal of Financial Economics**, 34/1, pp. 1-51.
- BOYD, J., E.
PRESCOTT: 1986 “Financial Intermediary-Coalitions.” **Journal of Economic Theory**, 38/2, pp. 211-32.
- CALDERÓN, C., L.
LIU: 2002 “The Direction of Causality between Financial Development and Economic Growth”, **Central Bank of Chile Working Papers**, No. 184.
- CAROSSO, V.: 1970 **Investment Banking in America**, Cambridge, MA: Harvard U. Press.
- CHRISTOPOULOS, D.K., E.G.
TSIONAS:2004 “Financial Development and Economic Growth: Evidence from Panel Unit Root and Cointegration Tests”, **Journal of Development Economics**, 73/1, pp. 55-74
- CIVAN M., M.
KAYACAN: 2002 “Türkiye Ekonomisinin Finansman Dengesinin Sermaye Piyasası Açısından İncelenmesi (1990-2002)”, **İktisat İşletme ve Finans Dergisi**, No. 201, pp. 87-103.
- ÇELEBİ İ.: 1991 **Dışa Açık Büyüme**, e Yayınları, İstanbul.
- ÇETİNTAŞ, H., S.
BARIŞIK: 2003 “Türkiye’de Bankalar, Sermaye Piyasası ve Ekonomik Büyüme: Koentegrasyon ve Nedensellik Analizi (1989-2000)”, **İMKB Dergisi**, Vol.7, pp. 1-16.
- COŞKUN, M., M.
BAŞER: 2002 **Bankacılık Uygulamaları**, Anadolu Üniversitesi Yayın No: 1361, Eskişehir.
- CRAFTS, N.: 2008 **Solow And Growth Accounting: A Perspective From Quantitative Economic History**, University Of Warwick.

- DAVIDSON, R., J. MACKINNON: 1993 **Estimation and Inference in Econometrics**, Oxford University Press.
- DEMETRIADES, P. O., A. H. KHALED: 1996 “Does Financial Development Cause Economic Growth? Time Series Evidence from 16 Countries”, **Journal of Development Economics**, Vol.51, pp. 387-411.
- DEMİR, Y., E. ÖZTÜRK, M. ALBENİ: 2007 “Türkiye’de Finansal Piyasalar ile Ekonomik Büyüme İlişkisi”, **Karamanoğlu Mehmetbey Üniversitesi İktisadi ve İdari Bilimler Fakültesi Dergisi**, Vol.13, pp. 438-455.
- DEMİRGÜÇ-KUNT, A., I. LOVE, V. MAKSIMOVIC: 2006 “Business Environment and the Incorporation Decision”, **Journal of Banking and Finance**, 30/11, pp. 2967-2993.
- DEMİRGÜÇ-KUNT, A., R. LEVINE: 2001 **Financial Structure and Economic Growth, A Cross-Country Comparison of Banks, Markets, and Development**, The MIT Press Cambridge, Massachusetts London, England.
- DEMİRGÜÇ-KUNT, A., R. LEVINE: 2008 **Finance, Financial Sector Policies, and Long-Run Growth**, Policy Research Working Paper, The World Bank, Washington, DC.
- DEMİRGÜÇ-KUNT, A., MAKSIMOVIC, V.: 1998 “Law, Finance and Firm Growth”, **Journal of Finance**, 53/6, pp. 2107-2137.
- DEMİRGÜÇ-KUNT, A., V. MAKSIMOVIC: 2001 “Funding Growth in Bank-Based and Market-Based Financial Systems: Evidence from Firm Level Data”, **Journal of Financial Economics**, 65/3, pp.337-363.
- DE LONG, J. B.: 1991 “Did J. P. Morgan’s Men Add Value? An Economist’s Perspective on Financial Capitalism,” in inside **The business enterprise: Historical perspectives on the use of information**. Ed. PETER TEMIN. Chicago: U. Of Chicago Press, pp. 205-36.

- DIAMOND, D.: 1984 “Financial Intermediation and Delegated Monitoring,” **Review of Economic Studies**, 51/3, pp. 393–414.
- DIAMOND, D. W., P. H. DYBVIK: 1983 “Bank Runs, Deposit Insurance, and Liquidity,” **Journal of Political Economy**, 91/3, pp. 401-419.
- DOĞAN, H.: 2002 “Finansal Derinleşme ve Ekonomik Büyüme İlişkisi: Türkiye Örneği”, **İktisat, İşletme ve Finans**, Vol. 190, pp. 60-71.
- DOĞU M.: 1996 “Gelişen Hisse Senedi Piyasaları ve Türkiye”, **Sermaye Piyasası Kurulu**, Ankara, No: 27.
- DUMRUL, C.: 2010 “**Finansal Sistemin Gelişimi ve Ekonomik Büyüme: Teori ve Türkiye Uygulaması**”, Erciyes Üniversitesi İktisat Doktora Tezi, Kayseri.
- EDWARDS, S.: 1996 “Why are Latin America’s savings rates so low? An international comparative analysis”, **Journal of Development Economics**, Vol. 51, pp. 5-44.
- ENDERS, W.: 2004 **Applied Econometric Series**, Second Edition, John Wiley and Sons Press.
- ENGLE, R. F., C. W. J. GRANGER: 1987 “Co-integration and Error-correction: Representation, estimation and testing”, **Econometrica**, 55, pp. 251-276.
- ESTRADA, G., A. RAMAYANDI, P. DONGHYUN: 2010 **Financial Development and Economic Growth in Developing Asia**, No. 233.
- FISHER, R.: 1954 **Statistical Methods for Research Workers**, Edinburgh (Oliver and Boyd), 12th Ed.
- FITZGERALD, V.: 2006 “Financial Development and Economic Growth: A Critical View”, Background paper for **World Economic and Social Survey 2006**, Oxford University.

- GERSCHENKRON, A.:1962 **Economic Backwardness in Historical Perspective. A Book of Essays**, Cambridge, MA: Harvard University Press.
- GOLDSMITH, R.W.: 1969 **Financial Structure and Development**, New Haven, CT: Yale University Press.
- GRANGER, C. W. J.: 1969 “Investigating Causal Relations by Econometric Models and Cross-spectral Methods”, **Econometrica**, 37/3, pp. 424–438.
- GREENWOOD J., B. JOVANOVIĆ: 1990 “Financial Development, Growth and the Distribution of Income”, **Journal of Political Economy**, Vol. 98, pp. 1076-1107.
- GREGORIO, J.D., P.E.GUIDOTTI: 1995 “Financial Development and Economic Growth”, **World Development**, Vol. 23, pp. 433-448.
- GROSSMAN, G. M., E.HELPMAN:1991 “Quality Ladders in the Theory of Growth,” **Review of Economic Studies**, 58/1, pp. 43-61.
- GROSSMAN, S. J., J. E. STIGLITZ: 1980 “On the Impossibility of Informationally Efficient Markets”, **American Economic Review**, 70/3, pp. 393-408.
- GUJARATI, D.: 2004 **Basic Econometrics**, McGrawHill Companies.
- GUPTA, K. L.: 1984 **Finance and Growth in Developing Countries**, Croom Helm, London.
- GURLEY, J., E. SHAW: 1955 “Financial Aspects of Economic Development”, **American Economic Review**, Vol. 45, pp. 515-537.
- GÜNAL, M.: 2001 **Türk Bankacılık Sektörünün Sorunları ve Geleceği**, Ankara Ticaret Odası Yayını, Ankara.

- HABIBULLAH, M. S.: 1999 “Financial Development and Economic Growth in Asian Countries: testing the financial-led growth hypothesis”, **Saving and Development**, 23/3, pp. 279-291.
- HALICIOĞLU, F.: 2007 “The Financial Development and Economic Growth Nexus for Turkey”, **MRPA Paper**, No: 3566, 2007, pp.1-10.
- HAN, E.: 2001 **Türkiye Ekonomisi**, Anadolu Üniversitesi Yayınları No: 1583, Eskişehir.
- HANSSON P., L. JONUNG: 1997 “Finance and Economic Growth: The Case of Sweden 1834- 1991”, **Research in Economics**, Vol. 51, pp. 275-301.
- HASSAN, M. K.: 2000 “Financial Development and Economic Growth: What we know and what we can do about it?” **University of New Orleans**, USA.
- HASSAN, M. K., B. SANCHEZ, J.S.YU: 2011 “Financial Development and Economic Growth: New evidence from panel data”, **The Quarterly Review of Economics and Finance**, 51/1, pp. 88-104.
- HENDRY, D. F., K. JUSELIUS,: 2000 “Explaining Cointegration Analysis: PartII”, Discussion Papers, **Department of Economics University of Copenhag**, No.00-20.
- HICKS, J.: 1969 **A Theory of Economic History**, Oxford: Clarendon Press, pp. 143-45.
- İNCEKARA, A.: 2011 **Bankacılık ve Finansal Kurumlar**, İktisadi Araştırmalar Vakfı, İstanbul.
- İSAGİLLER, A.: 2001 **İçsel Büyüme Modelleri**, İ.Ü. Sosyal Bilimler Enstitüsü, No: 2826.
- JOBOME, G. O.: 2002 **The Financial System and Economic Growth in the**

United Kingdom: A Disaggregated Time Series Approach, The Business School and the Department of Economics, Loughborough University.

- JOHANSEN, S.: 1988 “Statistical Analysis of Cointegration Vectors”, **Journal of Economic Dynamics and Control**, 12, pp. 231–254.
- JOHANSEN, S.: 1991 “Estimating and Testing Cointegration Vectors in Gaussian Vector Autoregressive Models”, **Econometrica**, 59, pp. 1551–1580.
- JUNG, W.S.: 1986 “Financial Development and Economic Growth: International Evidence”, **Economic Development and Cultural Change**, Vol. 34, pp. 333- 346.
- KAR, M: 2001 “Finansal Kalkınma ve Ekonomik Büyüme Arasındaki Nedensellik İlişkisi: Türkiye Örneği”, **Dokuz Eylül Üniversitesi İşletme Fakültesi Dergisi**, 2/2.
- KAR, M., E. J. PENTECOST: 2000 “Financial Development and Economic Growth in Turkey: Further Evidence on Causality Issue”, Loughborough University Department of Economics, **Economic Research Paper No: 00/27**, pp.4-13.
- KESKIN E., M. ALPARSLAN, E.A. İNAN: 2004 “Türk Bankacılık Sektörü”, **Bankacılar Dergisi**, No. 49, pp. 68-99.
- KILIÇ, E.: 2008 “**An Empirical Analysis of the Relationship between Financial Deepening and Economic Growth: The Case of Turkey**”, Master Thesis, Middle East Technical University, The Department of Economics.
- KING, R. G., R. LEVINE: 1993 “Finance and Growth: Schumpeter Might Be Right.” **Quarterly Journal of Economics**, Vol. 108, pp. 717-738.
- KUTLAR, A.: 2000 **Ekonometrik Zaman Serileri**, Pearson Education

Yayıncılık, İstanbul.

- LA PORTA, R. et.al.: 1997 “Legal Determinants of External Finance”, **Journal of Finance**, 1997, 52/3.
- LAMOREAUX, N. R.: 1994 **Insider lending: Banks, personal connections, and economic development in industrial New England**, New York: Cambridge U. Press.
- LEVINE, R.: 1997 “Financial Development and Economic Growth: Views and Agenda”, **Journal of Economic Literature**, 35/2, pp. 690-702.
- LEVINE, R.: 2002 “Bank-based or market-based financial systems: which is better?” **Journal of Financial Intermediation**, 11/4, 2002, pp. 398-428.
- LEVINE, R., N. LOAYZA, T. BECK: 2000 “Financial Intermediation and Growth: Causality and Causes”, **Journal of Monetary Economics**, Elsevier, 46/1, pp. 31-77.
- LEVINE, R., S. ZERVOS: 1998 “Stock Markets, Banks, and Economic Growth.” **American Economic Review**, 88/3, pp.537-558.
- LUCAS, R. E., Jr.: 1988 “On the Mechanics of Economic Development”, **Journal of Monetary Economics**, 22/1, pp. 3-42.
- LUCAS, R. E. Jr.: 1990 “Endogenous Technological Change,” **Journal of Political Economy**, 98/5, pp. 71-102.
- LUINTEL, K. B., M. KHAN: 1993 “A Quantitative Reassessment of the Finance-Growth Nexus: Evidence from A Multivariate VAR”, **Journal of Development Economics**, Vol. 60, pp. 381-405.
- MCKINNON, R. I.: 1973 **Money and Capital in Economic Development**, Washington, D. C.: Brookings Institution.

- MERTON, R. C.: 1992 “Financial Innovation and Economic Performance,” **Journal of Applied Corporate Finance**, 4/4.
- MISHKIN, F. S.: 2004 **The Economics of Money, Banking and Financial Markets**, Pearson Press, 7th Edition.
- MUCUK, M., M. T. DEMİRSEL: 2009 “Türkiye’de Doğrudan Yabancı Yatırımlar ve Ekonomik Performans”, **Selçuk Üniversitesi Sosyal Bilimler Enstitüsü Dergisi**, No. 21.
- NEUSSER, K., K. MAURICE: 1998 “Manufacturing Growth and Financial Development: Evidence from OECD Countries”, **Review of Economics and Statistics**, 80/4, pp.636-646.
- ODEDOKUN, M.O.: 1996 “Alternative Econometric Approaches for Analyzing The Role of the Financial Sector in Economic Growth: Time-Series Evidence From LDCs”, **Journal Of Development Economics**, Vol.50, pp. 119-146.
- ÖZCAN, B., ARI, A.: 2011 “Finansal Gelişme ve Ekonomik Büyüme Arasındaki İlişkinin Ampirik Bir Analizi: Türkiye Örneği, **Business and Economics Research Journal**, 2/1, pp. 121-142.
- ÖZİNCE, E.: 2008 “Finansal Sektör-Uluslararası Gelişmeler ve Türkiye Deneyimi”, **12. Dünya Muhasebe Tarihçileri Kongresi Açılış Bildirisi**.
- PAGANO, M.: 1993 “Financial Markets and Growth: An Overview”, **European Economic Review**, 37/2, pp. 613-622.
- PATRICK, H.T.: 1966 “Financial Development and Economic Growth in Underdeveloped Countries”, **Economic Development and Cultural Change**, Vol. 14, pp. 174-89.
- RAHMAN, M., M. MUSTAFA: 1997 “Dynamics of Real Exports and Real Economic Growths in 13 Selected Asian Countries”, **Journal of Economic**

- Development,**
22/2, pp. 81-95.
- PHILLIPS, C. B., P.
PERRON: 1988 “Testing For A Unit Root In Time Series Regression”,
Biometrika, 75/2, pp. 335-346.
- RAJAN, R. G., L.
ZINGALES:1998 Financial Dependence and Growth, **American
Economic Review**, 88/3, pp. 559-586.
- RAWDANOWICZ, L.:
2010 “The 2008-09 Crisis in Turkey Performance, Policy
Responses and Challenges for Sustaining the Recovery”,
OECD Economics Department Working Papers, No.
819.
- REBELO, S. T.: 1991 “Long-Run Policy Analysis and Long-Run Growth,”
Journal of Political Economy, 99/3, pp. 500-521.
- RIOJA, F., N. VALEV:
2004 “Does One Size Fit All? A Reexamination of the Finance
and Growth Relationship”, **Journal of Development
Economics**, Vol.74, pp.429-447.
- ROMER, P. M.: 1986 “Increasing Returns and Long-run Growth”, **Journal of
Political Economy**, 94/5, pp. 1002-1037.
- ROUSSEAU, P.L.,P.
WACHTEL: 2002 “Inflation Thresholds and the Finance-Growth Nexus”,
Journal of International Money and Finance, 21/6,
pp. 777-793.
- ROUSSEAU, P., P.
WACHTEL: 2007 “What is Happening to the Impact of Financial
Deepening on Economic Growth?”, **Working Paper
New York University**.
- ROUSSEAU, P.
P.,WACHTEL: 2005 “Economic Growth and Financial Depth: Is the
Relationship Extinct Already?”, **WIDER Discussion
Paper**, Vol.10.

- SHAW, E. S.: 1973 **Financial Deepening in Economic Development**, New York: Oxford University Press.
- SIMS, C. A., E. M. LEEPER: 1994 “Towards a Modern Macroeconomic Model Usable for Policy Analysis”, **NBER Working Paper**, No: 4761.
- SIRRI, E. R., P. TUFANO: 1995 “The Economics of Pooling,” in **The global financial system: A functional perspective**. Eds.: DWIGHT B. CRANE et al. Boston, MA: Harvard Business School Press, pp. 81–128.
- SOLOW, R. M.: 1956 “A Contribution to the Theory of Economic Growth”, **Quarterly Journal of Economics**, Vol.70, pp. 65–94.
- SOMEL, C. et al.: 2004 **Türkiye Ekonomisi**, Anadolu Üniversitesi Yayınları No: 1579, Eskişehir.
- SÖNMEZ, S.: 2004 “Türk İktisat Politikalarındaki Çıpa: Dış Borçlanma”, **İktisadi Kalkınma, Kriz ve İstikrar (İktisat Üzerine Yazılar – II)**, Edited by Ahmet Haşim KÖSE, Fikret ŞENSES, Erinç YELDAN, İletişim Yayınları, İstanbul.
- STIGLITZ, J.: 1998 “The Role of the Financial System in Development”, Presentation at the **Fourth Annual Bank Conference on Development in Latin America and the Caribbean, San Salvador**.
- STIGLITZ, J.E.: 1985 “Credit Markets and the Control of Capital”, **Journal of Money, Credit, and Banking**, 17/1, pp. 133-152.
- SWAN, T. W.:1956 “Economic Growth and Capital Accumulation”, **Economic Record**, Vol.32, pp. 334–361.
- SWANSON, N., C. W. J. GRANGER: 1997 “Impulse Response Functions based on the Causal Approach to Residual Orthogonalization in Vector Autoregressions”, **Journal of the American Statistical Association**, 92, pp. 357-367.
- ŞIKLAR, İ.: 2001 **Türkiye Ekonomisi**, Anadolu Üniversitesi Yayınları, Eskişehir.

- TARTAN, S., BERBER: 2004 M. “Kamu Kesimi Büyüklüğü ve Ekonomik Büyüme İlişkisi: Çoklu Koentegrasyon Analizi”, **Cumhuriyet Üniversitesi İİBF Dergisi**, 5/2.
- TSURU, K.: 2000 “Finance and Growth: Some Theoretical Considerations, and a Review of the Empirical Literature”, **OECD Economics Department Working Papers**, No. 228.
- TURAN, T. :2001 “Neoklasik Büyüme Modeli ve Koşullu Yakınsama Hipotezi”, **İstanbul Üniversitesi Maliye Araştırma Merkezi Konferansları**, Vol. 39.
- TURAN, T.: 2008 **İktisadi Büyüme Teorisine Giriş**, Yalın Yayıncılık, İstanbul, 1. Basım.
- TURGUT, A: 2006 **Finansal entegrasyon ve finansal krizler: Türkiye örneği (1994, 2000 ve 2001 krizleri)**, Selçuk Üniversitesi, Sosyal Bilimler Enstitüsü, Doktora tezi.
- TUTCUOĞLU, R. S.: 2010 **“Dünyada ve Türkiye’de Bireysel Bankacılığın Gelişme Nedenleri ve Bankacılık Sektörü Açısından Oluşturduğu Riskler”**, Yayınlanmış Yüksek Lisans Tezi, İstanbul Ticaret Üniversitesi Sosyal Bilimler Enstitüsü.
- UNITED NATIONS PUBLICATIONS, 2008 “Assessing Regional Integration in Africa 2008”, **Towards Monetary and Financial Integration in Africa**.
- UTKULU, U.: 1997 “How to Estimate Long Run Relationships in Economics: An Overview of Recent Approaches”, **Dokuz Eylül Üniversitesi İİBF Dergisi**, 12/2.
- WORLD BANK, 2001 **Finance for Growth: Policy Choices in a Volatile World**, A World Bank Policy Research Report, Washington D.C.: World Bank.
- XU, Z.: 2000 “Financial development, investment, and economic growth”, **Economic Inquiry**, 38/2, pp. 331-344.
- WEF : 2011 “The Financial Development Report 2011”, **World Economic Forum**, New York: USA Inc.

- WURGLER, J.: 2000 “Financial Markets and the Allocation of Capital”, **Journal of Financial Economics**, 58/1, pp.187-214.
- YELDAN, E.: 2009 **The Economics of Growth and Distribution**, Eflatun Yayınevi, 1. basım, pp.113-114.
- YELDAN, E.: 2004 “Türkiye Ekonomisinde Dış Borç Sorunu ve Kalkınma Stratejileri Açısından Analizi”, **Çalışma ve Toplum Dergisi**, No: 1.
- YILDIRIM, O.:2004 “Türk Bankacılık Sektöründe Yasanan Finansal Krizler (1980 – 2002), **İktisat Dergisi**, No: 453, İstanbul.
- ZIVOT, E., J. WANG: 2006 **Modeling Financial Time Series with S-PLUS**, Springer Science, Business Media Incorporated.

APPENDICES

APPENDIX I: DATA SET OF THE ECONOMETRIC ANALYSIS

YEARS	GDP	PRY	PCDC
1988Q1	1.475.340.000	1,765451632	0,608959
1988Q2	1.683.870.000	2,741544322	0,617757
1988Q3	2.573.780.000	2,540659315	0,599109
1988Q4	1.897.630.000	1,741943756	0,622509
1989Q1	1.439.490.000	2,675347671	0,62626
1989Q2	1.655.710.000	4,102980917	0,653217
1989Q3	2.590.250.000	3,858912491	0,667808
1989Q4	1.964.380.000	2,730663063	0,693458
1990Q1	1.594.240.000	4,275572954	0,717043
1990Q2	1.876.270.000	6,084980931	0,732144
1990Q3	2.752.090.000	5,97649059	0,735199
1990Q4	2.135.250.000	4,511491267	0,751619
1991Q1	1.587.210.000	6,982086407	0,704281
1991Q2	1.867.280.000	10,38602957	0,716618
1991Q3	2.860.710.000	9,652949745	0,71213
1991Q4	2.120.080.000	6,925368178	0,6743
1992Q1	1.717.530.000	11,08281763	0,651245
1992Q2	1.973.020.000	16,32363336	0,637633
1992Q3	3.013.800.000	16,47587962	0,660859
1992Q4	2.235.690.000	12,15159931	0,678788
1993Q1	1.801.970.000	19,90031266	0,692725
1993Q2	2.196.410.000	30,44186085	0,688263
1993Q3	3.237.210.000	29,50089464	0,713928
1993Q4	2.423.460.000	23,23281777	0,699295
1994Q1	1.895.490.000	36,49706618	0,643368
1994Q2	1.961.680.000	52,86143952	0,649091
1994Q3	2.984.590.000	55,65698279	0,645875
1994Q4	2.290.310.000	37,00463715	0,66517
1995Q1	1.867.120.000	59,35220996	0,711224
1995Q2	2.227.240.000	93,67140302	0,735184
1995Q3	3.252.480.000	93,79871051	0,800698
1995Q4	2.441.940.000	77,01577873	0,796705
1996Q1	2.029.010.000	133,6717855	0,79132
1996Q2	2.407.150.000	207,3361344	0,824208
1996Q3	3.424.590.000	199,170409	0,826066
1996Q4	2.613.760.000	172,2359319	0,844162
1997Q1	2.169.270.000	302,5846176	0,821448
1997Q2	2.611.070.000	458,8672779	0,841638
1997Q3	3.665.540.000	471,6551567	0,869531
1997Q4	2.817.240.000	410,5355036	0,877417
1998Q1	2.369.730.000	663,1307237	0,897031

1998Q2	2.695.960.000	962,6222861	0,935653
1998Q3	3.763.270.000	1010,049096	0,925683
1998Q4	2.782.400.000	798,9318678	0,915914
1999Q1	2.175.860.000	1101,654701	0,914565
1999Q2	2.636.880.000	1522,302864	0,919323
1999Q3	3.527.910.000	1393,868591	0,918626
1999Q4	2.723.950.000	1152,4296	0,895353
2000Q1	2.297.860.000	1631,44173	0,896763
2000Q2	2.819.540.000	2193,190099	0,910252
2000Q3	3.804.640.000	2074,68314	0,914148
2000Q4	2.956.870.000	1786,0729	0,906938
2001Q1	2.275.060.000	2564,251117	0,886847
2001Q2	2.543.580.000	3571,492049	0,87028
2001Q3	3.518.690.000	3315,595067	0,860138
2001Q4	2.651.200.000	2561,320804	0,852497
2002Q1	2.327.350.000	3501,140276	0,86112
2002Q2	2.771.170.000	3798,169678	0,845973
2002Q3	3.800.000.000	3044,44177	0,831699
2002Q4	2.962.710.000	2235,488579	0,855325
2003Q1	2.515.580.000	3047,820948	0,883593
2003Q2	2.879.920.000	4070,349224	0,897943
2003Q3	4.008.580.000	3833,596072	0,903718
2003Q4	3.144.440.000	2954,915007	0,906727
2004Q1	2.813.070.000	4432,685661	0,910108
2004Q2	3.293.550.000	5426,548468	0,918038
2004Q3	4.219.630.000	5679,692429	0,92481
2004Q4	3.343.010.000	4902,120328	0,92644
2005Q1	2.998.300.000	6736,385204	0,930459
2005Q2	3.474.790.000	8111,822866	0,936333
2005Q3	4.545.090.000	7942,218839	0,938059
2005Q4	3.659.890.000	6731,893846	0,923836
2006Q1	3.197.890.000	9331,114214	0,896603
2006Q2	3.761.490.000	11582,24329	0,89945
2006Q3	4.762.460.000	11505,28557	0,901145
2006Q4	3.851.400.000	9787,940203	0,897838
2007Q1	3.416.830.000	12731,88555	0,896606
2007Q2	3.917.230.000	15037,31388	0,895075
2007Q3	4.832.890.000	13916,53847	0,891201
2007Q4	4.658.420.000	12050,73424	0,889124
2008Q1	3.656.000.000	13325,85982	0,888075
2008Q2	4.019.070.000	18367,63135	0,888506
2008Q3	4.876.380.000	18283,70125	0,885797
2008Q4	4.332.330.000	15956,57744	0,881278
2009Q1	3.118.560.000	18247,91145	0,872621
2009Q2	3.705.580.000	24505,94816	0,866228
2009Q3	4.739.840.000	20761,16138	0,859789
2009Q4	4.076.720.000	16711,9149	0,858559
2010Q1	3.511.500.000	20447,35243	0,861554
2010Q2	4.090.970.000	25561,98764	0,866397

2010Q3	4.991.050.000	24421,65364	0,868765
2010Q4	4.455.860.000	21695,24323	0,869044
2011Q1	3.929.370.000	26488,85804	0,876535
2011Q2	4.463.240.000	33373,64791	0,884088
2011Q3	5.410.300.000	32444,86841	0,887946
2011Q4	4.687.560.000	29091,10269	0,887601
2012Q1	4.055.100.000	35242,49686	0,884785
2012Q2	4.592.670.000	41702,41533	0,882872
2012Q3	5.496.860.000	39057,79862	0,881635
2012Q4	4.753.180.000	33843,95318	0,880861

APPENDIX 2: EViews OUTPUTS

ADF Unit Root Tests

Null Hypothesis: LNGDP_SA has a unit root
 Exogenous: Constant
 Lag Length: 5 (Automatic based on AIC, MAXLAG=12)

	t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic	-0.571013	0.8709
Test critical values: 1% level	-3.501445	
5% level	-2.892536	
10% level	-2.583371	

Null Hypothesis: LNPCDC has a unit root
 Exogenous: Constant, Linear Trend
 Lag Length: 8 (Automatic based on AIC, MAXLAG=12)

	t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic	-1.601820	0.7848
Test critical values: 1% level	-4.062040	
5% level	-3.459950	
10% level	-3.156109	

Null Hypothesis: LNPRY_SA has a unit root
 Exogenous: Constant, Linear Trend
 Lag Length: 2 (Automatic based on AIC, MAXLAG=12)

	t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic	-0.564311	0.9787

Test critical values:	1% level	-4.055416
	5% level	-3.456805
	10% level	-3.154273

Null Hypothesis: D(LNGDP_SA) has a unit root
 Exogenous: None
 Lag Length: 0 (Automatic based on AIC, MAXLAG=12)

	t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic	-11.23833	0.0000
Test critical values:	1% level	-2.588772
	5% level	-1.944140
	10% level	-1.614575

Null Hypothesis: D(LNPCDC) has a unit root
 Exogenous: None
 Lag Length: 6 (Automatic based on AIC, MAXLAG=12)

	t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic	-4.189873	0.0001
Test critical values:	1% level	-2.590340
	5% level	-1.944364
	10% level	-1.614441

Null Hypothesis: D(LNPRY_SA) has a unit root
 Exogenous: Constant, Linear Trend
 Lag Length: 1 (Automatic based on AIC, MAXLAG=12)

	t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic	-4.238730	0.0058
Test critical values:	1% level	-4.055416
	5% level	-3.456805
	10% level	-3.154273

*MacKinnon (1996) one-sided p-values.

Phillips Perron Unit Root Tests

Null Hypothesis: GDP has a unit root

Exogenous: None
 Bandwidth: 14 (Newey-West using Bartlett kernel)

	Adj. t-Stat	Prob.*
Phillips-Perron test statistic	0.349838	0.7841
Test critical values: 1% level	-2.588530	
5% level	-1.944105	
10% level	-1.614596	

*MacKinnon (1996) one-sided p-values.

Residual variance (no correction)	5.09E+17
HAC corrected variance (Bartlett kernel)	1.25E+17

Null Hypothesis: PCDC has a unit root
 Exogenous: Constant, Linear Trend
 Bandwidth: 4 (Newey-West using Bartlett kernel)

	Adj. t-Stat	Prob.*
Phillips-Perron test statistic	-1.719102	0.7355
Test critical values: 1% level	-4.053392	
5% level	-3.455842	
10% level	-3.153710	

*MacKinnon (1996) one-sided p-values.

Residual variance (no correction)	0.000295
HAC corrected variance (Bartlett kernel)	0.000456

Null Hypothesis: PRY has a unit root
 Exogenous: Constant, Linear Trend
 Bandwidth: 16 (Newey-West using Bartlett kernel)

	Adj. t-Stat	Prob.*
Phillips-Perron test statistic	0.476789	0.9991
Test critical values: 1% level	-4.053392	
5% level	-3.455842	
10% level	-3.153710	

*MacKinnon (1996) one-sided p-values.

Residual variance (no correction)	4177612.
HAC corrected variance (Bartlett kernel)	1858158.

Null Hypothesis: D(GDP) has a unit root
 Exogenous: Constant, Linear Trend
 Bandwidth: 13 (Newey-West using Bartlett kernel)

	Adj. t-Stat	Prob.*
Phillips-Perron test statistic	-17.74413	0.0000
Test critical values: 1% level	-4.054393	
5% level	-3.456319	
10% level	-3.153989	

*MacKinnon (1996) one-sided p-values.

Residual variance (no correction)	5.09E+17
HAC corrected variance (Bartlett kernel)	6.77E+16

Null Hypothesis: D(PCDC) has a unit root
 Exogenous: Constant, Linear Trend
 Bandwidth: 3 (Newey-West using Bartlett kernel)

	Adj. t-Stat	Prob.*
Phillips-Perron test statistic	-7.948575	0.0000
Test critical values: 1% level	-4.054393	
5% level	-3.456319	
10% level	-3.153989	

*MacKinnon (1996) one-sided p-values.

Residual variance (no correction)	0.000291
HAC corrected variance (Bartlett kernel)	0.000313

Null Hypothesis: D(PRY) has a unit root
 Exogenous: Constant, Linear Trend
 Bandwidth: 15 (Newey-West using Bartlett kernel)

	Adj. t-Stat	Prob.*
Phillips-Perron test statistic	-12.68918	0.0000
Test critical values:		
1% level	-4.054393	
5% level	-3.456319	
10% level	-3.153989	

*MacKinnon (1996) one-sided p-values.

Residual variance (no correction)	4225440.
HAC corrected variance (Bartlett kernel)	880285.7

Johansen Cointegration Test Results

Date: 07/17/13 Time: 09:47
Sample: 1988Q1 2012Q4
Included observations: 98
Series: LNPRY_SA LNGDP_SA LNPCDC
Lags interval: 1 to 1

Selected
(0.05 level*)
Number of
Cointegrating
Relations
by Model

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

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

Date: 07/18/13 Time: 11:40
Sample (adjusted): 1988Q3 2012Q4
Included observations: 98 after adjustments
Trend assumption: No deterministic trend (restricted constant)
Series: LNGDP_SA LNPCDC LNPRY_SA
Lags interval (in first differences): 1 to 1

Unrestricted Cointegration Rank Test (Trace)

Hypothesized No. of CE(s)	Eigenvalue	Trace Statistic	0.05 Critical Value	Prob.**
None	0.160664	33.65703	35.19275	0.0726
At most 1	0.121449	16.49288	20.26184	0.1526
At most 2	0.038070	3.803722	9.164546	0.4421

Trace test indicates no cointegration at the 0.05 level

* denotes rejection of the hypothesis at the 0.05 level

**MacKinnon-Haug-Michelis (1999) p-values

Unrestricted Cointegration Rank Test (Maximum Eigenvalue)

Hypothesized No. of CE(s)	Eigenvalue	Max-Eigen Statistic	0.05 Critical Value	Prob.**
None	0.160664	17.16415	22.29962	0.2234
At most 1	0.121449	12.68916	15.89210	0.1494
At most 2	0.038070	3.803722	9.164546	0.4421

Max-eigenvalue test indicates no cointegration at the 0.05 level

* denotes rejection of the hypothesis at the 0.05 level

**MacKinnon-Haug-Michelis (1999) p-values

Date: 07/18/13 Time: 11:41

Sample (adjusted): 1988Q3 2012Q4

Included observations: 98 after adjustments

Trend assumption: Linear deterministic trend

Series: LNGDP_SA LNPCDC LNPRY_SA

Lags interval (in first differences): 1 to 1

Unrestricted Cointegration Rank Test (Trace)

Hypothesized No. of CE(s)	Eigenvalue	Trace Statistic	0.05 Critical Value	Prob.**
None	0.123587	23.07632	29.79707	0.2423
At most 1	0.086799	10.14842	15.49471	0.2695
At most 2	0.012675	1.250128	3.841466	0.2635

Trace test indicates no cointegration at the 0.05 level

* denotes rejection of the hypothesis at the 0.05 level

**MacKinnon-Haug-Michelis (1999) p-values

Unrestricted Cointegration Rank Test (Maximum Eigenvalue)

Hypothesized	Max-Eigen	0.05
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No. of CE(s)	Eigenvalue	Statistic	Critical Value	Prob.**
None	0.123587	12.92790	21.13162	0.4589
At most 1	0.086799	8.898290	14.26460	0.2947
At most 2	0.012675	1.250128	3.841466	0.2635

Max-eigenvalue test indicates no cointegration at the 0.05 level

* denotes rejection of the hypothesis at the 0.05 level

**MacKinnon-Haug-Michelis (1999) p-values

Date: 07/18/13 Time: 11:41

Sample (adjusted): 1988Q3 2012Q4

Included observations: 98 after adjustments

Trend assumption: Linear deterministic trend (restricted)

Series: LNGDP_SA LNPCDC LNPRY_SA

Lags interval (in first differences): 1 to 1

Unrestricted Cointegration Rank Test (Trace)

Hypothesized No. of CE(s)	Eigenvalue	Trace Statistic	0.05 Critical Value	Prob.**
None	0.188676	38.00301	42.91525	0.1423
At most 1	0.108446	17.51236	25.87211	0.3777
At most 2	0.061909	6.263037	12.51798	0.4276

Trace test indicates no cointegration at the 0.05 level

* denotes rejection of the hypothesis at the 0.05 level

**MacKinnon-Haug-Michelis (1999) p-values

Unrestricted Cointegration Rank Test (Maximum Eigenvalue)

Hypothesized No. of CE(s)	Eigenvalue	Max-Eigen Statistic	0.05 Critical Value	Prob.**
None	0.188676	20.49065	25.82321	0.2162
At most 1	0.108446	11.24933	19.38704	0.4880
At most 2	0.061909	6.263037	12.51798	0.4276

Max-eigenvalue test indicates no cointegration at the 0.05 level

* denotes rejection of the hypothesis at the 0.05 level

**MacKinnon-Haug-Michelis (1999) p-values

Granger Causality Test Results

VAR Granger Causality/Block Exogeneity Wald Tests

Date: 07/17/13 Time: 09:53
 Sample: 1988Q1 2012Q4
 Included observations: 98

Dependent variable: DLNPRY_SA

Excluded	Chi-sq	df	Prob.
DLNPCDC	1.010818	1	0.3147
DLNGDP_SA	63.39825	1	0.0000
All	65.55588	2	0.0000

Dependent variable: DLNPCDC

Excluded	Chi-sq	df	Prob.
DLNPRY_SA	1.129518	1	0.2879
DLNGDP_SA	0.764973	1	0.3818
All	1.341242	2	0.5114

Dependent variable: DLNGDP_SA

Excluded	Chi-sq	df	Prob.
DLNPRY_SA	0.048772	1	0.8252
DLNPCDC	2.517299	1	0.1126
All	3.348460	2	0.1875

CV

BETÜL MUTLUGÜN

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