DOKUZ EYLÜL UNIVERSITY

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MASTER'S THESIS

THE IMPACT OF FINANCIAL DEVELOPMENT ON INCOME INEQUALITY: THE CASE FOR TURKEY

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APPROVAL PAGE

DECLARATION

I hereby declare that this master's thesis titled "The Impact of Financial Development on Income Inequality and Poverty: The Case for Turkey" has been written by myself in accordance with the academic rules and ethical conduct. I also declare that all materials benefited in this thesis consist of the mentioned resources in the reference list. I verify all these with my honor.

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ABSTRACT

Master's Thesis

The Impact of Financial Development on Income Inequality and Poverty: The Case for Turkey

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This thesis aims to examine the impact of financial development on income inequality by using data from 26 subregions of Turkey. The financial development indicator is the ratio of cash credits to GDP. Income inequality indicators are the S80/S20 ratio, Gini coefficient, and poverty level. The impact of financial development indicator on income inequality indicators is analyzed over the time period 2014-2017 by using pooled OLS estimation method. To test the robustness of the main empirical results, control variables are used. The control variables comprise of education level, inflation rate, unemployment rate, and population growth. Education level is accepted as a social capital indicator. The inflation rate and unemployment rate are macroeconomic indicators. According to the empirical results, financial development does not improve income inequality, contrary deteriorates it. However, control variables that are included in the model determine the impact of financial development. The results from the econometric analysis indicate that the structure of social capital and macroeconomic condition of Turkey are insufficient to support the financial development. Financial development, which cannot be established with a good social capital infrastructure and sound macroeconomic conditions distorts income distribution on the contrary to expectations of most of the literature.

Keywords: Financial Development, Income Inequality, Poverty

ÖZET

Yüksek Lisans Tezi

Finansal Gelişmenin Gelir Eşitsizliği Üzerindeki Etkisi:

Türkiye Örneği

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Bu tez, Türkiye'nin 26 alt bölgesinden elde edilen verileri kullanarak finansal kalkınmanın gelir eşitsizliği üzerindeki etkisini incelemeyi amaçlamaktadır. Finansal kalkınma göstergesi, nakit kredilerin GSYH'ye oranıdır. Gelir eşitsizliği göstergeleri S80/S20 oranı, gini katsayısı ve yoksulluk düzeyidir. Finansal kalkınma göstergesinin gelir eşitsizliği göstergelerine etkisi, 2014-2017 dönemi boyunca karma EKK tahmin yöntemi kullanılarak analiz edilmektedir. Ana ampirik sonuçların sağlamlığını test etmek için kontrol değişkenler kullanılmaktadır. Kontrol değişkenler eğitim seviyesi, enflasyon oranı, işsizlik oranı ve nüfus artışından oluşmaktadır. Eğitim seviyesi bir sosyal sermaye göstergesi olarak kabul edilmektedir. Enflasyon oranı ve işsizlik oranı ise makroekonomik göstergelerdir. Ampirik sonuçlara göre, finansal kalkınma gelir eşitsizliğini iyileştirmemekte, aksine bozmaktadır. Ancak, modele dahil edilen kontrol değişkenler finansal kalkınmanın bu etkisinde belirleyici olmaktadırlar. Ekonometrik analizden elde edilen sonuçlar, Türkiye'deki sosyal sermaye yapısının ve makroekonomik durumun finansal kalkınmayı desteklemek için yetersiz olduğunu göstermektedir. İyi bir sosyal sermaye

altyapısı ve sağlam makroekonomik koşullar ile kurulamayan finansal gelişme, literatürün çoğunun beklentilerinin aksine gelir dağılımını bozmaktadır.

Anahtar Kelimeler: Finansal Gelişme, Gelir Eşitsizliği, Yoksulluk

THE IMPACT OF FINANCIAL DEVELOPMENT ON INCOME INEQUALITY: THE CASE FOR TURKEY

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INTRODUCTION

In a global economy, the financial system is one of the most important components of economic development. The financial system fulfills its function through financial instruments, financial intermediaries, market, institutions, legal and institutional regulations. A strong and effective link between these units creates a developed financial system. However, the financial system is a system that includes risks and costs as well as benefits for a country's economy. With reference to the World Bank definition in the Global Financial Development Report 2015/2016, financial development is the elimination of costs arising in the financial market while fulfilling the main functions of the financial system. The theory argues that financial development has an impact on income distribution.

In 1911, Joseph Schumpeter advocated that an efficient financial system promotes economic growth and development. Financial intermediation has an impact on the allocation of savings. Therefore, financial development improves productivity, which accelerating economic growth (King and Levine, 1993). Simon Kuznets remarks at first time in 1955, the link between economic development and income inequality. Kuznets suggests that an inverted U shape hypothesis where on the first stages of economic development, deterioration is observed in the distribution of income. According to the hypothesis, the recovery phase is experienced in income distribution on the maturity stages of development (Kuznets, 1955). Since the late 1970s, the components of economic development began to change along with the effects of financial deregulation and globalization. Greenwood and Jovanovic (1990) hypothesize for the first time to introduce the link between financial development and income inequality that resembles the Kuznets hypothesis. In the financial deregulation process, the financial system has become even more important from the point of economic development and has placed an important role to decide on economic policies. Thus, studies on financial development and its effects have gained an essential place in the literature.

Turkey has transformed an open economy with the implementation of the financial deregulation policies under the control of the World Bank and IMF after 1980 and has been integrated into the global economy. The process of financial deregulation that is a component of international integration has created both benefits

and risks for the Turkish economy. In the process that began with the financial deregulation, banks have gradually turned away from their duty of intermediation and providing loans and turned into institutions financing public debts. It can be said that financial development cannot be achieved in such an environment in which the financial system does not fulfill its core functions. “Banks are one of the most important financial intermediaries and perhaps no sector than banking better illustrates both the potential benefits and perils of deeper international integration” (World Bank Group, 2015: 1). The banking sector in Turkey has regulated and supervised after the 2001 crisis. Adjustments have been made affecting the intermediation costs of banks. “Stamp tax and dues on loans, and the deduction from the resource utilization and support fund applied in commercial and corporate loans were abolished” (Yiğitoğlu, 2005: 119). In theory, a financial system that performs its base functions effectively and at a minimum cost, which is called financial development, should increase economic growth and reduce income inequality and poverty.

This thesis investigates the impact of financial development on income inequality in Turkey. Turkey is the fifth country with the highest income inequality among OECD countries and has not provided an improvement in income distribution over the past decade. In theory, financial development is expected to improve income distribution. The aim of this thesis is to examine the effect of financial development on income inequality in Turkey and use empirical methods in doing so. In the empirical analysis, regional data is used by collecting the data based on the Statistical Region, Level 2 (SR Level 2). Turkey has 26 subregions according to the SR Level 2 and this thesis obtain their data for each of the 26 subregions. The impact of financial development on income inequality is examined by using pooled OLS method for 26 subregions over the period 2014-2017. The ratio of private credit to GDP is used as an indicator of financial development. Private credit equals the value of credit by the financial intermediaries to the private sector divided by GDP (Beck et al., 2007; Clarke et al., 2006). In this thesis, the private credit equals the cash credit that is provided to the real and legal person by the banks in Turkey. Income inequality indicators are S80/S20 ratio, Gini coefficient, and poverty rate. To test the robustness of the main empirical results control variables are used. The control variables

comprise of education level, inflation rate, unemployment rate, and population growth. Education level is accepted as a social capital indicator. The inflation rate and unemployment rate are macroeconomic indicators.

The empirical results show that financial development does not improve income distribution. Although the main purpose of this thesis is to examine the effect of financial development on income inequality, some by-products are obtained from the predicted model. The education level that is an indicator of social capital has an impact on income inequality. In addition to this, the unemployment rate and inflation rate which are principal macroeconomic indicators have also an impact on income inequality. These indicators of social capital and macroeconomic condition are determinative on the impact of financial development indicators on income inequality indicators. These results indicate that the structure of the social capital and macroeconomic condition of Turkey are insufficient to support financial development.

Although Yeldan (2004) did not directly examine the relationship between financial development and income inequality, he stated that a new form of wealth accumulation emerged after 1980 with the financial deregulation process. Under these new conditions, income inequality increased as the share of non-wage income in national income increased. The expectation from trade liberalization and financial deregulation in Turkey was ensuring a more equitable distribution of national income. However, these theoretical expectations have not been realized in Turkey. Rajan and Zingales (2003) argue that social capital is a factor for the emergence of a developed financial sector of the country. Social capital is the inherited legal, cultural, educational and political system of a country. Turkey's inherited legal, educational and political structure may have not supported the financial development. Financial development, which cannot be established with a good social capital infrastructure and a sound macroeconomic condition, has distorted income distribution on the contrary to expectations.

The previous studies on financial development for Turkey generally emphasize the link between financial development and economic growth (Kar and Pentecost, 2000; Arvas, 2014; Aslan and Korap, 2006; Aslan and Küçüksoy, 2006) There are no sufficient specific studies on the connecting financial development and

income inequality for Turkey and Turkey has generally included in cross-country studies (Beck et al., 2007; Clarke et al., 2006). However, there are some studies examining the relationship between income inequality and financial development, even if they are limited (Zeren and Yilanci, 2011; Kar et al., 2011; Yeldan, 2004). Therefore, this thesis aims to contribute to the literature by presenting new findings. This thesis is constituted as follows: the first chapter reviews the literature; the second chapter gives information on data and methodology; the third chapter defines the financial development; the fourth chapter examines the income inequality in Turkey and the financial development in Turkey; the fifth chapter presents empirical results of the impact of financial development on income inequality in Turkey. The study ends with the conclusion section.

CHAPTER ONE
LITERATURE REVIEW

The financial system brings together the economic units that are in need of funding with the units that are in fund surplus and ensures that the savings are transferred to the investments. It fulfills this function through financial instruments, financial intermediaries, market, institutions, legal and institutional regulations. A strong and effective link between these units will create financial development.

Levine (1997) specifies the five key financial system functions as mobilizing savings, acquiring information about investments and allocating resources, risk diversification, facilitating exchange, observing managers and ensuring corporate control.

There is an interrelated link among income inequality, economic growth, poverty and financial development in the theory. This study narrows its conceptual focus by studying the impact of financial development on income inequality. However, the large body of the literature examining the effects of financial development benefits from the interrelated link (Beck et al., 2007; Jalilian and Kirkpatrick, 2007). Therefore, this study reviews the literature about the interrelated link in addition to the effect of financial development on income inequality.

First-generation studies that examined the effects of financial development focus on financial development's impact on economic growth (e.g. King and Levine, 1993(a), (b); Levine, 1997; Beck et al., 2000). These studies suggest that financial development affects income inequality by accelerating economic growth. Further, the level of poverty is affected by financial development indirectly by the changes in the levels of income inequality and economic growth. Evaluating the role of the development level of financial structure in economic growth is a necessary condition to easily draw a link among financial development, income inequality, and poverty.

Theoretical literature is reviewed in the first part of this section and empirical literature is reviewed in the second part of this section.

1.1. THEORETICAL LITERATURE

The view that the financial system promotes economic growth is reached back up to Schumpeter (1911). Joseph Schumpeter advocated that an efficient financial system promotes economic development (King and Levine, 1993). Financial intermediation has an impact on the allocation of savings. Therefore, it improves productivity and economic growth.

In Greenwood and Jovanovic (1990), progress in financial intermediation and economic growth are in an interaction with together. The effect of the level of financial development on the distribution of income depends on the level of economic development. In that regard, Greenwood and Jovanovic (1990) refer to an inverted U-shape where financial development, economic development, and income inequality in interaction. From this point, Greenwood and Jovanovic (1990) resemble the Kuznets hypothesis (Kuznets, 1955). In the first stages of economic development, deterioration is observed in the distribution of income. Under the hypothesis, the recovery phase is experienced in income distribution on the maturity stages of development. In the stage of transition from a slow-growing economy to a fast-growing economy, income inequality increases with financial development and economic development. In this stage, only the rich may obtain an opportunity to benefit from the financial intermediaries. However, the poor may not utilize the financial system because of the high cost which is emerged in the financial markets. When the economy reached its maturity stage, it provides high rates of return for also poor. Thus, joining financial intermediaries increase with economic growth since financial intermediaries are beneficial for both the poor and the rich. At the same time, joining financial intermediaries provide the possible highest social return in the economy through the mobilization and transition of funds which accelerate economic growth.

Becker and Tomes (1986) develop a model in which the transfer of earnings from the parents to children in the situation of perfect capital and imperfect capital market. Earnings of children depend on human capital when they reach the period of adulthood. If the capital markets have a perfect process, expenditures on children by parents do not depend on the earnings of parents. These expenditures are actually an investment in human capital that children are going to benefit from in the future.

However, in the imperfect capital markets, poor parents must finance investment in human capital by reducing their consumption because they can not borrow from the financial market easily. Limitations on borrowing discourage parents to spend on their children. Thus, investment in human capital depends on the earnings of parents. Financial investment may affect income inequality indirectly through its effect on human capital investment.

Galor and Zeira (1988) develop a model explaining a theoretical link between income distribution and aggregate economic activity. Under this model, the economy has one good and it can be produced by either skilled labor or unskilled labor. If the capital market is imperfect, the level of skilled and unskilled labor is determined by the distribution of wealth. Individuals who acquire education in the first period of their life might be employed as skilled labor. On the other hand, individuals who can't have an education are employed as unskilled labor. The acquirements which are the acquisition of skills is limited for individuals because of the capital market imperfections leading to blocking for investments on human capital. The level of inheritance of wealth may differentiate the ability and income of individuals. Thus, the level of skilled and unskilled labor is limited by the distribution of wealth, determining the aggregate level of output.

Financial markets involve imperfections. The problem of adverse selection and moral hazard because of imperfect or asymmetric information leads to information and transaction costs combining with the risk for lenders, borrowers or both in the financial system. There is a high possibility that the poor are affected by these costs more than the rich. The financial development is expected to diminish the costs which emerge due to imperfect financial markets. Thus, the benefits of the financial system diffuse to the majority of individuals and financial development become an effective weapon to combat poverty and income inequality. Therefore, financial development can be relatively more advantageous to the poor.

In Hermes (2014), microfinance programs have an important role in tackling income inequality because they provide collateral-free loans or low-cost loans. Thus, microfinance programs offer an opportunity for the poor to increase their income and provide an investment opportunity. If the poor benefit disproportionally from financial development, income inequality will be expected to reduce.

Ahlin and Jiang (2005) emphasize the importance of micro-credit programs as part of financial development. An increase in the implication of microfinance programs is an indicator of financial development since the main object of the microfinance programs is to facilitate access to credit services and to borrow from financial institutions for the poor. Ahlin and Jiang examine the potential long-run impacts of micro-credit programs on poverty and income inequality theoretically. Micro-credit programs provide self-employment opportunities, since the possibility of finding necessary capital increases with the opportunity of obtaining low-cost credit.

McKenzie and Woodruff (2008) examine the importance of microfinance in order to reduce poverty such as Ahling and Jiang (2005). Researchers measure returns on capital investment in microenterprises in Mexico. The rise in returns on capital is observed if micro-enterprises' chance of access microlending is increased. The returns from investment provide higher interest rates, the exhilarating willingness of entrepreneurs to borrow from microlending organizations.

Most of the theoretical literature expect financial development in a country would improve economic growth and would narrow income inequality. “However, if financial development facilitates access to financial resources for the rich, not the poor, it will worsen income inequality” (Clarke et al., 2006: 578). In their study, Rajan and Zingales (2003) first ask why some countries still have an underdeveloped financial system. According to Rajan and Zingales (2003), the demand for financing required for investments must arise in order for financial development to emerge. The demand determines the level of development in the financial sector and it creates the necessity for the development of the sector. The demand for finance in a country depends on the willingness of political forces to seek investment in the country. First, the legal system in the country should allow innovation and investment. Innovation and investment create the demand for financing in a country, followed by financial development. The theory argues that the open economy will allow a competitive economy and thus create an environment for financial development. However, another factor for the emergence of a developed financial sector is the social capital of the country. Social capital is the inherited legal, cultural, educational and political system of a country. As a result, political forces will first have to allow investment

demand for financial development to emerge. Even if an open economy and a competitive environment to create investment demand are established, the social capital structure of the country will also be decisive for financial development and income inequality.

With initial income inequality, there is a strong connection between investment in an enterprise and the accumulated wealth of the entrepreneur. Imperfections in the financial system have prevented individuals who have a lower income to undertake investment activities because these individuals are disadvantageous in initial income distribution. Banerjee and Newman (1993) focus on interactions between occupational choice and economic development. The level of borrowing depends on the level of wealth because the wealth is used as collateral in the presence of imperfect capital markets. The poor have to choose to work for others since they can borrow limited and can not afford to be an entrepreneur that require a high level of investment. The only reason for borrowing is to finance investments in this case so it requires to become an entrepreneur or self-employed. Thus, individuals who have a lower wealth may be confined to be a worker.

Aghion and Bolton (1997) construct a model of distribution of income and economic growth in the existence of the imperfect capital market. In theory, if capital accumulation is sufficiently high in the economy, the poor can obtain more funds to invest. However, persistent income inequalities arise because of the capital market imperfections. The poor are restricted from their limited wealth and they avoid getting under investment projects. Thus, they worry that they can't protect themselves perfectly against income risk.

Mookherjee and Ray (2006) investigate the effect of initial income distribution on an individual's future occupation in the existence of imperfections in the financial markets as Banerjee and Newman (1993). They correlate between the occupational structure and financial bequests. Inequality and unequal distribution of income emerge endogenously as depending on a financial opportunity in the model which they develop. According to the model, the long-run condition of an individual depends on initial income per capita and its initial distribution.

1.2. EMPIRICAL LITERATURE

The empirical literature on the interaction of financial development and income inequality applies dominantly cross-section analysis since sufficient time-series data is absent.

The variables using commonly as indicator of the level of financial development are the ratio of liquid liabilities to GDP (King and Levine; 1993; Beck et al., 2000), the ratio of private credit to GDP (Beck, et al., 2000; Clarke et al., 2006; Beck et al., 2007; Jalilian and Kirkpatrick, 2007; Hermes, 20014) the ratio of M3 to GDP (Ang, 2010; Arora, 2012). Microfinance is also an indicator of the level of financial development and is measured by the rate of credit utilization of low-income individuals (Hermes, 2014). The increase in the variables is the indicator of financial development.

The studies use control variables in their analyses in order to test the robustness of the main results. In the empirical literature, control variable includes commonly the inflation rate, the level of democracy, the rate of the population growth, the level of human capital, the trade openness, GDP per capita growth, the level of initial Gini and the level of initial income share of the poor (e.g. Beck et al, 2007). These variables are preferred because they may have effects on the levels of income inequality and poverty. The studies show that the main results remain robust even after control variables are added in the analyses.

This thesis benefits from the empirical literature examining the link between financial development, poverty, and economic growth, although the main purpose of this thesis is to investigate the relationship between financial development and income inequality.

Clarke et al. (2006) examine the impact of financial sector development on income inequality. Researchers use cross-sectional analysis. They employ 83 countries over the time period 1960-1995 to measure the long-term relationship, while they conduct the panel analysis to capture short and medium-term interaction between financial sector development and income inequality using five-year panels. The researchers use the ratio of private credit to GDP in order to measure financial sector development. Because development in the financial sector might be endogenous, researchers use instrumental variables approach to evaluate the

exogenous impact of development in the financial sector on income inequality. After the possible endogeneity of the financial sector development, the results from cross-sectional regressions show that the proxy for financial sector development has a negative coefficient and it is statistically significant. The results suggest that financial sector development reduces income inequality. The results from panel regressions are consistent with the cross-sectional results, but these results provide information on short and medium-term relationships. Further, researchers test the inverted U-shape hypothesis concerning the interaction between financial sector development and income inequality by using squared terms of the indicator of financial sector development. According to the results, the linear terms of the financial sector development indicator have positive coefficients, while the squared terms have negative coefficients. These results suggest that a reverse U- shape hypothesis. Income inequality increases at the low levels of financial development while it decreases at high levels.

In theory, microfinance programs are an important component of financial development. The literature regarding the connection between financial development, income inequality and poverty advocates that microfinance alleviates income inequality and poverty (e.g. McKenzie and Woodruff, 2008; Ahling and Jiang, 2005).

Hermes (2014) examines empirically the effect of microfinance intensity that is utilization from the microfinance programs on income inequality for 70 developing countries using cross-sectional data for the time period 2000 to 2008. According to the results, microfinance intensity is in inverse and significant relation with income inequality, which suggests that microfinance improves income distribution. However, the impact of microfinance on diminishing income inequality is low in the empirical results.

For all studies have mentioned above, cross-country analyses are used on this subject. Arora (2012) uses the empirical analysis for an only specific country that is India and examines the effect of financial development on consumption inequality and income inequality at rural and urban levels in India for the post-banking reform period. The study includes 28 states in India for the time period 1999-2007. Researchers use the separate cross-sectional regressions and pooled panel estimation

approach for rural and urban inequalities. Private credits and population per bank for each region are used to financial liberalization, while M3 for each region is used to measure financial development. Private credits and population per bank are positively correlated with income inequality and consumption of the top quantile for urban areas, but they are negatively and significantly correlated for rural areas. M3 is insignificant and an inverse correlation with income inequality. It has a positive sign and it is significantly correlated with the lower quantiles for urban areas. However, for rural areas, M3 is positively and significantly correlated with both income inequality and consumption of the top quantile. These results suggest that financial development promotes to decrease income and consumption inequalities in India, for only urban areas.

Beck et al. (2007) conclude that 40 percent of financial development decreasing the effect on the poverty rate is due to diminishing income inequality. The remaining 60 percent is due to the enhancing effect on economic growth. Researchers suggest that financial development helps poverty alleviation. They examine the impact of financial development on the poor for 72 developing countries. They also examine the effect of financial development on GDP per capita growth and then, the impact on the growth of Gini, the growth of the lowest income share and the growth of poverty. They prefer using cross country regressions and dynamic panel instrumental variables regressions (GMM). Researchers use the ratio of private credit to GDP in order to measure the level of financial development, the growth of Gini and the growth of lowest income share to survey changes in income distribution, the growth of headcount (the growth rate of the percentage of the population living below 2 dollars per day) to measure poverty. According to the empirical results, financial development is in positive interaction and a significant correlation with the GDP per capita growth and the growth of the lowest income share. However, financial development is in an inverse relationship with the growth of Gini and the growth of headcount and this result suggests that financial development reduces the level of poverty.

Jalilian and Kirkpatrick (2007) suggest that financial development diminishes the level of poverty. It increases economic growth and decreases income inequality as Beck et al. (2007). Researchers examine the effect of financial development on

poverty in developing and developed countries by using a pooled-panel data approach for 42 countries. They use the ratio of private credit to GDP to measure financial development rate. Financial development is positively and significantly correlated with GDP growth. In order to test the effect of financial development on economic growth in economies that have a lower income, they construct an interactive variable with a developing country dummy. According to the results, the interactive variable has a positive sign and significant correlation with economic growth, suggesting that developing countries obtain the most benefits from financial development. Furthermore, income inequality is affected by the increase in economic growth resulting from financial development. In that regard, researchers investigate the inverse U-shaped link between financial development, economic growth, and income inequality. Inverted U-shaped linkage is confirmed. However, when the contribution of financial development to growth is excluded by using the instrumental variable method, the inverse U linkage is not confirmed. Thus, this result suggests that financial development has an effect on increasing income growth and has an indirect effect on decreasing income inequality.

Kar and Pentecost (2000) examine the interaction of financial development and economic growth in Turkey. The researchers apply the Granger causality test for the period 1963-1995. Researchers use five alternative proxy variables for financial development: the ratio of broad money to income (M2/GDNP), the ratio of bank deposit liabilities to income, the ratio of domestic credit to income, the ratio of private credit to income and the ratio of the private sector credit to domestic credit. According to the empirical results, the direction of causality depends on the selected proxies for financial development from five alternatives. Although researchers can not reach an exact conclusion on the direction of causality, the causal linking growth, and financial development is more effective than the causal linking financial development and economic growth.

Aslan and Küçükaksoy (2006) analyze the effect of financial development on economic growth in Turkey. The researchers apply Granger causality test for the period 1970-2004. Researchers unlike Kar and Pentecost (2000) use private credit volume as only one indicator of financial development. Therefore, they obtain a more exact result that financial development causes economic growth in Turkey.

Kar et al. (2011) examine the causal link between financial development, economic growth and poverty reduction in Turkey. Most of the studies on Turkey, focus on the causal relationship between two variables and examine the causality between financial development and economic growth. According to the researchers, this situation neglects the effect of variables bias. Therefore, they add poverty reduction as a third variable to their causal analysis. They use the ratio of private sector credits to income, the ratio of domestic credits to income and the ratio of broad money (M2) to income variables to measure the financial development. Per capita, final consumption expenditure and per capita households'final consumption expenditure are introduced as proxies for poverty reduction. The researchers examine the period 1970-2007 for Turkey. According to the results, there is a causal link from financial development to economic growth and economic growth causes poverty reduction. However, the direct impact of financial development on poverty reduction is weak.

Zeren and Yilanci (2011) investigate the existence of income convergence among the regions of Turkey. According to the convergence hypothesis, the per capita income gap between poor and rich regions closes over time. The researchers examine the regions at the NUTS-S level over the time period 1991-2000 by using panel data analysis. They use the Beta convergence model for the panel analysis. The beta convergence suggests that there is a negative relationship between the growth rates of per capita income in the beginning periods of the economy and the per capita income in the following periods. They test both absolute convergence and conditional convergence for 26 regions. In order to test the inter-regional conditional income convergence, researchers include the ratio of deposit in GDP as a control variable to the model, which is an indicator of financial development. According to the results, the convergence coefficient is negative and significant in both conditional and absolute convergence tests. Absolute convergence is accepted in 17 regions and conditional convergence is accepted in 25 regions. Moreover, the increase in deposits increases the national income per capita. Thus, there are income disparities among the regions of Turkey. However, there is income convergence among the regions and financial development is a factor that positively affects it.

The empirical literature has more precise views about the effect of financial development on income inequality than the theoretical literature has. The results of the majority of empirical literature suggest that financial development diminishes income inequality and alleviates poverty. However, the effect of financial development on income inequality and poverty differs depending on the used indicator, time data or country.

CHAPTER TWO

FINANCIAL DEVELOPMENT AND INCOME INEQUALITY

2.1. DEFINITION OF FINANCIAL DEVELOPMENT

The financial system brings together the economic units that are in need of funding with the units that are in fund surplus and ensures that the savings are transferred to the investments. The financial system fulfills this function through financial instruments, financial intermediaries, markets, institutions, legal and institutional regulations. A strong and effective link between these units will create a developed financial system. Levine (1997) specifies five key functions of the financial system as follows:

1- Financial system mobilizes savings: Levine (1997) refers to the mobilization is the pooling of capital that is transferred from different savers for investors. An individual may be insufficient in funding an investor, but financial institutions facilitate these processes by pooling different savers. Thus, financial markets bring together savers and borrowers and through a financial institution, the borrowers avoid the cost of finding the savers and the savers or lenders avoid the cost of evaluating the potential borrower.

2- The financial system helps to acquire information about investments and distributes resources according: Savers' desire to acquire information on activities, enterprises to be invested in and these constitutions' economic conditions, etc. Information acquisition is a costly activity because savers may not have sufficient time or capacity to acquire information and to evaluate acquired information in detail. Financial intermediaries satisfy the need for obtaining information, making this process less costly because they facilitate to access information more quickly and accurately.

3- Financial system diversifies risk: The financial system allows savers to diversify the risk by spreading savings to different investments in different countries, projects, industries, firms, etc. The financial system increases liquidity in the capital market and decreases liquidity risk.

4- Financial system facilitates exchange: There is a link between specialization, innovation, and economic growth. More transactions are required for more specialization and each transaction has fixed cost. The financial system reduces transaction costs, ensuring a better market which results in economic growth.

5- Financial system helps to observe managers and implementing corporate control: The financial system allows monitoring of resources and investments after financing the projects, enterprises or firms. Financial institutions exert corporate control and enforce discipline on borrowers and managers who use savings.

In theory, financial markets involve imperfections. Obtaining and transferring information for financial transactions is one of the main functions of financial markets. However, the information from borrowers to lenders or vice versa is not always transferred perfectly or accurately. Accordingly, financial markets that are information-intensive markets must be informationally imperfect; not all information can be transferred from informed to uninformed investors (Stiglitz et al., 1993:22). Imperfect information produces financial market failures or imperfections -that is, the problems of adverse selection and moral hazard that is also discoursed as main problems in finance literature. Potential investors struggle in distinguishing low-risk borrowers from high-risk borrowers, generating the problem of adverse selection.

Individuals have a tendency to alter their actions, after they have entered into a transaction, giving rise to the problem of moral hazard. The problem of adverse selection and moral hazard because of imperfect or asymmetric information leads to information and transaction costs combining with the risk for lenders, borrowers or both of them in the financial system. With reference to the World Bank definition in the Global Financial Development Report 2015/2016, financial development is the elimination of costs arising in the financial market while fulfilling the main functions of the financial system.

Most of the literature about financial development, economic growth and finance suggest that financial development is an influential determinant of the economic development of countries. In addition, income distribution is the most important component of economic development. In order to achieve a high level of economic development, a fair income distribution must be ensured. In the process of

financial deregulation, the financial system has become an important component of the development, and linking financial development and income inequality has been a primary scope that is investigated in the literature on economic development. (King and Levine, 1993; Galor and Zeira, 1993; Clarke et al., 2006; Beck et al., 2007; Claessens and Perotti, 2007; Ang, 2010; Arora, 2012).

The literature that examines the interaction of financial development, income inequality and poverty has used various indicators to measure financial development. The indicators of financial development which are preferred by the literature are the ratio of liquid liabilities to GDP (King and Levine; 1993; Beck et al., 2000), the ratio of private credit to GDP (Beck, et al., 2000; Clarke et al., 2006; Beck et al., 2007; Jalilian and Kirkpatrick, 2007; Hermes, 2014) the ratio of M3 to GDP (Ang, 2010; Arora, 2012).

In this thesis, the ratio of private credit to GDP is used as an indicator of financial development. Private credit equals the value of credit by the financial intermediaries to the private sector divided by GDP (Beck et al. 2007; Clarke et al., 2006). In this thesis, the private credit equals the cash credit that is provided to the real and legal person by the banks in Turkey. The cash credit is excluded the non-performing loans because the non-performing loans are the loans provided to real and legal persons by banks and classified as frozen receivables.

Banks are classified as deposit banks, development and investment banks, investment banks as foreign banks, public banks and domestic private banks by BRSA. The ratio of cash credits provided by foreign banks, domestic private banks, deposit banks and public banks to GDP was selected as the indicator of financial development. However, it has been observed that the results of econometric analyses for each financial development variable have very similar results. Therefore, in order to avoid confusion, it is preferred to include only the ratio of cash credits provided by foreign banks to GDP as an indicator of financial development.

2.2. INCOME INEQUALITY IN TURKEY

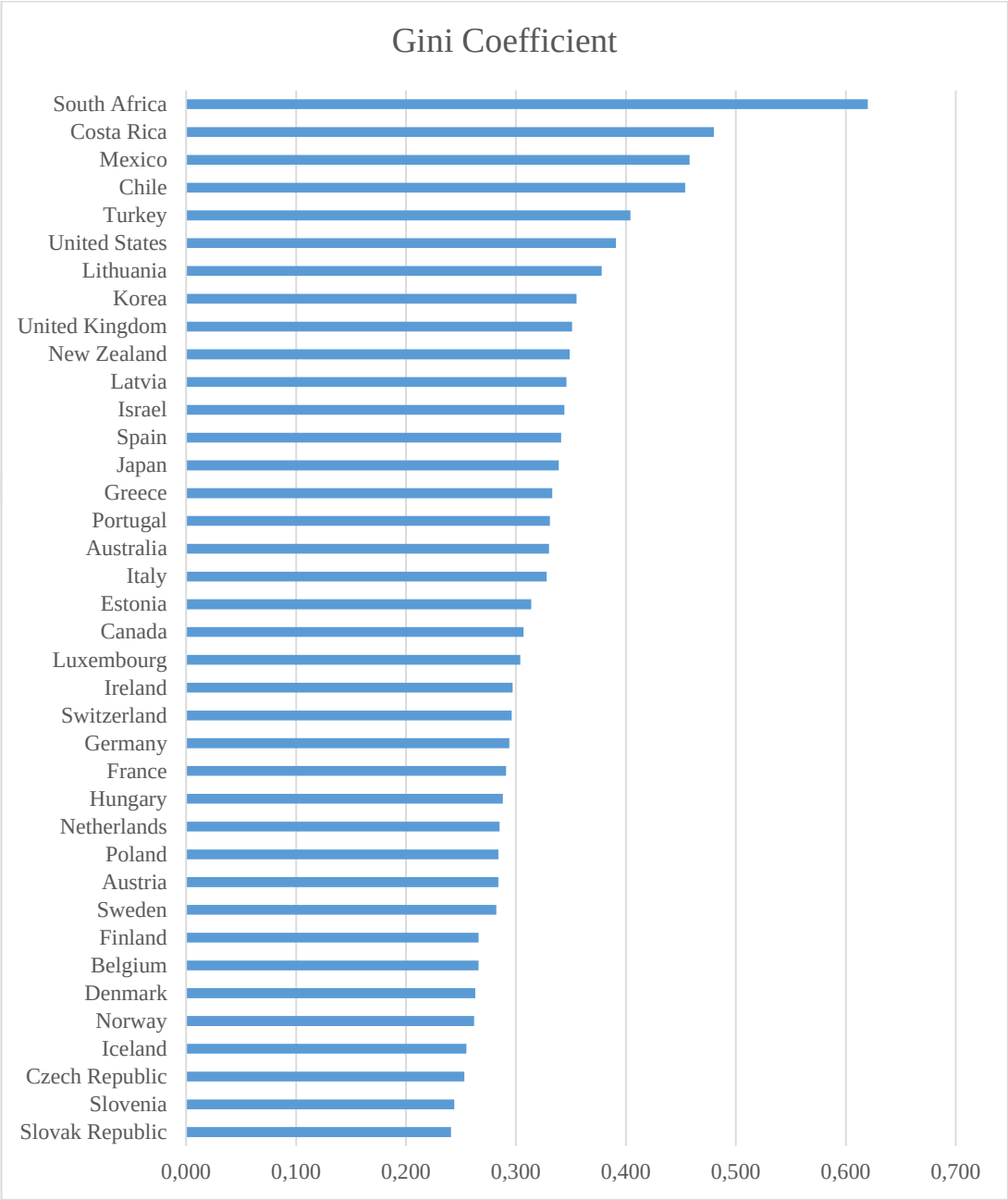
Income distribution refers to the distribution of the domestic income produced in a country in a given period between individuals in the country. This distribution is very important for economic theory as it is an important indicator of

the development of a country (Kuştepeli and Halaç, 2004: 144). There are many studies in the literature on income distribution. The aim of these studies is to determine the factors that affect income distribution by analyzing the distribution of domestic income among individuals or among factors of production in the country (Çalışkan, 2010). Income inequality; is the uneven or unfair distribution of national income in a country in a given period between households, regions, social groups and factors of production factor contributing to this income.

Income inequality is one of the most important macroeconomic indicators for the comparison of developed and developing countries in terms of economic development. One of the most important economic goals in Turkey is to ensure income more equal income distribution as well as in the whole developing countries. Although a downward trend in income inequality in Turkey over the last 10 years, sustainable recovery in the income distribution can not be achieved.

Gini coefficient is the most preferred indication of income inequality, deriving from the Lorenz curve. According to the OECD definition of income inequality, the comparison of cumulative proportions of the population against cumulative proportions of income they receive is evaluated on the Lorenz curve and ranged between 0 and 1. The larger values are indicative of greater income inequality. Turkey is one of the countries with the highest income inequality among OECD countries. The following figure demonstrates the last obtained Gini coefficients of OECD countries over the period 2014-2017 and Turkey is the fifth country with the highest Gini coefficient.

Figure 1: Gini Coefficient in the OECD Countries, 2014-2017



Distribution of annual household income which is ordered by quintiles is another indicator of income inequality. For instance, the S80/S20 ratio shows the ratio of the total income of the highest 20 percent income group to the total income of the lowest 20 percent income group. The following table demonstrates the distribution of annual household disposable income that is ordered by quintiles over the period 2006-2017 from the TURKSTAT, Income, and Living Conditions Survey.

When the table is examined, the share of the first quantile, which is the lowest 20 percent income group, in total income increased over the period 2006-2017. However, the share of middle-income groups in total income remained unchanged and tended to decline after 2016. Besides, the share of the last quantile, which is the highest 20 percent income group in total income, did not decrease but tended to increase after 2014.

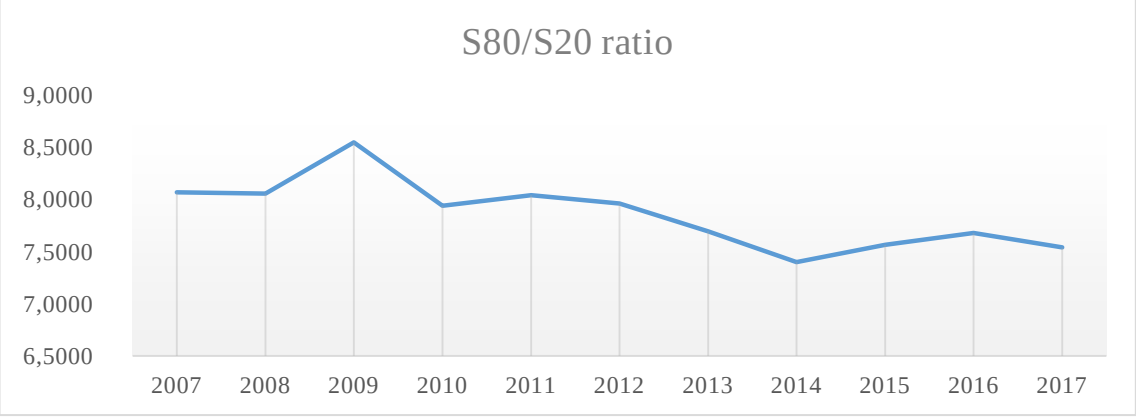
Table 1: The Distribution of Annual Household Disposable Income that is ordered by Quintiles, 2006-2017

	Quintiles (Percentage (%))					
Year	**Total**	**First quantile**	**Second quantile**	**Third quantile**	**Fourth quantile**	**Last quantile**
2006	**100,0**	5,1	9,9	14,8	21,9	48,4
2007	**100,0**	5,8	10,6	15,2	21,5	46,9
2008	**100,0**	5,8	10,4	15,2	21,9	46,7
2009	**100,0**	5,6	10,3	15,1	21,5	47,6
2010	**100,0**	5,8	10,6	15,3	21,9	46,4
2011	**100,0**	5,8	10,6	15,2	21,7	46,7
2012	**100,0**	5,9	10,6	15,3	21,7	46,6
2013	**100,0**	6,1	10,7	15,2	21,4	46,6
2014	**100,0**	6,2	10,9	15,3	21,7	45,9
2015	**100,0**	6,1	10,7	15,2	21,5	46,5
2016	**100,0**	6,2	10,6	15,0	21,1	47,2
2017	**100,0**	6,3	10,7	14,8	20,9	47,4

Source: TURKSTAT Database, Income and Living Conditions Survey

The following figure illustrates the S80/S20 ratio that is the ratio of the total income of the highest 20 percent income group to the total income of the lowest 20 percent income group in Turkey over the period 2007-2017.

Figure 2: S80/S20 Ratio in Turkey, 2007-2017



When the figure is examined, it is seen that there is no stability in reducing income equality. The S80/S20 ratio increased significantly in 2008 that is the year of the global financial crisis and started to decline after 2009. However, income inequality has increased over the period 2014-2016 period and has started to decline again after 2016.

2.3. FINANCIAL DEVELOPMENT IN TURKEY

Since the late 1970s, the components of economic development began to change along with the effects of financial deregulation and globalization. The financial system has placed an important role to decide on economic policies. Turkey has also started to implement the financial deregulation policies under the control of the World Bank and the IMF after 1980. With these policies, it was aimed to benefit from international capital by integrating into the global financial economy. First, the foreign trade regime was liberalized, incentives were provided to attract foreign capital and investors to the country, interest rates were raised to encourage domestic savings, and state-owned enterprises were privatized. In 1989, the Turkish Lira was made convertible and a market system was established to allow institutions to borrow in foreign currency. These implementations have created an open economy and the Turkish economy has affected by all economics movements and crises in the world since 1990. The process of financial deregulation that is a component of international integration has created both benefits and risks for the Turkish economy.

The most significant negative effects of this situation were observed in the financial crisis in 1994, 1998, 2001 and 2008. In these years and following years, economic growth and income distribution were affected negatively. According to Yeldan, 2004, expectation from trade liberalization and financial deregulation in Turkey was ensuring a more equitable distribution of national income. It was thought that with the abolishment of import quotas, the domestic industry would shift to the export industry and the domestic industry would integrate into the world market. The domestic industry was a labor-intensive industry and, with liberalization, this labor would also shift into the export industry. Thus, rents from import quotas would now spread to the domestic industry, establishing a competitive environment within the domestic market and reducing the inequality of income. However, the expected

competitive environment in the domestic market and especially in the export-oriented domestic industry has not been achieved. In Yeldan, 2004, with liberalization, wages were no longer a source of demand but merely a cost element because the sources of demand would be expected from imports or from the more skilled labor force. In addition, export subsidies were provided by the state. As a result of this, a new form of wealth accumulation emerged and as the share of non-wage income in national income increased, income inequality increased. Yeldan, 2004, also states that in this process, banks have gradually turned away from their duty of intermediation and providing loans and turned into institutions financing public debts. As a result, it can be said that financial development cannot be achieved in an environment in which the financial system does not fulfill its core functions and thus will negatively affect income inequality.

The financial system fulfills its base functions through financial instruments, financial intermediaries, markets, institutions, legal and institutional regulations. A strong and effective link between these units creates a developed financial system. With reference to the World Bank definition in the Global Financial Development Report 2015/2016, financial development is the elimination of costs arising in the financial market while fulfilling the main functions of the financial system. The banking sector in Turkey has regulated and supervised after the 2001 crisis. Adjustments have been made affecting the intermediation costs of banks. Stamp tax on and dues on loans and the deduction from the resource utilization and support fund applied in commercial and corporate loans were abolished (Yiğitoğlu, 2005: 119). In theory, a financial system that performs its base functions effectively and at a minimum cost, which is called financial development, should increase economic growth and reduce income inequality and poverty. It has reached the conclusion that financial development causes economic growth in the studies that examine the causal relationship between financial development and economic growth in Turkey (Kar and Pentecost, 2000; Aslan and Küçükaksoy, 2006). Another empirical study, Kar et al., 2011, finds a causal link from financial development to economic growth and economic growth that causes poverty reduction. Notwithstanding that the literature is not rich in terms of studies that examine the direct impact of financial development on income inequality in Turkey, some studies that examine the income inequality in

Turkey determine the financial development as a factor affecting income inequality. Zeren and Yilanci (2011) include the ratio of deposit in GDP as a control variable to their model in order to test the inter-regional conditional income convergence. According to the results, the increase in deposits increases the national income per capita. There are income disparities among the regions of Turkey. However, there is income convergence among the regions and financial development is a factor that positively affects it.

This thesis prefers to use the empirical measures of financial development and income inequality to analyze the interaction between financial development and income inequality. Empirical results will be presented in the following part.

CHAPTER THREE
EMPIRICAL ANALYSIS

3.1. DATA AND METHODOLOGY

This thesis prefers to use the empirical measures of financial development and income inequality to analyze the interaction between financial development and income inequality. In this section, the indicators of financial development and income inequality are described. To test the robustness of the main empirical results, control variables are used. The control variables comprise of education level, inflation rate, unemployment rate, and population growth. This section purpose to conduct an econometric model and to describe the variables in the model.

Most of the theoretical studies provide a negative relationship between financial development and income inequality. However, the empirical literature has more precise views about the effect of financial development on income inequality than the theoretical literature has. In addition to this, the empirical results may differ according to the data that this thesis will use.

This thesis follows the literature on the relationship between financial development, income inequality, and poverty for the methodology. (E.g. Beck et al., 2007; Clarke et al., 2016; Hermes, 2014; Arora, 2012). While this thesis examines the impact of the financial development on income inequality in Turkey, using regional data by collecting the data based on Statistical Region, Level 2 (SR Level 2). Turkey has 26 subregions according to the SR Level 2 and this thesis obtains its data for each of the 26 subregions.

The literature that examines linking financial development, income inequality and poverty has used various indicators to measure financial development. The proxies for financial development which are preferred by the literature are the ratio of liquid liabilities to GDP (King and Levine; 1993; Beck et al., 2000), the ratio of private credit to GDP (Beck, et al., 2000; Clarke et al., 2006; Beck et al., 2007; Jalilian and Kirkpatrick, 2007; Hermes, 2014) the ratio of M3 to GDP (Ang, 2010; Arora, 2012), the share of commercial bank assets in the sum of commercial and central bank assets (Ang, 2010; Jalil and Feridun, 2011). Microfinance is also an indicator for financial development and is measured by the number of active

borrowers divided by the country's total population and the total value of the issued microfinance loans divided by the country's GDP (Hermes, 2014).

Table 2: Statistical Regions of Turkey (SR Level, 2)

TR10 (İstanbul)
TR21 (Tekirdağ, Edirne, Kırklareli)
TR22 (Balıkesir, Çanakkale)
TR31 (İzmir)
TR32 (Aydın, Denizli, Muğla)
TR33 (Manisa, Afyon, Kütahya, Uşak)
TR41 (Bursa, Eskişehir, Bilecik)
TR42 (Kocaeli, Sakarya, Düzce, Bolu, Yalova)
TR51 (Ankara)
TR52 (Konya, Karaman)
TR61 (Antalya, Isparta, Burdur)
TR62 (Adana, Mersin)
TR63 (Hatay, Kahramanmaraş, Osmaniye)
TR71 (Kırıkkale, Aksaray, Niğde, Nevşehir, Kırşehir)
TR72 (Kayseri, Sivas, Yozgat)
TR81 (Zonguldak, Karabük, Bartın)
TR82 (Kastamonu, Çankırı, Sinop)
TR83 (Samsun, Tokat, Çorum, Amasya)
TR90 (Trabzon, Ordu, Giresun, Rize, Artvin, Gümüşhane)
TRA1 (Erzurum, Erzincan, Bayburt)
TRA2 (Ağrı, Kars, Iğdır, Ardahan)
TRB1 (Malatya, Elazığ, Bingöl, Tunceli)
TRB2 (Van, Muş, Bitlis, Hakkari)
TRC1 (Gaziantep, Adıyaman, Kilis)
TRC2 (Şanlıurfa, Diyarbakır)
TRC3 (Mardin, Batman, Şırnak, Siirt)

Source: TURKSTAT Database

In this thesis, the ratio of private credit to GDP is used as an indicator of financial development. Private credit equals the value of credit by the financial intermediaries to the private sector divided by GDP (Beck et al. 2007; Clarke et al., 2006). In this thesis, the private credit equals the cash credit that is provided to the real and legal person by the banks in Turkey. The cash credit excludes the non-performing loans because they are the loans provided to real and legal persons by banks and classified as frozen receivables.

The data of cash credit is obtained from the Banking Regulation and Supervision Agency (BRSA) database. The data from the BRSA are based on the province level, so the dataset is transformed into regional data in order to obtain the data based on SR Level 2. Therefore, the dataset of financial development is obtained for the 26 subregions over the period 2014-2017.

There is a large literature which suggests that financial development has a positive effect on economic growth (e.g. Greenwood and Jovanovic, 1990; King and Levine, 1993(a), (b); Levine, 1997; Kar and Petencost, 2000; Beck et al., 2007). Furthermore, the literature suggests that financial development affects income inequality through economic growth. There is an interrelated relationship between financial development, economic growth, and income inequality. Accordingly, the cash credit is weighed with the Gross Domestic Product (GDP). The data of GDP is obtained for the 26 subregions over the period 2014-2017 from the Turkish Statistical Institute (TURKSTAT) database. GDP data is real GDP and its base year is 2009.

Banks are classified as deposit banks, development and investment banks, investment banks as foreign banks, public banks and domestic private banks by BRSA. The ratio of cash credits provided by foreign banks, domestic private banks, deposit banks and public banks to GDP was selected as the indicator of financial development. However, it has been observed that the results of econometric analyses for each financial development variable have very similar results. Therefore, in order to avoid confusion, it is preferred to include only the ratio of cash credits provided by foreign banks to GDP as an indicator of financial development.

Beck et al. (2007) examine the impact of financial development on the income of the poorest quantile. In this study, researches specify two channels that influence the income of the poorest quantile. The two channels decrease in income inequality and aggregate economic growth. Financial development reduces income inequality by increasing incomes of the poor or by changing the distribution of income.

Firstly, the researchers consider the relative poverty. They conduct a model to measure relative poverty:

$Y_p = Y*L(0,2)/0,2$ **(equation(1))**

In this model, Y_p is income per capita of the lowest quantile, Y is the average income per capita, L is the Lorenz Curve. According to OECD's definition of income inequality, the comparison of cumulative proportions of the population against cumulative proportions of income they receive is evaluated on the Lorenz curve and ranged between 0 and 1. The larger values are indicative of greater income inequality. In this model, the researchers prefer to use the income proportion of the lowest 20 percent income group of the population. Then, the researchers differentiate the variables in equation(1) and provide the growth rate of the variables:

$g(Y_P)=g(Y) + g(L(0.2))$ **(equation(2))**

According to this model, a sum of the growth of average income per capita and Lorenz curve that is expressed as the growth of income of the lowest 20 percent income equals the growth of income per capita of the lowest quantile.

Secondly, the researchers use the headcount measure of poverty to measure absolute poverty. They use the ratio of the population that has less than 1$ per day for an indicator of the headcount measure of poverty.

In this thesis, the impact of financial development on income inequality is analyzed. This thesis conducts a model that measures the direct impact of financial development on income inequality. The income inequality is reduced either by increasing the income of the poor (or decreasing poverty) or by changing the income distribution. The S80/S20 ratio is used in this thesis to measure the changes in the distribution of income. The S80/S20 ratio shows the ratio of the total income of the highest 20 percent income group to the total income of the lowest 20 percent income group. Another indicator of income inequality is the Gini coefficient. Gini coefficient is the most preferred indication of income inequality, deriving from the Lorenz curve. According to OECD's definition of income inequality, the comparison of cumulative proportions of the population against cumulative proportions of income they receive is evaluated on the Lorenz curve and ranged between 0 and 1. This thesis uses the poverty rate to measure poverty.

There are three indicators in this thesis to measure income inequality:

S80/S20 Ratio: The data is obtained for the 26 subregions over the period 2014-2017 from the TURKSTAT database.

Gini Coefficient: The data is obtained for the 26 subregions over the period 2014-2017 from the TURKSTAT database.

TURKSTAT database provides two sets of data on income inequality and poverty both as equivalent household disposable income and household disposable income. This thesis prefers to use the S80/S20 ratio, Gini coefficient and poverty rate by equivalent household disposable income. This measure takes into account the number of individuals in the household and uses the differences between incomes per individual. The total household income is converted to individual income. In order to make accurate comparisons between households, it should be noted that the consumption of the child is less than the consumption of the adult. The coefficients, called equivalence scales, are used and it is calculated how many adults (equivalent individuals) are equal to each household size. The total household disposable income is divided by the equivalent household size, the income per equivalent household is calculated.

Poverty Rate: The data is obtained for the 26 subregions over the period 2014-2017 from the TURKSTAT database. The poverty rate by equivalent household disposable income is used. It is the proportion of the population whose individual equivalent income is lower than the poverty line. The poverty line is defined as 50 percent or 60 percent of the equivalent individual median income. The individuals are defined as the poor if their incomes are below 50 percent or 60 percent of the equivalent individual median income. This thesis prefers to use the data set which sets the poverty line as 50 percent.

The data is combined over the four year periods for the 26 subregions and the pooled OLS estimation approach is used. Separate equations for the S80/S20 ratio, Gini coefficient, and poverty rate by using the following specification in all cases:

$$\ln Y_{it} = \beta_0 + \beta_1 \ln PC_{it} + \gamma \ln X_{it} + e_{it}$$

PC: Growth of the ratio of private cash credits to GDP.

In this regression, PC_{it} is the logarithm of the ratio of private cash credits provided by the foreign banks to GDP. Y_{it} is either the logarithm of S80/S20 ratio, Gini coefficient, or poverty rate for region *i* in period *t*and *e* is the stochastic error

term. In the model the logarithm of S80/S20 ratio, Gini coefficient, and poverty are expressed as follows:

GINI : Growth of Gini Coefficient

QUANT : Growth of S80/S20 Ratio

POVR : Growth of Poverty Rate

X_{it} is a set of conditioning variables for region *i* in period *t.* The conditioning variables comprise of growth of education level, growth of inflation rate, growth of unemployment rate, and growth of population.

In the model education level, inflation rate, unemployment rate, and population growth are expressed as follows:

EDUC **:** Growth of the number of higher education graduate proportion

INF **:** Growth of inflation rate

UNEMP **:** Growth of unemployment rate

POPUL **:** Growth of population

Table 3: Description of Variables

Income Inequality Indicators	*GINI*	Growth of Gini coefficient
	QUANT	Growth of S80/S20 ratio
	POVR	Growth of poverty rate
Financial development Indicator	*PC*	Growth of the ratio of private cash credits to GDP
Control Variables	*EDUC*	Growth of the number of higher education graduate proportion
	INF	Growth of inflation rate
	UNEMP	Growth of unemployment rate
	POPUL	Growth of population

The education level is included because the perfect financial market accessibility to education for the human capital of an individual is irrespective of initial wealth bequests. Individuals excluded from the financial system because of financial market imperfections have difficulties in investing in education, and thereby human capital (Demirgüç-Kunt and Levine, 2009; Becker and Tomes, 1986; Galor and Zeira, 1988). The ratio of the number of higher education graduates to the population is used to measure education level. The data is obtained for the 26

subregions over the period 2014-2017 from the TURKSTAT database. Then, the variable is differentiated and provided the growth rate of the variable.

The inflation rate is included because the poor or low-income individuals are more vulnerable than the rich in price instability in a country due to the fact that they have limited access to financial intermediaries for restriction of the inflation effect on themselves. (Clarke et al., 2006). The annual rate of change in the consumer price index is used to measure the inflation rate. The data is obtained for the 26 subregions over the period 2014-2017 from the TURKSTAT database. Then, the variable is differentiated and provided the growth rate of the variable.

The unemployment rate is included because financial development has an effect on economic growth. A decrease in economic growth may result in an increase in the unemployment rate. In the case of the imperfect financial market, the most affected by unemployment will be the poor without sufficient wealth accumulation. In addition, unemployed individuals will have limited access to financial intermediaries. The data of the unemployment rate is obtained for the 26 subregions over the period 2014-2017 from the TURKSTAT database. Then, the variable is differentiated and provided the growth rate of the variable.

The population growth is included in the model because it is used to measure the poverty rate. The poverty rate is the proportion of the population whose equivalent individual income is lower than the poverty line. Changes in the number of the population have an effect on the poverty rate. The data of the total population is obtained from the TURKSTAT database. The data from the TURKSTAT are based on the province level, so the data set is transformed into 26 subregion data to obtain the data based on SR Level 2. Then, the variable is differentiated and provided the growth rate of the variable.

3.2. EMPIRICAL RESULTS

This thesis uses a pooled OLS estimation approach and conducts separate six regressions. The dataset is combined over the four year periods for the 26 subregions. The estimations are made by using heteroscedasticity consistent standard errors in the regressions (White, 1980). The empirical results obtained from the following three models:

Model (1):

$$\ln POVR_{it} = \beta_0 + \beta_1 \ln PC_{it} + \beta_2 X_{it} + e_{it}$$

Model (2):

$$\ln QUANT_{it} = \beta_0 + \beta_1 \ln PC_{it} + \beta_2 X_{it} + e_{it}$$

Model (3):

$$\ln GINI_{it} = \beta_0 + \beta_1 \ln PC_{it} + \beta_2 X_{it} + e_{it}$$

There are three separate models for three different indicators of income inequality. X_{it} expresses control variables in all three models. Control variables are education level, unemployment rate, inflation rate, and population growth. Education level is used as a social capital indicator. The inflation rate and unemployment rate are macroeconomic indicators. The population indicator is also included in the models to test the robustness of the models.

In model (1), the dependent variable is the poverty rate and the independent variable is the financial development indicator. Model (2), unlike model (1), QANT, another indicator of income inequality, is used as the dependent variable to represent the S80 / S20 ratio. Model (3) unlike model (1) and model (2), Gini coefficient, another indicator of income inequality, is used as the dependent variable.

The empirical results from a model (1) are presented in Table 4. Firstly, only the financial development indicator is regressed on the poverty rate and results from the regression are demonstrated in the first column.

Table 4: Model (1), Impact of financial development on the poverty rate

	(1)	***(2)***
Growth of ratio of Prvivate Credits to GDP	-0,015 (0,024)	0.404*** (0.130)
Growth of Number of Higher Education Graduate Proportion		0.910*** (0.190)
Growth of Inflation Rate		-0,260* (0,131)
Growth of Unemployment Rate		0,035 (0,058)
Growth of Population		0,390** (0,169)
Constant	2,304 (0,025)	-5,501* (2,874)
Estimation Procedure	OLS	OLS
R-squared	0,201	0,201
Observations	104	104

***, ** and * represent at 1, 5 and 10% level respectively.
Heteroskedasticity consistent standard errors are in parenthesis.

The growth of financial development is insignificantly correlated with the growth of the poverty rate in the first column. Then, control variables are included in the model and results from the results are demonstrated in the second column. According to the results, financial development has an enhancing impact on the poverty rate. In the regression, the growth of the financial development indicator positively and significantly correlated with the growth of the poverty rate. The growth of a number of higher education graduate rates has a positive sign in the equation and it is significantly correlated with the growth of the poverty rate. The growth of the inflation rate has a decreasing impact on the poverty rate, it is negatively and significantly correlated with the growth of the poverty rate. There is no significant impact on the unemployment rate on the poverty rate, because the growth of the unemployment rate positively, but insignificantly correlated with the growth of the poverty rate. Growth of population rate positively and significantly correlated with the growth of the poverty rate. The poverty rate is the proportion of

the population whose equivalent individual income is lower than the poverty line. Population growth has an enhancing effect on the poverty rate.

The empirical results from the model (2) are presented in Table 5. Firstly, only the financial development indicator is regressed on the S80/S20 ratio and results from the regression are demonstrated in the first column.

Table 5: Model (2), Impact of financial development on S80/S20 ratio

	(1)	***(2)***
Growth of ratio of Private Credits to GDP	-0,057***	0,161*
	(0,016)	(0,088)
Growth of Number of Higher Education Graduate Proportion		0,237*
		(0.130)
Growth of Inflation Rate		0,052
		(0,083)
Growth of Unemployment Rate		0,028
		(0,037)
Growth of Population		0,281***
		(0,102)
Constant	1,774***	2,922
	(0,017)	(1,840)
Estimation Procedure	OLS	OLS
R-squared	0,102	0,191
Observations	104	104

***, ** and * represent at 1, 5 and 10% level respectively.
Heteroskedasticity consistent standard errors are in parenthesis.

The growth of financial development is significantly and negatively correlated with the growth of the S80/S20 ration in the first column. Therefore, financial development has a reducing effect on income inequality. Then, control variables are included in the model and results from the results are demonstrated in the second column. The effect of financial development on income inequality becomes positive and significant when the control variables are included in the model. The growth of financial development positively and significantly correlated with the growth of the S80/S20 ratio. The growth of a number of higher education graduate proportions has a positive and significant effect on the growth of the S80/S20 ratio, but the strength of its effect is lower than the poverty rate. The growth

of the inflation rate has a positive sign in the equation, but it is insignificantly correlated with the growth of the S80/S20 ratio. There is no significant impact of the unemployment rate on income inequality, because the growth of the unemployment rate positively, but insignificantly correlated with the growth of the S80/S20 ratio. Population growth has an increasing effect on income inequality because the growth of population rate positively and significantly correlated with the growth of S80/S20.

The empirical results from the model (3) are presented in Table 6. Firstly, only the financial development indicator is regressed on the Gini coefficient and results from the regression are demonstrated in the first column.

Table 6: Model (3), Impact of financial development on gini coefficient

	(1)	***(2)***
Growth of Ratio of Private Credits to GDP	-0,023***	0,658*
	(0,006)	(0,037)
Growth of Ratio of Number of Higher Education Graduate to Population		0,109*
		(0,060)
Growth of Inflation Rate		-0,001
		(0,038)
Growth of Unemployment Rate		-0,007
		(0,014)
Growth of Population		0,108**
		(0,042)
Constant	-0,994***	-2,909***
	(0,006)	(0,778)
Estimation Procedure	OLS	OLS
R-squared	0,095	0,158
Observations	104	104

***, ** and * represent at 1, 5 and 10% level respectively.
Heteroskedasticity consistent standard errors are in parenthesis.

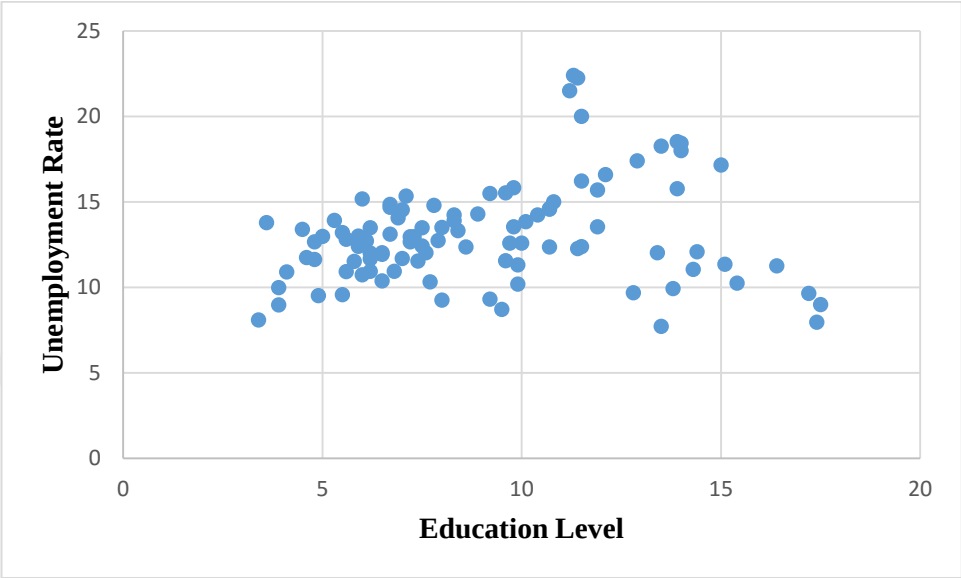
The growth of financial development is significantly and negatively correlated with the growth of the Gini coefficient in the first column. Therefore, financial development has a reducing effect on income inequality. Then, control variables are included in the model and results from the results are demonstrated in the second column. The effect of financial development on income inequality becomes positive and significant when the control variables are included in the

model. The growth of financial development positively and significantly correlated with the growth of the Gini coefficient. According to the results, the growth of the number of higher education graduate proportions has a positive and significant effect on the growth of the Gini coefficient. Population growth has an increasing effect on income inequality because the growth of the population rate positively and significantly correlated with the growth of the Gini coefficient. The remaining control variables have no significant effect on income inequality.

According to the results, when control variables are included in all three models, it is seen that financial development increases income inequality. However, the strength of financial development's effect on the poverty rate is higher than other inequality indicators. As mentioned before, in this thesis, the education level is considered as a social capital indicator, the inflation rate and unemployment rate are macroeconomic indicators. According to empirical results, control variables representing social capital and macroeconomic indicators change the effect of financial development on income inequality. Although the main purpose of this thesis is to examine the effect of financial development on income inequality, some by-products are obtained from the predicted model. A rise in the higher education graduate rate increases income inequality. This relationship can be explained by the positive correlation between higher education graduate rate and unemployment rate. According to the TURKSTAT Household Labor Force Survey Results, the labor force participation rate increases as the level of education rises, but unemployment rates do not decrease as the level of education rises. The reason for these results is that the education system in Turkey may not train their workforce to capable of meeting the market demand. In Turkey, universities don't have sufficient departments that supply the needs of the country and there is higher education graduates surplus in unneeded fields. The higher graduated students from the unneeded fields cannot find employment opportunities in their field of study and they are forced to seek employment in the fields that they have not to get an education (Çalışkan, 2007). In order to better understand the econometric results, a correlation graph was conducted showing the correlation between education level and unemployment rate. Thus, the lack of qualifications demanded by employers increases educated unemployment and high unemployment rates affect negatively

income of the individuals. When the data obtained for 26 subregions are examined, there is a positive correlation between the rate of higher education graduates and the unemployment rates in the 2014-2017 period.

Figure 3: Correlation between education level and an unemployment rate



CONCLUSION

One of the most important economic goals in Turkey is to ensure more equal income distribution as well as in the whole developing countries. Turkey is one of the countries with the highest income inequality among OECD countries. According to the last obtained Gini coefficients of OECD countries over the period 2014-2017, Turkey is the fifth country with the highest Gini coefficient. When the S80 /S20 ratio that is an income inequality indicator is examined, the share of the first quantile, which is the lowest 20 percent income group, in total income increased over the period 2006-2017. However, the share of middle-income groups in total income remained unchanged and tended to decline after 2016. Besides, the share of the last quantile, which is the highest 20 percent income group in total income, did not decrease but tended to increase after 2014. These results indicate that a significant improvement in income distribution in Turkey could not provide. The theory argues that financial development has an impact on income distribution. Income inequality is one of the most important economic problems for Turkey and this thesis aims to examine the relationship between income inequality and financial development in Turkey.

Turkey has started to implement the financial deregulation policies under the control of the World Bank and the IMF after 1980. With these policies, it was aimed to benefit from international capital by integrating into the global financial economy. However, the process of financial deregulation has also created risks for the Turkish economy besides benefits. With the crises of 1994, 1998, 2001 and 2008 the most significant negative effects of this process were observed. Banks have gradually turned away from their duty of intermediation and providing loans and turned into institutions financing public debts. The banking sector in Turkey has regulated and supervised after the 2001 crisis. Adjustments have been made affecting the intermediation costs of banks. “Stamp tax on and dues on loans and the deduction from the resource utilization and support fund applied in commercial and corporate

loans were abolished" (Yiğitoğlu, 2005: 119). However, the empirical results of the thesis show that financial development does not improve income distribution.

According to the empirical results of the thesis, when control variables are included in all three models, it is observed that the correlation between the independent variable and the dependent variable is significant and positive. However, model (1) provides a more successful explanation of the relationship between financial development and income inequality in Turkey. In model (1), the dependent variable is the poverty rate and the independent variable is the financial development indicator. When the control variables are included in the model, the growth of the financial development indicator positively correlated with the growth of the poverty rate at a %1 significance level. As a result, the strength of financial development's effect on the poverty rate is higher than other inequality indicators that are Gini coefficient and S80/S20 ratio.

The expectation from trade liberalization and financial deregulation in Turkey was ensuring a more equitable distribution of national income. However, these theoretical expectations have not been realized in Turkey. Rajan and Zingales (2003) argue that social capital is a factor for the emergence of a developed financial sector of the country. Social capital is the inherited legal, cultural, educational and political system of a country. Turkey's inherited legal, educational and political structure may have not supported the financial development. The empirical results show that financial development does not improve income distribution. Although the main purpose of this thesis is to examine the effect of financial development on income inequality, some by-products are obtained from the predicted model. The indicators of social capital and macroeconomic condition are determinative on the impact of financial development indicators on income inequality indicators. The education level that is an indicator of social capital has an increasing impact on income inequality. In order to better understand this result, the relationship between unemployment and education was examined. For these purposes, the correlation graph was conducted. The graph shows that there is a positive correlation between education level and unemployment rate. Also, TURKSTAT Household Labor Force Survey Outcomes support that the labor force participation rate increases as the level of education rise, but unemployment rates do not decrease as the level of education

rises. In addition to this, the unemployment rate and inflation rate which are principal macroeconomic indicators have also a negative impact on income inequality. The political implication from these findings is the necessity of ensuring macroeconomic stability while making effective arrangements in the education system in order to reduce income inequality. Thus, social capital and macroeconomic condition can support financial development and financial development may have a positive effect on income distribution.

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