DOLLARIZATION AND BANK PERFORMANCE

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ABSTRACT

DOLLARIZATION AND BANK PERFORMANCE

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Dollarization is an important topic in the developing economies since 1970s. It has significant effects on the real sector, public debt management, monetary policy and financial system. In addition, denomination of a big portion of the financial assets and liabilities in foreign currencies creates mismatch between the currencies of assets and liabilities held in foreign currencies and those in domestic currency. The currency mismatch causes financial fragilities and subsequent serious macroeconomic risks. The banks, which burden these risks by accepting foreign exchange deposits and extending foreign exchange credits while functioning as an agent between depositors and creditors, could experience various impacts of dollarization on their performances.

In this study, the impacts of dollarization on banks' performance in Turkey for the period of 2012-2017 are investigated. Both static and dynamic panel data analyses are conducted for this aim. Fixed Effect Regression, Random Effect Regression and GMM aproaches are employed for the estimations. The GMM results indicate statistically significance of negative impact of deposit dollarization on ROA; however, the static panel data analyses results show that the negative effect

of deposit dollarization on ROA is statistically insignificant. On the other hand, both the random effect regression and GMM results show a statistically significant and negative relationship between ROE and deposit dollarization. On the credit dollarization side, random effect regression results indicate a significant and negative impact of credit dollarization only on ROA. According to the GMM results, the effect of credit dollarization on bank performance is not found statistically significant.

Keywords: Dollarization, Bank Performance, Panel Data Analysis, Random Effect Model, Generalized Method of Moments

ÖZ

DOLARİZASYON VE BANKA PERFORMANSI

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Yüksek Lisans, İşletme Bölümü

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Dolarizasyon 1970'li yıllardan beri gelişmekte olan ekonomilerde önemli bir olgu olarak karşımıza çıkmakta olup, reel sektör, kamu borç yönetimi, para politikası ve finansal sistem üzerinde oldukça önemli etkileri bulunmaktadır. Bunlara ek olarak, finansal varlık ve yükümlülüklerin yabancı para cinsinden belirlenmesi varlık ve yükümlülükler arasında para birimi uyuşmazlığı yaratmakta ve bu durum finansal kırılganlıklara ve ardından ciddi makroekonomik risklerin oluşmasına neden olmaktadır. Mevduat sahipleri ile borçlular arasında aracılık fonksiyonunu üstlenen bankalar, yabancı para cinsinden mevduat kabul ederek ve yabancı para cinsinden borç vererek para birimi uyuşmazlığından kaynaklanan risklerle karşı karşıya kalmakta ve bu nedenle dolarizasyonun banka performansları üzerinde çeşitli etkileri görülebilmektedir.

Bu çalışmada, dolarizasyonun Türkiye'de mukim bankaların 2012-2017 yılları arasındaki performansları üzerindeki etkisi hem statik ve hem de dinamik panel veri analizi yöntemleri kullanılarak incelenmiştir. Tahminlerde sabit etkiler, rastgele etkiler ve genelleştirilmiş momentler metodu (GMM) yöntemleri kullanılmıştır. GMM sonuçları mevduat dolarizasyonunun aktif karlılığı üzerindeki

negatif etkisinin istatistiksel olarak anlamlı olduğunu göstermiştir. Ancak, rastgele etkiler modelinin sonuçları söz konusu negatif ilişkin istatistiksel olarak anlamlı olmadığını işaret etmektedir. Diğer taraftan; hem rastgele etkiler modeli hem de GMM sonuçları mevduat dolarizasyonunun özkaynak karlılığı üzerinde istatistiksel olarak anlamlı ve negatif bir etkisinin bulunduğunu ortaya koymaktadır. Kredi dolarizasyonu açısından ise, rastgele etkiler modeli sonuçları kredi dolarizasyonunun sadece aktif karlılığı üzerinde istatistiksel olarak anlamlı bir etkisi olduğunu göstermiş olup, GMM sonuçlarına göre kredi dolarizasyonunun banka performansı üzerinde istatistiksel olarak anlamlı bir etkisi bulunmamaktadır.

Anahtar Kelimeler: Dolarizasyon, Banka Performansı, Panel Veri Analizi, Rastgele Etkiler Modeli, Genelleştirilmiş Momentler Metodu

To my beloved mother and father

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MODELS

LIST OF ABBREVIATIONS

BRSA	Banking Regulation and Supervision Authority
CBRT	Central Bank of Republic of Turkey
EGLS	Pooled Estimated Generalized Least Squares
GDP	Gross Domestic Product
GLM	Generalized Linear Model
GLS	Generalized Least Squares
GMM	Generalized Method of Moments
GNP	Gross National Product
NIM	Net Interest Margin
OLS	Ordinary Least Squares
ROA	Return On Asset
ROE	Return On Equity
SUR	Seemingly Unrelated Regression
TBA	The Banks Association of Turkey
TL	Turkish lira
TSLS	Two Stage Least Squares
USD	US dollar

CHAPTER 1

INTRODUCTION

Dollarization is a significant issue for the developing economies since 1970s. As a consequence of the regulations about the liberalization of capital movements, exchange rate regime changes, political uncertainties and economic crises in developing economies in the late 1980s, the use of foreign currencies as the store of value, the unit of account and the medium of exchange, has continued to deepen up to the present.

In Turkey, the roots of dollarization phenomenon started to form in the late 1960s and early 1970s, together with the legislations about foreign currency deposits. Later the reforms about financial liberalization, the changes in foreign exchange regulations, and macroeconomic developments in the 1980s and 1990s played important roles on the development of dollarization in Turkey. The high dollarization ratios of those days showed remarkable declines time to time; however, the dollarization maintains its importance in today's Turkey.

Dollarization has significant impacts on the real sector, government debt management, monetary policy and financial system. Therefore, dollarization phenomenon is considered as an important risk source and many policies and measures are being developed to prevent dollarization in developing economies.

If a large part of the financial assets and liabilities in an economy is held in terms of foreign currencies, it results in mismatches between the currencies of assets and liabilities held in domestic currency and those held in foreign currencies. Currency mismatch; on the other hand, causes financial fragilities and subsequent serious macroeconomic risks. Independent of the exchange rate regime, a currency mismatch risk arises for banks, and it increases banks' currency risk, in a highly

dollarized country. Moreover, the other types of risks stemming from foreign currency operations of banks, namely, interest rate risk, credit risk, country or solvency risk and time-zone risk accompany the currency risk in these economies.

The banks, which burden these risks by accepting foreign exchange deposits and exchange foreign currency funds while functioning as an agent between depositors and creditors, could experience various effects of dollarization on their performances.

In this study, the impacts of dollarization on banks' performance are investigated. The main objective of this thesis is studying the impact of financial dollarization on the banks' performances in Turkey for the period of 2012-2017.

Within the framework of the main purpose of this thesis, a comprehensive literature review regarding dollarization is carried out. In the literature review chapter, the emergence of dollarization phenomenon is explained initially. Afterwards the concepts of asset dollarization, liability dollarization and financial dollarization are discussed, as well as the full and partial dollarization classifications. Then, information about the methods of measuring dollarization is provided.

Following this extensive introduction of dollarization, the impacts of dollarization on financial system is searched. In the literature, especially the relationships between dollarization and financial depth, financial development and banking crises are studied. According to some empirical works' results, deposit dollarization's impact on the bank performance is found negative, while the effect of credit dollarization is found insignificant. It is also argued that in inflationary economies dollarization is attached with a deeper financial system. Yet, the results of the examined studies do not point a negative impact of dollarization for financial development. Likewise, the results do not show any enhancing effect of dollarization for the possibility of the banking crises.

Then, the impacts of dollarization on banking sector are discussed by considering the risks arising from operations of banks in foreign currency. Exchange rate risk, interest rate risk, credit risk, country or solvency risk and time-zone risks

are explained and exemplified in line with the dollarization of bank deposits and credits.

In the following section of literature review chapter, the empirical works examining the effects of dollarization on bank performance are scrutinized. Although dollarization is studied from many perspectives and numerous empirical works have been done with various research questions about dollarization, there is only a couple of works that questioning the effect of dollarization on banks' performances. However, the regression results of these works point out different inferences regarding the dollarization and bank performance relationship. To put a finer point on it, some empirical works show that the impact of dollarization on banks' profitability is statistically insignificant, while others reveal that the effect of dollarization on bank profitability is statistically significant. More surprisingly, the sign of the significant relationship is found positive in some works and negative in others.

In addition to works related to dollarization and banking sector, for determining the correct variables of empirical analysis and examining the bank performance better, empirical works about the determinants of bank performance are studied in the final section of literature review chapter.

In the third chapter, development of dollarization phenomenon in Turkey is analyzed from a historical perspective and deposit and liability dollarization ratios are provided for the years from 2002 to 2018. Moreover, the data of foreign exchange position of banks in Turkey are analyzed in the third chapter.

In the fourth chapter, the impact of financial dollarization on the banks' performance in Turkey is studied. Both static and dynamic panel data analyses are conducted for analyzing this. At the static panel data analysis part, both Fixed Effect Regression and Random Effect Regression models are used and the final method is determined accordingly Hausman test results. In addition, by considering the advantages of Generalized Method of Moment (GMM) procedure, system GMM approach is employed at the dynamic panel data analysis part.

The raw data collected for the econometric analyses includes financial data of 46 banks in Turkey. After the exclusion of data about investment and

development banks, which do not receive deposits; the banks, not lending credits and the banks, operating in Turkey for a few years, 26 banks' data is used in this study. By taking the availability of deposit and credit dollarization data, restrictions of GMM procedure about the numbers of cross sections and time periods into consideration, the final data, used in the analysis, is started from first quarter of 2012 to fourth quarter of 2017.

In the literature, bank performance has been addressed in many aspects and it measured by several indicators. However, the appropriate measure of bank performance depends on the aim of the study. Therefore, by following the many works in the related literature, bank profitability is used as the indicator of bank performance in this thesis.

In the empirical analyses, bank profitability takes place as dependent variables, whereas deposit and credit dollarization are independent variables. Besides the dollarization variables, some macroeconomic and bank specific variables are also used in the analyses, for isolating the impacts of dollarization. Bank size, bank capital, economic growth and inflation are the other independent variables employed in the analyses.

Two different measures of bank profitability, return on asset (ROA) and return on equity (ROE), are employed as dependent variables and both of the models are estimated for analyzing the robustness of the regression results. Moreover; for considering the persistence in the banks' profitability, the lagged value of bank performance is included in the models as independent variables.

The information about methods and model selection procedures are broadly explained in this chapter. In addition, results of regression analyses and the diagnostic tests of results are studied.

Finally, in the conclusion chapter, the findings obtained from the econometric analyses are evaluated by comparing the results with those of the studies, which examine the dollarization and bank performance relationship previously.

CHAPTER 2

LITERATURE REVIEW

2.1. Dollarization

The "dollarization" term was initially derived to tell foreign currency demand by considering the US dollar choice of Latin America countries. In the literature, "currency substitution" and "dollarization" terms were used interchangeably during 1970s and 1980s. However, in 1990s, dollarization term was also started to use for describing the acceptance of US dollar as a legal currency in a country.

In the literature, dollarization is studied under two main classes, namely, full and partial dollarization. The terms of asset dollarization, liability dollarization and financial dollarization are also used to describe different characteristics of partial dollarization.

2.1.1. Full dollarization

Full, official or de jure dollarization terms are used interchangeably in the literature to describe the acceptance of US dollar as the legal currency by monetary authorities for all transactions in an economy. US dollar functions as the unit of account, medium of exchange and store of value in these economies (Quispe-Agnoli, 2002).

The very early examples of full dollarization experiments were the results of specific political and historical facts and in most of them a foreign currency had been started to be used before their domestic currency created (Levy Yeyati &

Sturzenegger, 2001). On the other hand, full dollarization, as an exchange rate regime choice, does not have a long history.

In 1990s, as Fischer (2006) stated, many countries were struggling to control or stabilize inflation. According to him, to decrease inflation level from three digit numbers, many of these counties started to implement pegged exchange rate regime. He mentioned that, impossible trinity, i.e, the combination of fixed exchange rate regime, free capital flows and independent monetary policy became evident as a consequence of the pegged exchange rate regime and these economies faced a series of financial crisis. As listed by him, these economies had three options, namely, controlling capital flows, moving to a more flexible exchange rate regime and strengthening the exchange rate peg either by adopting a currency board or adopting a foreign currency; full dollarization.

Under these conditions, full dollarization offers many advantages for economies. It is a way of protecting from currency crashes and balance of payment crises, because in the absence of a local currency there are not possibilities of sharp depreciations and sudden capital outflows resulted from deprecations. The increasing confidence of international investors will reduce the fiscal cost of borrowing by decreasing the spreads in international borrowing and promote investment and growth (Berg & Borensztein, 2000).

In addition, domestic inflation converging to world inflation; decreasing domestic interest rates, resulted by the disappearance of currency risk; providing a better investment environment thanks to inflation stability and lower interest rates; removal of currency mismatch in the balance of payments and the diminishing country risk are considered as other advantages of full dollarization (Jacome & Lonnberg, 2010).

Full dollarization also has been criticized from many respects in the literature.

According to Berg and Borensztein (2000), a country forgoes its seigniorage rights, by taking a foreign currency as its legal currency and the loss of seigniorage resulted from the transition to full dollarization has both stock and flow components. As mentioned by them, to withdraw local currency from circulation by changing it

with foreign currency, monetary authorities firstly need to take the public's local currency stock, which means the loss of stock seigniorage income accumulated in time. In addition, they stated that the monetary authorities renounce their possible seigniorage income resulting from print of new money to respond the increase in money demand.

Moreover, the lender of last reserve role of central banks is limited under full dollarization, since printing new money is not a way of creating liquidity and they have to find new liquidity sources for responding financial emergencies (Quispe-Agnoli, 2002).

Furthermore, accepting full dollarization as the exchange rate regime does not provide a guarantee for the future of the system. Political instabilities, large external shocks could encourage governments to print money or start to use exchange rate as a policy tool again (Calvo & Vegh-Gramont, 1992).

Also, the lower ability of the full dollarized economies to isolate real economy form external and real shocks has been argued in the dollarization literature. Although some analysis provides no evidence about the success of flexible exchange rate regimes in isolating domestic monetary variables from external ones, the standard argument against dollarization states that the flexible exchange rate regimes could protect the economy from external interest rate fluctuations. The dollarization against argument also mentions that in economies with flexible exchange rate regimes, monetary policy could be used for managing the aggregate demand, whereas full dollarization of a small open economy removes the use of countercyclical monetary policy.

From the historical perspective, Panama was the first country that accepting US dollar as the legal currency in 1904.

According to IMF Annual Report on Exchange Arrangement and Exchange Restrictions (2017), 13 member countries reported that they accepted a foreign currency as their legal currency.

2.1.2. Partial dollarization

Quispe-Agnoli (2002) defined partial dollarization as the substitution of local currency with a foreign currency for making transactions and allocating financial assets of economic agents. She mentioned that dollarization is not necessarily promoted by authorized institutions in the case of de facto dollarization, as its name reveals.

Calvo (1999) categorized the economies, in which a foreign currency serves at least one of the three functions of money, i.e., store of value, unit of account and medium of exchange, as partially dollarized economies.

According to Feige (2003), de facto dollarization, which is used for describing partial dollarization, is the answer of economic units to decreasing assurance about domestic currency, which is generally arisen from inflation, depreciation and/or currency seizures.

In the literature, asset dollarization, liability dollarization and financial dollarization terms are also used under the concept of partial dollarization. Thus, these three terms are explained separately in the next sub-sections.

2.1.2.1. Asset dollarization

Asset dollarization could be basically defined as the substitution of monetary assets in foreign currency with domestic currency ones.

In the economics literature, asset dollarization, asset substitution and deposit dollarization terms are used interchangeably time to time. Asset substitution is generally used to explain the usage of foreign currency as the store of value, whereas deposit dollarization describes the high rate of foreign currency deposits in the national banking system.

Foreign currency denominated assets provide developing countries with the possibility of protecting from macroeconomic risks like price instability or prolonged recessions.

According to Berg and Borensztein (2000), even under stability conditions, if the residents have any slightest thought about the recurrence of inflation, foreign currency denominated assets continue to carry on these functions. The so-called hysteresis in the dollarization process could be explained for asset substitution easily, since assets, denominated in foreign currency, will provide assurance if inflation and/or devaluation occurs again (Alvarez-Plata & Garzia-Herrero, 2008).

To hold foreign currency as a tool for declining the risks related to inflation and devaluations also provides efficiency gain from diversified portfolios and reduces the reasons for inflationary finance and capital outflow (Feige & Dean, 2002).

As mentioned by Honohan and Shi (2001), the volatility in the inflation rate makes the real return of investments ambiguous and it reduces the demand for investing domestic currency. Therefore, they pointed out that in many economies after a period of high inflation and abrupt devaluations of local currency, banks and their client start to hold an important portion of their deposits in foreign exchange.

In asset dollarization, the risk perception and yield expectations play significant roles (Quispe-Agnoli, 2002). An improvement in the difference between interest rates on behalf of domestic currency reduces deposit dollarization by increasing the level of domestic currency deposits (Ize & Levy-Yeyati, 2003).

2.1.2.2. Liability dollarization

Until the end of 1990s, dollarization term was used to describe the situation in which economic actors hold an important portion of their assets in foreign currencies.

However, the crises of Southeast Asia in 1998, Argentina in 2001/2002 and Turkey in 2001 pointed the importance of the currency combinations of loans and balance sheets in an economy.

Many works in the literature focused on the currency mismatches of countrywide balance sheets, stemming from the “original sin” phenomenon, which is described in the work of Eichengreen, Hausmann and Panizza et al. (2004) as the

incapacity of most countries to borrow in terms of their domestic currencies, internationally (Kesriyeli, Özmen, & Yiğit, 2005).

As a result of this, liability dollarization concept, used to describe the high level of foreign exchange liabilities of all economic agents, including public and banking sectors, gained importance.

The liability dollarization creates a source of financial fragility for developing economies.

Mishkin (2001) noted that the foreign exchange loan burden of domestic firms is increased by an unanticipated depreciation of local currency, whereas the value of domestic currency denominated assets does not change. According to him, as a result of this, balance sheets of the firms deteriorate and their net worth decline. He also mentioned that the decrease in net worth leads asymmetric information problems and these problems cause declines in investment and economic activity levels.

Because of these balance sheet effects, in emerging markets, economic agents concern about the major movements in the foreign exchange rate, especially depreciation of the local currency.

On the other hand, this situation creates one of the leading causes of "fear of floating" at the same time. The fear of floating leads the restriction of foreign exchange rate volatility by policy makers and it limits employing an independent monetary policy (Honig, 2005).

2.1.2.3. Financial dollarization

Uzun (2005), defined financial dollarization as the existence of an important amount of foreign exchange assets and liabilities in the balance sheets of an economy's the main sectors. Foreign exchange and foreign exchange denominated assets, holding in order to protect the savings of economic units against inflation risks, create one pillar of financial dollarization, whereas the foreign exchange borrowing caused by failures both in the market and institutions constitutes the other pillar of it (Adanur-Aklan & Nargelecekenler, 2010).

Luca and Petrova (2003) described the presence of financial dollarization in an economy by a high percentage of residents' financial contracts denominated in foreign exchange.

According to Havrylyshyn and Beddies (2003), analytical economic actors choose financial dollarization to decrease inflationary finance and enable better diversified portfolios, which could decrease or invert the capital outflows.

In addition, the adverse effects of financial dollarization are widely discussed in the macroeconomics literature. One of these effects is the declining effectiveness of monetary policy, resulted from the influence of financial dollarization on the asset selection in the monetary aggregates and exchange rate regimes. Other effects are the risks of dollarization for macroeconomic and financial stability and performance. Dollarization creates balance sheet currency and maturity mismatches and complicates the crisis management through decreasing effectiveness of financial safety (Uzun, 2005).

However; in his study, Arteta (2003) mentioned that the benefits of financial dollarization are overlooked. According to him, financial dollarization enhances financial intermediation in the economies with high nominal instability history, helps to avoid demonetization, decreases the contractionary impacts of crises on output level and leads efficiency gains for financial intermediation by allowing more integration with global markets and providing a wide range of financial tools.

2.2. Measures of Dollarization

According to Quispe-Agnoli (2002), measuring level of dollarization in a country depends on the restrictions that monetary authorities impose about the use of foreign currency. She noted that monetary authorities might limit or prohibit the usage of foreign exchange in domestic transactions or as a financial instrument. In the case of no restrictions, as she mentioned, residents could use foreign exchange in circulation or hold foreign currency deposits within the country or abroad.

Thus, for measuring the level of asset dollarization, the level of foreign exchange in circulation, the level of foreign exchange deposits owned by residents both in the country and abroad should be known. Nevertheless, the information about the quantity of foreign currency, used by residents in the circulation, and the level of deposits, held abroad, are limited. Therefore, the degree of asset dollarization is measured by the ratio of foreign exchange deposits in a country to the M2 money supply or to the total deposits in the country, in most of the studies.

However, in a number of works dollarization was measured by the level of foreign exchange in circulation. For example; Kamin and Ericsson (2003), analyzed the money transaction between Argentina and the USA and they used the US dollar level in Argentina for measuring dollarization degree of the country. Similarly, Feige, Sosic, Faulend and Sonje (2002) used estimations of the USA customs regarding the US dollar stocks in Latin America, to analyze the reasons of dollarization in Argentina.

From the liability dollarization side, the ratio of foreign exchange credits, given to private sector, to total credits, extended to private sector, or total assets or the ratio of foreign exchange credits, extended by banks to nonfinancial sector to total credits, extended by banks, are used as different measures of dollarization.

In some works, public sector liabilities in terms of foreign currencies were took into considerations. For instance; Reinhart, Rogoff and Savastano (2014) analyzed both public and private sector loans and they grouped economies under different classes, according to their domestic/external and public/private dollarization ratios.

Since the financial dollarization is a mix of asset and liability dollarization, measurements of both are used in the studies about financial dollarization. But the way used for measuring the dollarization level is related to the aim of the study.

2.3. Effects of Dollarization on Financial System

According to De Nicolo, Honohan and Ize (2003), since various factors that affect financial development are the determinants of dollarization at the same time;

the evaluation of dollarization's impact on financial development necessitates the consideration of endogeneity. Therefore, they stated that the simultaneousness of financial shallowness and dollarization indicates the occurrence of macroeconomic developments which affect both of them, rather than a causal relation. The regression results showed the higher dollarization level links with the deeper financial systems for high inflation countries.

Asel (2010), studied the relationship of dollarization with the financial development level for the Central Asia countries, namely Kazakhstan, Kirghizstan and Tajikistan. The correlation analysis between the deposit dollarization and the ratio of broad money to gross domestic product (GDP) as a measure of monetary depth showed a negative relationship. However, she did not find any important evidence regarding to contribution of dollarization to financial development.

Bannister, Gardberg and Turunen (2018), used 77 emerging and developing countries' data for the years between 1996 and 2015 to analyze the impacts of partial dollarization on financial development. They measured financial depth by the ratio of credits to GDP and the result of empirical analysis revealed that deposit dollarization has a significant negative impact on financial depth, whereas the effect of credit dollarization is statistically insignificant. They also investigated the effect of dollarization on the financial access. Yet the estimation result does not show any evidence of an effect of dollarization on financial access.

From the reverse side, Caballero and Krishnamurthy (2003) stated that the sign of the financial sector development level and credit dollarization relationship is negative. They explained this relationship with the fact that, the domestic economic actors, in the less developed financial markets, do not give importance to the assurance against the exchange rate risk provided by domestic currency credits,.

Since high inflation, weak institutions and financial instability are common characteristics of many dollarized economies, it could be expected that these conditions of dollarization contribute to lack of deep financial systems (Court, Ozsoz, & Rengifo, 2012).

In their study, Court et al. (2012) touched upon both positive and negative impacts of dollarization on financial depth. On the positive side, they argued that in

an inflationary economy savings, denominated in foreign currency, support financial depth by providing an alternative method for savings instead of the continuously depreciating local currency savings. On the opposite side, they stated that currency mismatch might raise the fragility of banking system against the external shocks. Thus, to answer the question whether dollarization has a positive or negative impact on financial depth, they analyzed the role of deposit dollarization on the 44 emerging market economies' financial depth. According to their results, the relationship between deposit dollarization and financial depth is negative, except in countries with high inflation. However, the results showed that in economies with high inflation rates, dollarization has a soothing impact on inflation.

Kubo (2008) examined the impact of foreign exchange deposits on the development of financial intermediation in low-income countries. He started his study with the assumption of the negative impact of foreign currency deposits on financial intermediation is more powerful in those countries. He used 70 low-income countries' data and the empirical analysis pointed out that the high percentage of foreign exchange deposits to total deposits links with the high level of private credit solely under inflationary conditions. The results also showed, under a certain inflation level threshold, foreign currency deposits could cause a decrease in private credit level.

Arteta (2003) studied whether financial dollarization raises the probability of crises or currency crashes and the cost of them. He conducted an extensive empirical research by using banking data of 72 developing and transition economies. The empirical results did not reveal any evidence about the enhancing impact of dollarization on the probability of banking crises or currency crashes or their costs. Oppositely, he found some evidence about the buffer impact of deposit dollarization which leads to less severe crises.

Furthermore, Honig (2006) questioned the existence of a relation between dollarization and banking crisis. He used data of 85 emerging markets for the years 1988-2000. As opposed to the general idea about the liability dollarization is an important risk factor for emerging economies; according to his estimation results the coefficients of dollarization variables are insignificant. In the evaluation of the

regression results, he noted the impact of dollarization is related to the type of dollarization. According to him, if a country experiences both deposit and credit dollarization at the same time, there is not any currency risk resulted by dollarization since any currency mismatch does not occur and there would not be any effect of dollarization on the banking crisis. He also mentioned if the firms could repay their dollar credits to domestic banks in case of a large depreciation, the deteriorating effect of the exchange rate change would be seen on balance sheets of firms instead of banks.

2.4. Effects of Dollarization on Banking

According to Basel Committee (1980), although banks engage in many risk-taking activities, only a number of them might end up with big losses as occurred in foreign exchange operations.

Basel Committee (1980) listed risks stemming from foreign currency operations of banks as exchange rate risk, interest rate risk, credit risk, country or solvency risk and time-zone risk.

In the case of a depreciation or appreciation of the local currency, banks are confronted with exchange rate risk, depending on their foreign exchange positions.

Exchange rate risk; in other words, currency risk, could be defined as the risk that movements in the exchange rate affect the value of banks' assets and liabilities in foreign currency (Saunders & Cornett, 2008).

For instance, a bank with a net long asset position in a foreign currency is exposed to exchange rate risk, if the bank has to liquidate its foreign exchange assets at an exchange rate smaller than the rate that the bank took the foreign exchange position (Casu, Girardone, & Molyneux, 2006). Or as a consequence of adverse exchange rate changes, a bank, which has an open position, might face serious losses (Basel Committee, 1980).

Exchange rate movements affect banks both directly and indirectly. The direct effect is resulted from banks' net payments in foreign currency related to foreign exchange assets and liabilities. With the movements in the exchange rate, the

value of these assets and liabilities in terms of domestic currency changes, too. According to Popper (1996), both identifying and hedging against direct impacts of foreign exchange is easier than coping with indirect impacts.

Even though a bank does not have any foreign exchange assets and liabilities, the changes in the economy, resulted from the foreign exchange rate, affect the banks' profitability indirectly. In this case, since the risk itself is not explicit, forecasting, analyzing and protecting from the effects of risk is more difficult.

Aloğlu (2005) described the reasons of exchange rate risk as concentrating on operational and financial profit of foreign direct investments and foreign portfolio investments, not allocating foreign exchange assets and liabilities in the form of different instruments and having different amounts of foreign currency instruments as assets and liabilities.

For measuring exchange rate risk, banks calculate the net exposure for each currency. The difference between the assets and liabilities denominated in a currency gives the net exposure in terms of that currency (Casu et al., 2006).

However, holding assets and liabilities in varied maturities and currencies, makes measuring foreign exchange rate risk of a bank more complicated (Saunders, 1999).

In addition to currency risk, since the maturity mismatch of foreign exchange positions leads interest rate risk, interest rate risk could be accepted as another type of risk that stemming from banks' operations in foreign currency (Basel Committee, 1980).

In a basic way, Casu et al. (2006) described the risk related to unanticipated movements in interest rates as the interest rate risk.

If the assets and liabilities of a bank do not respond the interest rate change in the same direction or in the equal amounts, the interest rate fluctuations might lead a rise or fall in a financial institution's net worth. (Shaffer, 1991).

The banks' reported earnings and bank capital is influenced by the movements in the interest rate through the changes in the net interest income, the

market value of trading accounts and other interest sensitive income and expenses (U.S. Department of Treasury Office of the Comptroller of the Currency, 1997).

An illustration could make easier to describe the relation. A bank has equal amounts of assets and liabilities in a foreign exchange; however, the assets have 6 months maturity and the liabilities have 3 months maturity. A rise in the foreign exchange interest rates, when the bank has to roll over its liabilities at the end of the maturity, leads an interest rate risk for the bank (Saunders & Cornett, 2008).

In other words, even though a bank matches the quantity of its foreign exchange assets and liabilities, it might be subjected to foreign interest rate risk if it mismatches the maturities (Saunders & Cornett, 2008).

According to De Nicolo et al. (2003), banks with huge amount of foreign currency liabilities have to balance their currency positions by lending in foreign currency to residents or accumulating foreign currency assets abroad. Therefore, as they stated, to sustain their profits and respond the credit demand, banks transfer the exchange rate risk to unhedged debtors by lending most of their foreign exchange deposits to customers. However, they undertake the credit risk in turn.

Similarly, Chang and Velasco (2001) noted that liability dollarization shows that the depreciation of domestic currency affects balance sheet of banks, negatively. According to them, banks want to protect themselves from the exchange rate risk by lending in foreign currency or using financial derivatives like foreign currency swaps. However, as they mentioned, by lending in foreign currency, banks try to avoid exchange rate risk at the cost of a potential default risk, which would be possibly more dangerous.

Banking Regulation and Supervision Agency (2001) described credit risk as the situation that a bank faces when a customer fails to fulfill his liabilities, in accordance with agreed terms, partially or completely. In other words, credit risk is the default risk of the debtor.

For most of the banks the main resource of the credit risk associated with the credits extended to their customers. However, some other reasons, stemming from other operations of bank, also lead credit risk. Interbank transactions, trade financing, foreign exchange transactions, swap operations, bonds, options, future

contracts and guarantees are some examples of financial operations and instruments that create credit risk for the banks (The Banks Association of Turkey, 1999).

As mentioned by Sonbul-İskender (2014), in terms of credit risk, the borrower might be firms, real persons or even governments; while, the liability of the borrower might take many different forms from credit cards to financial derivatives.

For studying the banks' foreign exchange operations and credit risk relation, considering an example of a defaulting counterparty of a foreign exchange contract or foreign exchange loan would be beneficial. In this case, the bank will have an uncovered exchange position. The bank will suffer from an exchange loss stemming from the exchange rate change in meantime of covering the position opened up by the unfulfilled foreign exchange contract (Basel Committee, 1980).

Since counterparties of most foreign exchange contracts are non-residents, foreign exchange operations of banks also create a source of country risk for the banks (Basel Committee, 1980).

According to Saunders and Cornett (2008), country risk could be described as another type of credit risk that occurred when the repayments of foreign borrowers are interrupted as a result of foreign country's government interruptions.

As indicated when mentioning about credit risk, the borrower of the bank might be firms, real persons or even governments. Despite the prevail opinion that a credit to a foreign government is more credible than the one extended to private sector, international lending carries unexpected risks (Hempel & Simonson, 1999).

As mentioned by Casu et al. (2006), governments might fail to fulfill its obligations regarding to its debt to banks and it is called as sovereignty risk. According to them, sovereignty risk describes that governments might use their power of authority for declaring cancellation of external debts or changing the capital movements, interest rates and profits. They noted that this kind of situations might emerge at the times that foreign governments experience some economic and political problems. In this case, as they explained, governments try to solve their domestic problems by directing the resources to their own countries.

Time-zone-related settlement risk is defined as another type of credit risk particular to foreign currency operations. If a foreign currency contract has two settlements, taking place at varied times because of the difference in time zones and the other party of the contract fails to fulfillment of obligation in the interim, the time-zone related settlement risk occurs (Van Greuning & Brajovic-Bratonovic, 2009).

2.5. Studies About the Impacts of Dollarization on Bank Performance

Harker and Zenios (2000) noted that to measure performance by using output or quantity was easy in old economies; however, with the ongoing development in the diversity of services provided in the banking sector, conventional measures of productivity are hard to calculate and less adequate for evaluating performance, as they were before.

Thus, in the literature, bank performance has been addressed in many aspects and several indicators are used to measure it. Most of the works addressing the relationship between dollarization and bank performance handle bank performance from profitability aspect. Therefore, the performance is assessed with indicators of profitability, loan quality and loan growth in these studies.

The first work analyzing the dollarization and bank performance relationship was carried out by Quispe-Agnoli and Whisler (2006). They examined the impacts of full dollarization and other macroeconomic and institutional characteristics on the bank performance indicators. They used the data of Ecuador and El Salvador banks for the period between 1995 and 2004. In their model, each of the bank performance indicators, namely, profitability, loan quality and loan growth were used as dependent variables. The independent variables used in the study were dollarization dummy, which shows when official dollarization was implemented, economic growth rate, inflation rate, GDP per capita, ratio of trade to GDP, bank deposits as a ratio of GDP, private sector credits as a ratio of GDP. According the regression results obtained, dollarization has a positive impact for loan quality, whereas it

affects the liquidity ratio of the bank negatively. In addition, it was found that dollarization does not have a statistically significant impact on profitability.

Ozsoz (2007) investigated the financial dollarization's impact on bank performance in 11 emerging economies. He used the bank-level data of the years between 1991 and 2004. In the regression model developed, before tax profit was taken place as an indicator of bank profitability. The estimations were done by Generalized Least Squares (GLS) method. According to estimation results, he stated that dollarization does not directly explain bank profitability, whereas the estimations on loan-loss provisions shows the significant impact of foreign exchange deposits on the changes in the banks' bad loans to its overall loan portfolio ratios.

Kutan, Ozsoz and Rengifo (2012) analyzed the deposit dollarization and bank profitability relation in 36 countries for the years between 1991 and 2006. They measured the bank profitability by the ratio of earning-before-taxes to total assets. Ordinary Least Squares (OLS), Fixed Effect and GMM techniques were used for estimation. They found that the dollarization ratio of the current period does not have any significant impact on banks' profitability, whereas the dollarization ratios of the previous periods affect the bank profitability, significantly. The results showed that deposit dollarization affects banks' profitability adversely, with a time lag. They explained the reason behind this with the adaptive expectations of the bank managers.

Omet, Hadhoud and Abdel-Halim (2015) evaluated the effect of foreign exchange deposits on the performance of banks, domiciled in Jordan, in terms of profitability. They conducted an empirical research based on the data of 2000-2011 period. They employed ROA as an indicator of bank performance. They used Seemingly Unrelated Regression (SUR) and Pooled Estimated Generalized Least Squares (EGLS) methods for the estimation. According to estimation results, foreign currency deposits have a positive effect on ROA.

Caglayan and Talevera (2016) studied the impacts of credit dollarization on the Turkish banks' liquidity and profitability. They used 46 banks' quarterly data of 2003-2014 period. They conducted an empirical analysis by using generalized linear model (GLM) and instrumental variables fixed effect methodologies. According to

their estimation results, banks decrease their liquid assets while lending more in foreign currency. It means that liability dollarization fosters banks for using their resources more effectively. However, it was found that supply of foreign exchange credits, deposit dollarization and total foreign exchange liabilities do not have any significant effect on liquidity management. But the coefficient of exchange rate volatility was found significant and positive. The results also showed that a raise in the liability dollarization leads an improvement in performance. In addition, the interaction coefficients between foreign currency loans and volatility of exchange rate and interest rate differentials are found negative. It indicates that the positive impact of foreign exchange credits will diminish as volatility of exchange rate or the spread between the interest rates are increasing.

Davidovic and Milenkovic (2013) analyzed the effect of currency substitution on Serbian banks' performance. They used panel data structure and analyzed the data of the 10 Serbian banks. Their study covered the years between 2005 and 2011. They specified two profitability models while using ROA and net interest margin (NIM) ratios as dependent variables. The estimation results gathered by conducting Two Stage Least Squares (TSLS) method revealed that currency substitution affects both of the dependent variables, adversely.

2.6. Studies About the Determinants of Bank Performance

In addition to works related to dollarization and banking sector, to analyze the bank performance better and determine the correct variables of empirical analysis, reviewing some empirical works about bank performance's determinants would be purposeful.

A huge number of empirical analyses conducted for examining the determinants of bank performance. From the very first studies, the variables, impacts of which on the bank performance are investigated, are classified under different groups, particularly, bank specific variables, financial sector structure related variables and macroeconomic variables. The bank specific variables are described as

internal variables, whereas the financial sector structure related and macroeconomic variables grouped under the name of external variables.

One of the earlier examples of these works conducted by Short (1979). He analyzed the determinants of banks performance and especially the effect of banking sector concentration on banks profit rate. He used data of 60 banks from 12 countries. Also he added central bank discount rate and long term government bond rate to his model as proxies of economy wide profitability. The results showed that, concentration measures, central bank discount rate and long-term government bond rate have positive impacts on banks profitability, whereas the effect of government-ownership is negative. Additionally, it is found out that in the models including central bank discount rate, the coefficient of the rate of growth of assets is statistically significant and negative.

A similar study of Bourke (1989) supported the positive relation between the concentration and the performance of banks.

Following the works about the effect of banking sector concentration on bank performance, Molyneux and Thornton (1992) studied the factors affecting banks' performances in 18 countries of Europe for the years between 1986 and 1989, and staff expenses and liquidity variables were included in their study. They found out that ROE has statistically significant positive relationships with concentration, nominal interest rates and government ownership. Their results regarding to government ownership is conflicting with the results of previous studies. However, they explained it with the lesser capital ratios of state owned banks. From the ROA side, the estimation results indicated positive relationships with capital, nominal interest rates, staff expenses, concentration and government ownership.

A recent study regarding to determinants of bank performance was conducted by Kohlscheen, Murcia and Contreras (2018). They worked on 534 banks from 19 emerging market economies. The findings of the estimation results show that long-term interest rates and credit growth have an increasing impact on profitability of banks. However; short-term interest rates and sovereign risk premium decline the bank profits.

On the other hand; Naceur (2003)'s work is an example of the studies conducted for explaining the performance of a single country's banking system. In his work; the effects of several internal and external variables on NIM and profitability of banks in Tunisia, between the years 1980 and 2000, are studied. According to the results of the study; capital and overheads have significant and positive effects on both NIM and profitability of banks in Tunisia. The size variable has a statistically significant negative relationship with NIM, whereas the variable of bank loans has a positive one. On the other hand; the effect of the stock market development is statistically significant and positive for bank profitability. The macroeconomic variables inflation and growth rates do not have any statistically significant effect on NIM and profitability. In addition, the results showed that concentration affects NIM negatively

Another example of single country analyses is the study of Guru, Staunton and Shanmugam (2002), regarding the determinants of commercial bank profitability in Malaysia for the period of 1985-1998. They worked on both asset based measures and capital based measures of profitability. According to estimations of asset based profitability, loans and current account deposits are the most profitable contributors to banks profits. Liquidity and bad expenses-management; however, contribute to poor profitability performance of banks. The findings regarding to capital based measures of profitability showed that loans, deposits, inflation, market interest rate and investment in subsidiaries have positive impacts on performance. However, the coefficients of total expenditure, capital and reserves variables are found negative.

The other example of single country studies is the work of Athanasoglou, Brissimis and Delis (2005), which examined the effects of various banking and macroeconomic variables on Greek banks' profitability in the period of 1985- 2001. They added the lag value of profitability to model as an independent variable and the estimation results pointed out that it has a highly significant positive effect for the current profitability of the bank. Capital, productivity growth and inflation have statistically significant and positive impacts on profitability, while, the effects of credit risk and operating expenses are founded negative. In addition, the findings

revealed that size and the ownership structure of banks, whether government owned or privately owned, are insignificant in affecting banks' profitability.

In the literature, there are also some works conducted for explaining the determinants of banks' performance in Turkey. For example, Tunay and Silpar (2006) analyzed the profitability of banks in Turkey by using various statistical and econometrical methods. In this study, not only scales of banks but also ownership structures handled separately for the regression analysis. The results showed that ratio of credits to total assets, log of total assets, ratio of non-interest income to total assets, inflation, real national income, ratio of deposits to stock market capitalization value, ratio of stock market capitalization value to national income and ratio of total assets to national income affects the banks' profitability, measured by ROA, ROE and NIM.

In addition, Atasoy (2007) examined the factors affecting the Turkish banking sector profitability by using a panel dataset regarding to banks in Turkey for 1990-2005 period. He used NIM and ROA as indicators of bank profitability. The estimations showed that equity, loan loss provisions, non interest earnings assets, size of bank, inflation and bank concentration ratio have significant effects on both ROA and NIM. However; the findings show that overhead and significance of bank finance are only associated with ROA. According to estimation results, deposits, growth of GNP and significance of stock market finance have significant impacts on only NIM.

By using financial data of 25 Turkish commercial banks for the years between 2002 and 2007, Ata (2008) worked on the same topic and focused on the period after the 2001 economic crisis. He employed cost ratio, capital adequacy, liquidity, asset profitability and size indicators as internal variables, whereas GDP growth rate, consumer price index (CPI), growth rate of M2Y money supply, the ratio of total assets of the deposit banks to GDP and concentration ratio of banking sector variables constituted the external variables. He implemented OLS and Fixed Effect methods for the empirical analysis. The estimations revealed that the effects of internal factors on the profitability of banks are more than those of external variables. The effects of cost management, capital adequacy, asset profitability and

concentration ratio of banking sector are found significant and negative. Liquidity, size and the ratio of total assets to GDP have significant and positive effects on bank profitability.

Alper and Anbar (2011) investigated the effects of asset size, capital adequacy, asset quality, liquidity, deposits, income-expenditure structure, annual real GDP growth rate, annual inflation and real interest rate on the profitability of 10 banks in Turkey for 2002-2010 period. The Fixed Effect panel estimation results demonstrated that only bank size and non-interest income significantly affects profitability, indicated by ROA. Asset quality has negative impacts on ROA. In the estimations conducted by employing ROE, only the positive effects of bank size and real interest rate were found statistically significant.

In a similar way, Topak and Talu (2017) Turkish banks' profitability by using panel data of 2005-2015 period. They used ROA and ROE ratios for the assessment of profitability. According to empirical findings, the ratios of loan interest to deposits interest, net fees and commissions revenues to total operating expenses and bank size have statistically significant and positive effects on both of the banks' profitability measures. However, the ratio of nonperforming loans to total loans, capital adequacy and the ratio of other operating expenses to total operating revenue have negative impacts on profitability. Among the real GDP and interest rate have positive effects on banks' performance, while the effect of exchange rate was found negative.

CHAPTER 3

DOLLARIZATON AND BANKING SYSTEM IN TURKEY

3.1. Dollarization in Turkey

The Law No. 1567 Regarding the Protection of the Value of Turkish Currency[1], published in February 25, 1930 dated and 1433 numbered Official Gazette, constitutes the basis of foreign exchange legislation in Turkey. The principles and procedures about the foreign exchange regime are regulated with decrees that use the Law No.1567 as base.

In this context, the Decree No.1[2] was published in February 27, 1930 dated 1435 and numbered Official Gazette with the name of "Protection of the Value of Turkish Currency". With the first and second articles of this Decree, foreign exchange purchases and sales were prohibited, except for stock exchange, banks, authorized bankers and those listed in the list of needs, issued or announced by the Ministry of Finance.

According to the regulations made between Decree No.1 and Decree No. 13[3], the foreign exchange buying and selling operations could be done only by banks and banks could not sell foreign exchange to those, who did not have the permission issued by the Ministry of Finance. In addition, the residents in Turkey could not use

[1] The current version of the law could be accessed from http://www.mevzuat.gov.tr/MevzuatMetin /1.3.1567.pdf

[2] The Decree is available at http://www.resmigazete.gov.tr/arsiv/1435.pdf

[3] The Decree is available at http://www.resmigazete.gov.tr/arsiv/6615.pdf

their foreign currencies in Turkey and the import of these currencies was subject to permission of Ministry of Finance. Moreover, the banks, except those authorized by Ministry of Finance to hold foreign exchange, must have deposited the foreign exchange, which were deposited to their banks, to CBRT or the banks that authorized by Ministry of Finance to hold foreign exchange. Furthermore, the prices of good and service export, maritime services and foreign shipping and insurance partnerships must have brought to Turkey and the regarding foreign exchange must have been sold to banks.

With the Decree No.14 [4], published in Official Gazette dated September 15, 1955 and numbered 9104, the import of foreign exchange to Turkey was liberated. However, it was obligatory to sell the foreign currencies, brought into country, to one of the authorized banks within the periods determined by the Ministry of Finance.

After that, the Decree No.17[5] was published in September 14, 1962 dated and 11206 dated Official Gazette. In this regulation, it was mentioned that the foreign currency import to Turkey was free and the importation could not be subject to any declaration or any other operation. In addition, buying foreign exchange in Turkey was liberated.

With the same regulation, the residents in Turkey were allowed to open deposits with foreign currencies, which are not compulsorily brought to Turkey. This regulation could be accepted as the first step of the development of dollarization phenomenon in Turkey.

After this regulation, the convertible deposit accounts were put into practice in 1967. The aim of these accounts was providing the required foreign exchange for the economy, from the savings of Turkish workers abroad.

[4] The Decree is available at http://www.resmigazete.gov.tr/arsiv/9104.pdf

[5] The Decree is available at http://www.resmigazete.gov.tr/arsiv/11206.pdf

In 1976, Central Bank of Republic of Turkey (CBRT) started to open "foreign exchange deposit with credit letter" for taking Turkish workers' savings from German banks (Artukoglu, 2005).

The implementation of convertible deposit accounts and foreign exchange deposit with credit letter shows that the required conditions for dollarization in Turkish economy first occurred in the late 1960s and early of 1970s.

At the beginning of 1980s, an economic stabilization program, called as January 24 Decisions, was put into force. In the context of this program, several reforms and foreign exchange legislation amendments were made, regarding to financial liberalization.

The first of the important legislative amendments made in this context was the Decree No.26 [6], which was about the rules to be applied for opening of foreign currency deposit accounts of those who make foreign exchange earning transactions. The Decree was published in January 12, 1983 dated and 17929 numbered Official Gazette and it made enable residents in Turkey to open foreign currency demand deposits with the foreign exchange, which they must have brought to Turkey. However, the amount of these deposits could not exceed the 5% of the amount, brought to Turkey.

Liberalizing interest rate of deposits and credits, introducing Capital Market Law and Banking Law were the main important reforms and legislations made in this period. Along with these reforms and regulations, inflation and movements of foreign exchange rate played role in the development of dollarization in Turkey between the years 1980 and 1989.

As stated by Civcir (2005), until the end of 1988, the high and volatile difference between domestic and foreign inflation and depreciation of domestic currency affected the inflation rate. As a result, as he mentioned, residents, who want to be protected against inflation, turned to foreign currency. As well as high inflation rates, fiscal deficits, financial crises and political instabilities deepened dollarization phenomena in Turkey and increased dollarization rate.

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[6] The original text of the Decree is available at http://www.resmigazete.gov.tr/arsiv/17926.pdf

When it came to 1989, the most important financial liberalization reform was realized and Decree No. 32[7] entered into force.

Kepenek and Yentürk (2005) mentioned that, with the liberalization of capital account in 1989, the capital inflow to Turkey was more than expected, like in many developing countries. As a result of this, Turkey evaded from foreign exchange bottle-neck, while capital inflows led an overvaluation in real exchange rate.

In addition, Civcir (2005) pointed out that portfolio choices became more sensitive to relative return of assets after the liberalization of capital account in Turkey and it reduced the transaction cost of having foreign exchange deposits.

The difference between domestic and foreign interest rate followed a similar path with dollarization in Turkey, since a rise in the interest rate difference shows the increasing risk perception about the domestic economy and gives acceleration to deposit dollarization (Serdaroğlu, 2011).

On the other hand, Metin-Özcan and Us (2006) stated that, the reasons behind resorting dollarization even in the periods, when the real returns of assets denominated in Turkish lira were higher than those denominated in foreign currencies, were the ongoing uncertainties in the political and macroeconomic conjuncture.

The financial crises occurred at the beginning of 2000s, lack of confidence about the economy and expectation of depreciation contributed to the dollarization phenomenon in Turkey. Three months after the February 2001 crisis, "Strong Economy Transition" program started to be implemented in May.

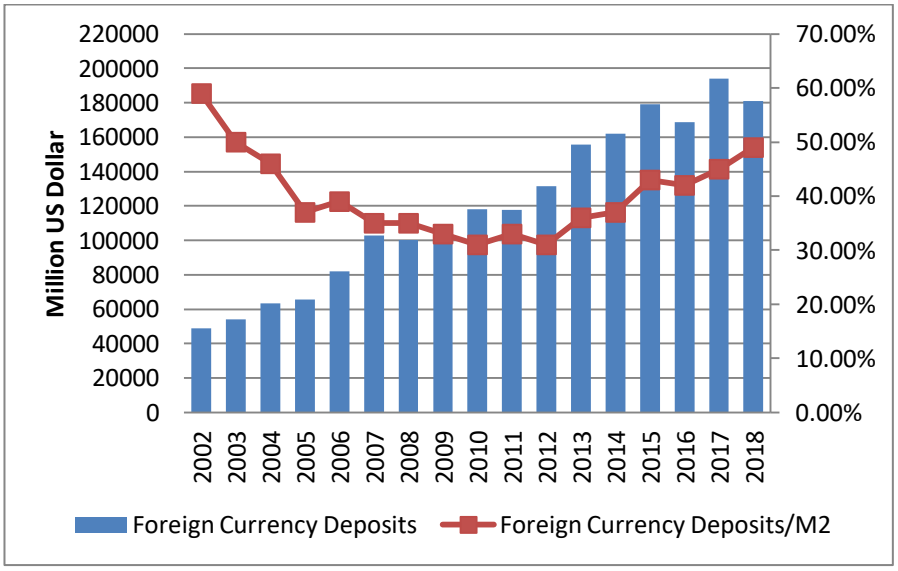
Özatay (2005) mentioned that, the program had begun to show its effects and inflation expectations, inflation rate and the ratio of public debt to GNP declined, by the end of 2001. In addition, he stated the improvement of fragility indicators such as liquidity and default risk at the same time. According to him, concerns about the sustainability of fiscal discipline and external shocks like September 11 attack and

[7] The initial version of the Decree is available at http://www.resmigazete.gov.tr/arsiv/20249.pdf. The current version of the Decree could be accessed from https://hmb.gov.tr/finansal-piyasalar-ve-kambiyo-mevzuat

the Iraq War in 2003 adversely affected the perception of the risk of the domestic currency and caused loss in power of the Turkish lira. He explained the persistence in demand for foreign exchange assets, despite the positive developments in the inflation, with these issues.

At the beginning of 2002, CBRT announced that it would implement implicit inflation targeting. Besides high inflation, fiscal dominance, risk premium and exchange rate volatility; the high level of dollarization was one of the factors that make transition to inflation targeting difficult for Turkish economy.

At the Figure 1, the ratios of foreign exchange deposits[8] to M2 money supply, the widely used measure of deposit dollarization, in Turkey between the years 2002 and 2018 are illustrated.



Source: CBRT, BRSA

Figure 1- Deposit Dollarization in Turkey (2002-2018)

As is seen on the Figure 1, after the 2001 Crisis, the deposit dollarization ratio was recorded as 59 % in 2002.

[8] Foreign exchange deposits of both residents and non-residents, in the banks domiciled in Turkey.

In 2004 CBRT announced that, it would start to implement explicit inflation targeting at the beginning of 2006.

Metin-Özcan and Us (2007) mentioned that, in this period, Turkey was exposed to external factors like flow of capital to developing economies, increses in international inflation and global slowdown in growth. Furthermore, they stated that Turkey experienced high economic growth and achieved its targets on inflation and primary surplus between the years 2002 and 2005, which increased the confidence in the economy.

Figure 1 demonstrates that the ratio of foreign exchange deposits to M2 money supply, which was 37% in 2005, rose to 39% in 2005. After 2006, it started to fall and declined to 31% in 2010, but it started to rise again in 2012. Except the slight decrease in 2016, the deposit dollarization ratio continuously increased and it reached 49% in 2018.

Besides asset dollarization, the evolution of liability dollarization in Turkey should be analyzed. The first time that residents in Turkey allowed to use credit from abroad was 7 June 1984, when the Decree No.30 [9] came into force. With this regulation, banks, domiciled in Turkey, were allowed to give foreign currency credits, under certain conditions like financing of export, investment goods and expenses regarding to international competitive bindings.

In years, the conditions for use of foreign currency credit were changed with several legislations

Until the amendment made in 2009[10], the consumers and firms, who did not meet these conditions, were not able to use foreign exchange credits from the domestic banking system; however, there was not any restriction on using foreign currency indexed credits from Turkey. In addition, all firms were able to use foreign currency credits from abroad in order to finance all kinds of commercial and

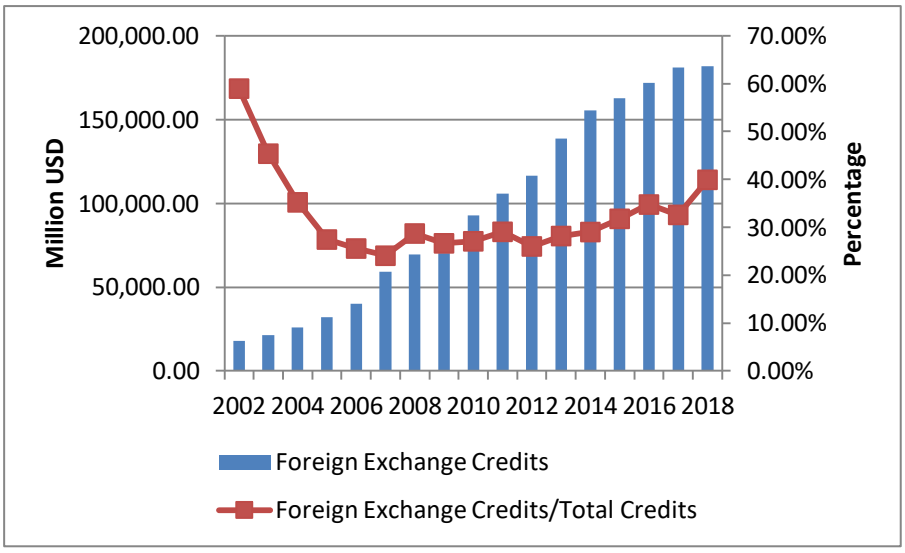
[9] The Decree is available at http://www.resmigazete.gov.tr/arsiv/18451.pdf

[10]The original text of the amendment is available at http://www.resmigazete.gov.tr/eskiler/2009/06/20090616-1.htm

professional activities. In this case, companies were directed to use foreign currency loans from foreign branches of banks established in Turkey.

With the amendment in 2009, foreign exchange indexed credits use of residents in Turkey was prohibited, except for the credits used for their professional and commercial purposes. Moreover, banks were allowed to provide residents with foreign exchange credits, which were more than 5 million US dollars (USD) and had an average maturity longer than 1 year.

In 2018, another amendment[11] regarding to foreign currency credits was put into force. According to the new legislation, residents in Turkey, who have foreign exchange liabilities less than 15 million USD, could borrow in foreign exchange according to a limit which does not exceed the sum of their foreign currency income of last three fiscal years, with some exceptions. With the same amendment, the use of foreign currency indexed credits by residents in Turkey was prohibited completely.



Source: BRSA

Figure 2- Credit Dollarization in Turkey (2002-2018)

[11] The original text of the amendment is available at http://www.resmigazete.gov.tr/eskiler/2018/01_/20180125-1.pdf

In Figure 2, the ratio of foreign currency credits extended by banks in Turkey to total credits extended by those banks is showed, for the period of 2002-2018[12].

As is shown in Figure 2, the ratio of foreign exchange credits to total credits decreased significantly, after the transition to floating exchange rate regime. The companies with limited foreign exchange income reduced their foreign exchange credit use in order to avoid currency risk. The ratio of foreign exchange credits to total credits was recorded as 59% in 2002 and it decreased gradually until 2007. It followed a fluctuating course between the years 2008 and 2012 and started to increase from 2012. A slight decrease was observed in 2017 and it reached 40% in 2018.

When the numbers in Figure 1 and Figure 2 evaluated together, it could be said that both deposit and credit dollarization maintain their importance in Turkish economy.

3.2. Foreign Exchange Positions of Banks in Turkey

As described by Rodriguez and Carter (1984), a bank has a long position if the foreign currency cash inflows, expected by the bank, are more than the foreign exchange cash outflows. On the other hand, as they stated, the bank has a short position if the foreign exchange cash outflows are larger than the foreign exchange cash inflows.

In addition, the situation is called as square position when the cash inflows and cash outflows, in terms of foreign currency, are equal in a certain period (Rodriguez & Carter, 1984).

Analyzing the foreign exchange positions of banks in Turkey would provide meaningful contributions to this study. However, before moving on with banks' foreign exchange positions, giving brief information about the number and type of banks operated in Turkey would be appropriate.

[12] The data covers all the credits extended by banks domiciled in Turkey, except for the credits extended to each other by banks.

According to the database of The Banks Association of Turkey (TBA), there are 47 banks in Turkey and the classification of them is shown in Table 1.

Table 1- Banks in Turkey

Classification			**Number**
Deposit Banks	Turkish Banks	State- Owned Deposit Banks	3
		Privately- Owned Deposit Banks	9
		Banks Under the Deposit Insurance Fund	1
	Foreign Banks	Foreign Banks Founded in Turkey	16
		Foreign Banks Having Branches in Turkey	5
Development and Investment Banks	Turkish Banks	State- Owned Development and Investment Banks	3
		Privately- Owned Development and Investment Banks	6
	Foreign Banks	Foreign Development and Investment Banks	4
TOTAL			47

3.2.1. Foreign exchange assets of banks in Turkey

According to data provided by BRSA, total foreign exchange assets of banks in Turkey was 2.596.936,52 million Turkish lira (TL), as of January 2019. Total foreign exchange assets comprise all foreign exchange asset accounts, foreign exchange indexed assets, forward foreign exchange buying commitments of banks, including account of banks' off-shore branches. Foreign exchange indexed assets describes the assets, precisely defined as a foreign exchange indexed instrument in related contract or legislation. The changes in foreign exchange rate directly affect the values of these assets. Off- balance sheet foreign exchange assets includes the assets regarding to forward, swap, future and option transactions.

As of January 2019, balance sheet assets in foreign exchange constituted around 67% of the total foreign exchange assets, whereas the share of off-balance sheet foreign exchange assets was 33%. Foreign exchange indexed assets; on the other hand, has only about 2% share in total.

In the Table 2, banks' total foreign exchange assets and their components are listed for the period of 2006-2019. Although, BRSA provides the data only in TL, for analyzing the changes in the foreign exchange assets of banks the values should be adjusted from the foreign exchange rate movements. Thus the TL values were converted to USD, by using CBRT indicative foreign exchange selling rates for each year's end of January.

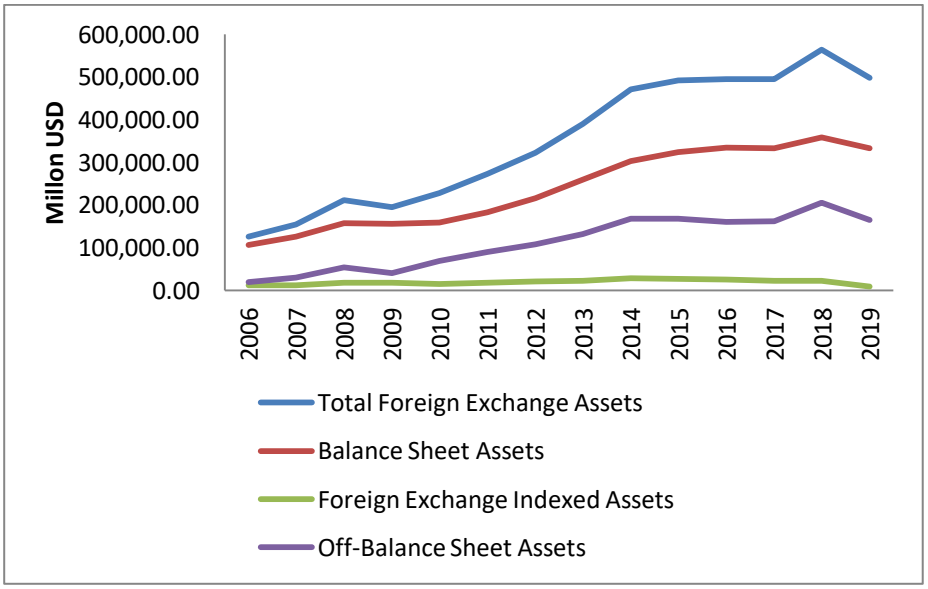
Table 2- Foreign Exchange Assets of Banks in Turkey[13]

	Total Foreign Exchange Assets		**Balance Sheet Assets**		**Foreign Exchange Indexed Assets**		**Off-Balance Sheet Assets**	
	(million TL)	*(million USD)*	*(million TL)*	*(million USD)*	*(million TL)*	*(million USD)*	*(million TL)*	*(million USD)*
2006	166.231,56	125.334,81	140.352,00	105.822,21	15.662,47	11.809,15	25.879,57	19.512,61
2007	219.738,50	154.712,74	178.733,04	125.841,75	15.703,76	11.056,65	41.005,46	28.870,99
2008	247.469,58	210.863,65	184.902,44	157.551,50	20.968,22	17.866,58	62.567,15	53.312,16
2009	320.576,17	195.187,63	254.242,66	154.799,48	28.789,25	17.528,77	66.333,51	40.388,16
2010	338.796,94	227.334,72	236.382,39	158.613,96	21.974,20	14.744,82	102.414,55	68.720,76
2011	436.913,30	271.915,17	293.256,78	182.509,82	28.892,96	17.981,68	143.656,52	89.405,35
2012	571.762,89	322.574,27	382.525,78	215.811,44	35.214,83	19.867,32	189.237,10	106.762,82
2013	687.767,33	390.045,56	456.730,43	259.020,26	39.468,70	22.383,43	231.036,90	131.025,29
2014	1.068.640,46	470.000,64	688.184,29	302.671,54	64.354,01	28.303,65	380.456,17	167.329,10
2015	1.190.576,31	491.587,72	785.104,88	324.168,99	64.251,39	26.529,33	405.471,44	167.418,74
2016	1.467.474,36	494.732,10	993.028,87	334.781,49	72.498,76	24.441,63	474.445,49	159.950,61
2017	1.875.090,95	494.199,29	1.260.253,81	332.152,71	83.380,15	21.975,69	614.837,14	162.046,58
2018	2.118.558,67	563.326,60	1.344.995,14	357.635,38	80.490,99	21.402,62	773.563,53	205.691,22
2019	2.596.936,52	497.468,83	1.737.272,71	332.791,74	45.076,10	8.634,77	859.663,81	164.677,09

[13] Annual data, starting from January 2006 to January 2019.

According to the data showed in Table 2, the USD value of total foreign exchange assets follow an increasing pattern except the years 2009 and 2017. After a decline in 2009, it increased continuously between the years 2010 and 2016. Following a slight decline in 2017, it increased again in 2018. However, from 2018 to 2019, the value declined about 65.857 million USD from January 2018 to January 2019. Yet, in terms of domestic currency the value increased about 478.378 TL.

The development of the components of total foreign exchange assets is shown in Figure 3.



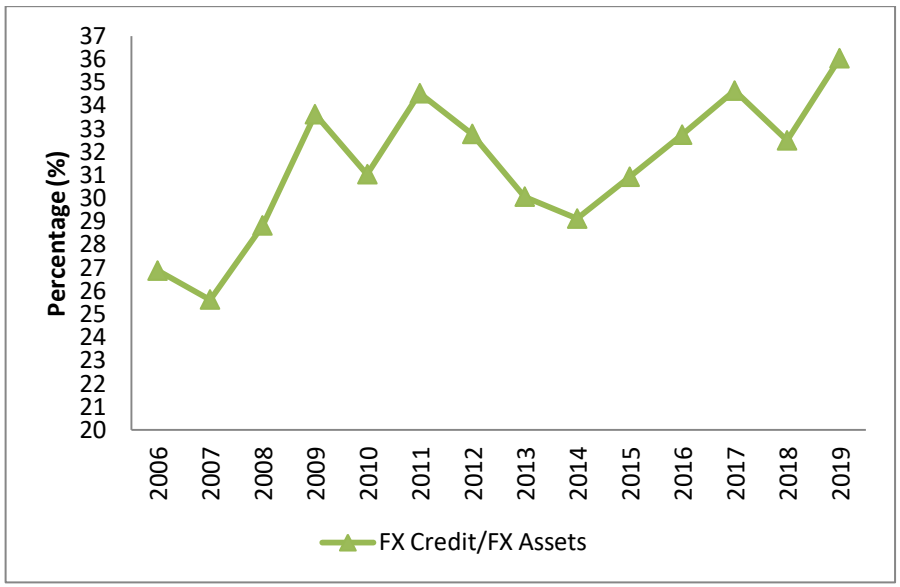
Source: BRSA

Figure 3- Components of Banks' Foreign Exchange Assets

As is seen from the Figure 3, balance sheet and off balance sheet foreign exchange assets follow a similar pattern. They increased together in the period of 2006-2008. After the decline in 2009, both of them continued to increase until 2015. In 2016, off-balance sheet foreign exchange assets decreased. After this decline, it increased to reach its peak in 2018. Balance sheet foreign exchange assets, after a fall in 2017, also reached its maximum in 2018. In 2019, both of them decreased in terms of USD.

The foreign exchange indexed assets increased between the years 2006 and 2016, except a decline in 2010. Then, it continuously decreased, starting from 2016. In 2019, it recorded its minimum level for the period of 2006-2019.

Moreover, in the Figure 4 the percentage of foreign exchange credits in total foreign exchange assets is shown.



Source: BRSA

Figure 4- Foreign Exchange Credits/ Foreign Exchange Assets

The ratio of foreign exchange credits to total foreign exchange assets changed between 26% and 36% between the years 2006 and 2019. The ratios show that the foreign exchange credits are a significant component of banks' total foreign exchange positions.

3.2.2. Foreign exchange liabilities

According to BRSA data, total foreign exchange liabilities of banks in Turkey is 2.581.884,44 million TL, as of January 2019. The value of total foreign exchange liabilities is calculated by summing all foreign exchange liability accounts,

foreign exchange indexed liabilities, forward foreign exchange selling commitments of banks, including account of banks' off-shore branches. Foreign exchange indexed liabilities show the liabilities, precisely defined as a foreign exchange indexed instrument in related contract or legislation. The changes in foreign exchange rate directly affect the values of these liabilities. Off- balance sheet foreign exchange liabilities includes the liabilities regarding to forward, swap, future and option transactions.

The share of balance sheet liabilities in foreign exchange liabilities is around 75%, while the share of off-balance sheet foreign exchange liabilities is 25%. The value of foreign exchange indexed liabilities is recorded as 0, in January 2019.

In Table 3, banks' total foreign exchange liabilities and their components are listed for the period of 2006-2019. Although, BRSA provide the data only in TL, to study the changes in the foreign exchange liabilities of banks the values should be adjusted from the foreign exchange rate movements. Hence, the TL values were converted to USD, by using CBRT indicative foreign exchange selling rates for each year's end of January.

Table 3- Foreign Exchange Liabilities of Banks in Turkey[14]

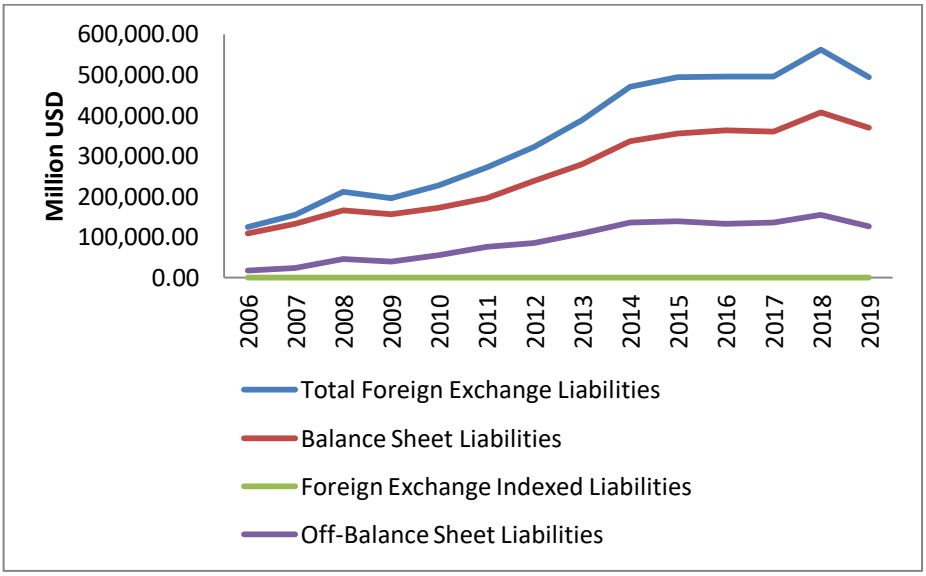
	Total Foreign Exchange Liabilities		**Balance Sheet Liabilities**		**Foreign Exchange Indexed Liabilities**		**Off-Balance Sheet Liabilities**	
	(million TL)	*(million USD)*	*(million TL)*	*(million USD)*	*(million TL)*	*(million USD)*	*(million TL)*	*(million USD)*
2006	165.482,82	124.770,28	143.825,00	108.440,78	3,73	2,81	21.657,82	16.329,50
2007	220.212,13	155.046,21	187.281,15	131.860,28	6,20	4,37	32.930,98	23.185,93
2008	247.631,73	211.001,81	194.371,69	165.620,05	7,36	6,27	53.260,04	45.381,77
2009	321.479,96	195.737,92	256.812,89	156.364,40	9,65	5,88	64.667,08	39.373,53
2010	338.889,96	227.397,14	256.591,08	172.174,11	14,73	9,88	82.298,88	55.223,03
2011	436.390,41	271.589,75	314.649,10	195.823,44	14,85	9,24	121.741,31	75.766,31
2012	571.420,33	322.381,00	421.880,87	238.014,60	11,42	6,44	149.539,46	84.366,41
2013	683.804,45	387.798,13	491.833,59	278.927,91	16,62	9,43	191.970,86	108.870,22
2014	1.069.815,53	470.517,45	763.695,02	335.882,05	15,81	6,95	306.120,51	134.635,40

[14] Annual data, starting from January 2006 to January 2019.

Table 3 (cont'd)- Foreign Exchange Liabilities of Banks in Turkey

	Total Foreign Exchange Liabilities		Balance Sheet Liabilities		Foreign Exchange Indexed Liabilities		Off-Balance Sheet Liabilities	
	(million TL)	*(million USD)*	*(million TL)*	*(million USD)*	*(million TL)*	*(million USD)*	*(million TL)*	*(million USD)*
2015	1.194.679,60	493.281,97	859.720,26	354.977,60	20,85	8,61	334.959,34	138.304,36
2016	1.467.468,12	494.730,00	1.074.602,06	362.282,40	29,36	9,90	392.866,06	132.447,60
2017	1.881.344,42	495.847,46	1.366.602,14	360.181,89	26,15	6,89	514.742,28	135.665,56
2018	2.111.135,25	561.352,70	1.531.579,39	407.248,30	0,06	0,02	579.555,86	154.104,41
2019	2.581.884,44	494.585,45	1.928.013,96	369.330,11	0,00	0,00	653.870,48	125.255,35

The data in Table 3 demonstrates that the USD value of total foreign exchange liabilities showed a continuous increase between the years 2006-2018, except the fall in 2009. However, from January 2018 to January 2019, total foreign exchange liabilities declined about 66.767 millions in terms of USD. In terms of domestic currency, the value increased by 470.749 millions.



Source: BRSA

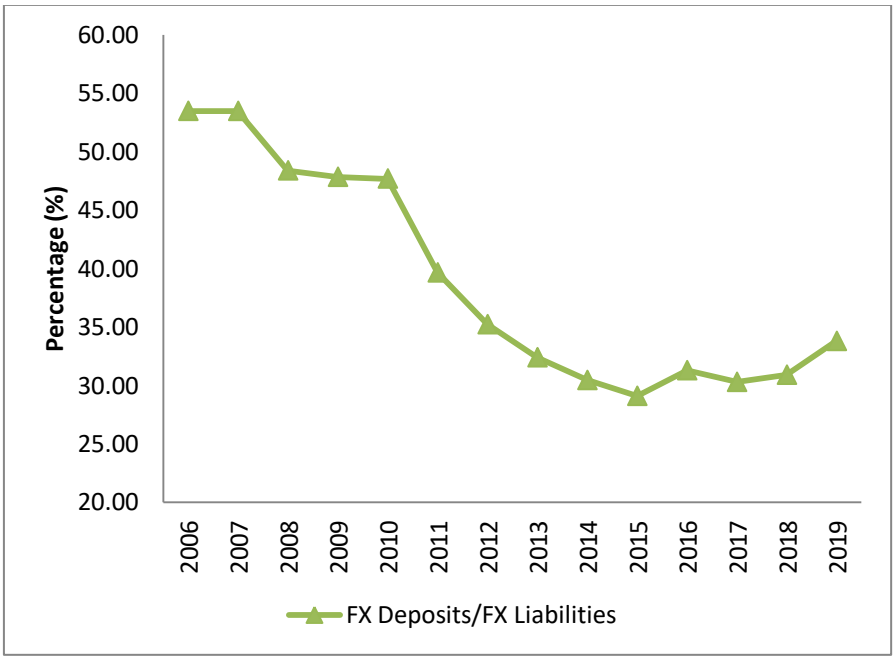
Figure 5- Components of Banks' Foreign Exchange Liabilities

The development of the components of total foreign exchange liabilities of banks in Turkey is shown in Figure.

According to Figure 5, balance sheet and off balance sheet foreign exchange liabilities move in a similar trend. They increased together in the period of 2006-2008. After the fall in 2009, balance sheet liabilities continued to increase until 2017. In 2018, it made a peak and decreased again as of 2019 January. Off-balance sheet foreign exchange liabilities rose at the 2010-2015 period and then it showed a decline in 2016. After this decline, it increased and reached its maximum in 2018. As of 2019, it decreased again.

For the period of 2006-2017, the foreign exchange indexed liabilities moved up and down without following a trend. However, since 2018 it dramatically decreased and recorded as 0 in 2019.

In addition, in the Figure 6, the ratio of foreign exchange deposits to total foreign exchange liabilities is shown.



Source: BRSA

Figure 6- Foreign Exchange Deposits/ Foreign Exchange Liabilites

Although the ratio of foreign exchange deposits[15] to total foreign exchange liabilities was greater than 50% in 2006 and 2007, it followed a downward trend from 2006 to 2016. In January 2015, the ratio was 29,10%. However, it increased to %31,30 in January 2016. After a slight decline in 2017, it started to increase again. In January 2019, the ratio was recorded as 33,80%.

3.2.3. Foreign exchange general positions

The net amount of foreign exchange assets and liabilities including off-balance sheet transactions defined as the foreign exchange position of a bank (Fukao, 1991).

Before analyzing the foreign exchange net general positions of banks in Turkey, it would be appropriate to mention about the relevant legislation.

The Regulation on Foreign Currency Net General Position/Own Funds Standard Rate Calculation on Consolidated and Unconsolidated Basis and Implementation by Banks published in the November 1, 2006 dated Official Gazette and came into force on its publication. In this regulation, own funds is defined as the bank's own funds calculated according to "Regulation on Own Funds of the Banks" and foreign exchange net general position means the difference between sum of foreign exchange assets and sum of foreign exchange liabilities, in terms of Turkish lira. Similarly, consolidated own funds is described as the bank's own funds calculated in accordance with "Regulation on Own Funds of the Banks" and consolidated foreign exchange net general position is calculated by subtracting the sum of foreign exchange liabilities from foreign exchange assets, denominated in Turkish lira.

According to this regulation, the weekly simple arithmetic mean of the foreign currency net position/ equity standard ratios' absolute value calculated over working days, shall not exceed 20%. Correspondingly, the absolute value of the net general

[15] Because of the BRSA data availability, foreign exchange deposits and foreign exchange participation funds included for 2011-2019 period, whereas only foreign exchange deposits are included for 2006-2010 period.

position/ equity standard ratio, calculated on the basis of consolidated financial statements, shall not exceed 20%.

In Table 4, banks' foreign exchange net general positions, regulatory capital and the ratio of these two variables are listed, for the period of 2006-2019. The ratio of foreign exchange net general position indicates how much own fund the bank could provide for assurance against its open position risk.

Although, BRSA provide the data only in TL, the TL values were converted to USD, by using CBRT indicative foreign exchange selling rates for each year's end of January.

Table 4- Foreign Exchange Net General Positions of Banks in Turkey[16]

Year	**Foreign Exchange Net General Position**		**Regulatory Capital**		**Foreign Exchange Net General Position / Regulatory Capital Standard Ratio (Percentage)**
	(million TL)	*(million USD)*	*(million TL)*	*(million USD)*	
2006	748,74	564,53	49.162,60	37.067,48	1,52
2007	-473,63	-333,47	63.183,62	44.486,11	-0,75
2008	-162,15	-138,17	78.637,75	67.005,58	-0,21
2009	-903,79	-550,29	93.436,46	56.890,19	-0,97
2010	-93,02	-62,42	116.868,12	78.419,19	-0,08
2011	522,89	325,42	138.004,66	85.887,89	0,38
2012	342,56	193,26	159.443,93	89.954,26	0,21
2013	3.962,88	2.247,42	198.008,96	112.294,54	2,00
2014	-1.175,08	-516,81	229.506,77	100.939,78	-0,51
2015	-4.103,29	-1.694,24	272.515,37	112.521,32	-1,51
2016	6,24	2,10	306.881,56	103.459,50	0,00
2017	-6.253,47	-1.648,17	351.667,65	92.685,59	-1,78
2018	7.423,42	1.973,89	421.766,56	112.148,10	1,76
2019	15.052,08	2.883,37	517.971,73	99.222,60	2,91

When the data demonstrated in Table 2, 3 and 4 are analyzed together, it could be inferred that banks in Turkey often have short positions within balance sheet and they balance their positions with off-balance sheet transactions and foreign exchange indexed assets. Therefore; the foreign exchange net general position of the banking sector is low and within the legislative limits.

[16] Annual data, starting from January 2006 to January 2019.

CHAPTER 4

DATA AND METHODOLOGY

4.1. Data

The banks' data used for the estimations are obtained from the database of TBA. According to TBA, there are 47 banks in Turkey, however, at the TBA data query system, 46[17] banks exist. Therefore, the raw data collected for the econometric analyses is including 46 banks. Because the investment and development banks do not receive deposits, they are excluded from the data. On the other hand, some of the banks do not lend credits. Thus, they are exempted from the data, too. In addition, the banks, operating in Turkey for a few years, are also excluded for studying with balanced panel data structure. After these revisions, financial data of 26 banks are used in this study and the list of these banks could be seen in Appendix−A.

GMM estimators could be biased in case of small data, especially when the data is small and the number of instrumental variables is high. Thus, for maintaining the adequate and efficient data size for GMM procedure quarterly data is used. Since the credit and deposit data are available beginning from the fourth quarter of 2006, the raw data includes the data starting from the first quarter of 2007 to fourth quarter of 2017.

However, since in GMM estimations the number of cross sections should be equal to or greater than the number of time periods, the final data, used in the analysis, is started from first quarter of 2012 and it is ended in the fourth quarter of

[17] The Bank of China Turkey, which established in January 2017, is not exist in the data query.

2017 Furthermore, the GDP data is taken from Turkish Statistical Institute database. Also, the CPI data is obtained from the database of CBRT.

The main objective of this thesis is to analyze the effect of financial dollarization on the performance of banks in Turkey. Therefore, in the base model of the empirical analysis, bank performance takes place as dependent variable, whereas deposit and credit dollarization are independent variables.

Besides the dollarization variables, some macroeconomic and financial sector variables are also used in the analyses for isolating the impacts of dollarization.

The variables are described precisely in Table 5.

Table 5- Description of Variables

Variable Name	Description	Formula	Data Source
Return on Asset (ROA)	The measure of profitability of the bank relative to its total assets	Net Income/ Total Assets	The Banks Association of Turkey
Return on Equity (ROE)	The measure of the contribution of equity to net income	Net Income/ Total Equity	The Banks Association of Turkey
Deposit Dollarization	The ratio of foreign currency deposits to total deposits received by the bank	Foreign Currency Deposits/ Total Deposits	The Banks Association of Turkey
Credit Dollarization	The ratio of foreign currency credits to total credits extended by the bank	Foreign Currency Credits /Total Credits	The Banks Association of Turkey
Capital	The ratio of bank's equity to its total assets	Equity/ Total Assets	The Banks Association of Turkey
Size	Logarithm of the total assets of the bank	Log (Total Assets)	The Banks Association of Turkey
Growth	Logarithm of the gross domestic product value of Turkey	Log (GDP)	Turkish Statistical Institute
Inflation	Logarithm of the consumer price index value of Turkey	Log (CPI)	Central Bank of Republic of Turkey

In the empirical analyses, two different indicators of bank performance, namely, ROA and ROE, are employed. Different models are constructed with these variables and all of the models are estimated for analyzing the robustness of the regression results.

On the other hand, for considering the persistence in the profitability of banks by following Athanasoglou, Delis and Staikouras (2006) and Kutan et al. (2012), the lagged value of bank performance is added to model as an independent variable. Thus, both static and dynamic panel data analyses are conducted for the empirical research.

As demonstrated by Court et al. (2012), even if the inflation process of a country is moderate, deposit dollarization affects financial depth negatively, in a significant amount. This fact could be a result of the banks' credit restrictions to the private sector during the high dollarization periods, which decreases their profitability. Also as mentioned by De Nicolo et al. (2003) and Chang and Velasco (2001), in dollarized banking systems, exchange rate risk is transferred into default risk and it could reduce the profits. When these facts are considered, the expected coefficient of deposit dollarization variable is negative.

As mentioned by Caglayan and Talevera (2016), it could be expected that the foreign currency liabilities have an adverse effect on banks' performances, as a result of the risks stemming from operating in accordance with available international money market funds. However, since the banks are generally fully hedged against exchange rate risks, the impact of liability dollarization could be positive as found in their study.

Although our main concern is about the signs and significance of dollarization variables, it is possible to make some predictions about the other dependent variables. The effect of the banking size on the bank performance bases not only on characteristics of individual bank, but also on those of banking sector. Increasing bank size could raise the profitability of banks, since it allows banks to benefit from economies of scale. However, small banks could build more powerful relationships with domestic clients than big banks and these advantages could balance the disadvantage of the economies of scale (Regehr & Sengupta, 2016).

Thus, the sign of the size coefficient could be positive or negative, depending on which impact is dominant.

The supporters of negative relationship between capital and bank performance mentioned that a higher capital ratio could decrease the equity risk and it reduces the expected return on equity (Berger, 1995). The findings of Guru, Staunton and Shanmugam (2002) and Ata (2009) are in line with this argument. However, some empirical studies like Molyneux and Thornton (1992) and Athanasoglou et al. (2006) revealed that the relationship between capital and bank performance is positive, which supports the idea regarding the safety role of capital in financing process.

Economic growth's impact on the performance of bank is expected to be positive, since the economic growth indicates a rise in credit demand and a decline in default risk at the same time.

On the other hand, as stated by Revell (1979) the sign of the coefficient, showing the impcat of inflation on bank performance, depends on whether salaries of bank employees and other expenditures increase faster than inflation. Thus, the relationship between the inflation rate and bank profitability is ambiguous.

The descriptive statistics of variables are shown in Table 6.

Table 6- Descriptive Statistics

Variable	Mean	Maximum	Minimum	Standard Deviation	Observations
ROA	0.009	0.386	-0.128	0.020	624
ROE	0.058	0.210	-0.581	0.057	624
DEPOSIT DOLLARIZATION	0.472	0.999	0.042	0.189	624
CREDIT DOLLARIZATION	0.292	1.000	0.000	0.161	624
BANK SIZE	7.211	8.637	3.836	0.957	624

Table 6 (cont'd)- Descriptive Statistics

Variable	Mean	Maximum	Minimum	Standard Deviation	Observations
CAPITAL	0.189	6.458	0.056	0.521	624
GROWTH	8.735	8.949	8.522	0.108	624
INFLATION	2.400	2.511	2.307	0.060	624

As is seen in the Table 6, the value of the deposit dollarization ratio is always above 4% and it reaches 99,91% as maximum. On the other hand, credit dollarization ratio takes value within a wide range of 0 to 100%. The mean of deposit dollarization and credit dollarization are 47% and 29%, respectively.

The indicators of bank performance, ROA and ROE have an average of 0,9% and 5%, respectively. The value of ROA has a maximum of 39% and a minimum of -13%, whereas the maximum value of ROE is 21% and minimum value of it is -58%.

4.2. Methodology

In this study, the impact of financial dollarization on the banks' performance in Turkey is analyzed by using panel data structure.

Gujarati and Porter (2009) and Baltagi (2013) listed the benefits of using panel data structure as below:

- Panel data makes possible to control individual heterogeneity. More precisely, the estimation techniques of panel data could take account the individual heterogeneity by enabling the use of subject-specific variables.
- Panel data provides more informative data, more variability, less collinearity among the variables, more degrees of freedom and more efficiency.
- Panel data is more convenient for identifying and measuring the impacts, which could not be easily observed in other types of data.

- Dynamics of adjustments could be observed better by panel data analysis, since it studies the recurrent cross section of observations.
- More complex models could be studied with panel data.
- Panel data could minimize the bias stem from aggregating individuals or firms into broad aggregates, by making data for several thousand units available.

In panel data estimations, Fixed Effects Regression and Random Effects Regression models are applied very often. According to Gujarati and Porter (2009), deciding on one of these methods depends on the assumptions regarding the possible correlation between the individual or cross specific error component and the regressors. In the Fixed Effects Regression model, even though the intercept term might change across cross-sections, each cross sections intercept term does not change over time (Gujarati & Porter, 2009). On the contrary, in the Random Effects Regression model, as stated by Gujarati and Porter (2009), intercept term and coefficients might change across cross sections and over time.

For testing which assumption is appropriate, Hausman (1978) suggested a test, built on the difference between random effects and fixed effects. A statistically significant difference is considered as evidence to reject the Random Effects Regression model assumptions (Wooldridge, 2002).

Baltagi (2013) stated that a dynamic relationship is characterized by presence of the lagged dependent variables among independent variables and as mentioned before, the lag of dependent variables are added to the models as independent variables for considering the persistence in the profitability of banks by following Athanasoglou et al. (2006) and Kutan et al. (2012).

Although Ordinary Least Squares Method (OLS) is one of the common methods, in a dynamic model the lagged value of dependent variable is correlated with error term and under this condition the OLS estimators are biased and inconsistent (Baltagi, 2013).

This phenomenon is called as the dynamic panel bias by Nickell (1981). To avoid from it,Generalized Method of Moments (GMM) procedure could be used. As

Greene (2003) mentioned, GMM makes it possible to formulate models and implicit estimators with no need of strong assumptions about distributions.

GMM provides many advantages for the dynamic panel data analysis. As noted by Baltagi (2013), by using this method, it is possible to control fixed effects both related to time and cross section. In addition, he mentioned that, to overcome the endogeneity problem, the appropriate lagged values of independent variables could be employed as instrumental variables in GMM approach.

Arellano and Bond (1991) estimator is one of the main estimation models used in GMM. In this model, the lagged values of independent variables are taken as instrumental variables and their first difference are used for minimizing the specific impacts of components.

Arellano and Bond (1991) suggested that, if the orthogonality conditions between dependent variable's lagged values and error terms are utilized, additional instruments could be attained in a dynamic panel data model.

In the case of heteroskedastic error term, Arellano and Bond (1991) propose two stage GMM estimators. In the first stage, error terms assumed as independent and homoscedastic to time and cross-section. However, as they stated, this assumption could be relaxed when the consistent estimator of the variance-covariance matrix is obtained owing to the residual terms obtained from the first stage.

With the assumption that first differences of instrumental variables are not correlated with the fixed effects, Arellano and Bover (1995) and Blundell and Bond (1998) improved Arellano-Bond (1991) estimator and it enables introduction of more instruments on account of improvement in efficiency (Roodman, 2009).

The system, which they built, is known as "System GMM" and it is the system of the original and the transformed equations (Roodman, 2009).

According to Roodman (2009), the system GMM estimators are designed for the case that some regressors are independent of current error terms but could be influenced by past error terms, such as lagged dependent variable.

In the light of all these methodological information, at the static panel data analysis part of this thesis, both Fixed Effect Regression and Random Effect

Regression models are used and the final method is determined accordingly to Hausman test results. In addition, System GMM approach is applied at the dynamic panel data analysis part.

4.3. Correlation Analysis

In Table 7 correlation coefficients between variables are listed.

Table 7- Correlation Coefficients

	ROA	ROE	DEPOSIT DOL.	CREDIT DOL.	SIZE	CAPITAL	GROWTH	INFLATION
ROA	1							
ROE	0.393***	1						
DEPOSIT DOL.	0.072*	-0.270***	1					
CREDIT DOL.	-0.140***	-0.144***	0.487***	1				
SIZE	-0.203***	0.368***	-0.497***	-0,111***	1			
CAPITAL	0.746***	-0,067*	0.219***	-0.092**	-0.411***	1		
GROWTH	0.007	0.104***	0.145***	0.179***	0.104***	-0.056	1	
INFLATION	-0.038	-0.001	0.149***	0.185***	0.107***	-0.053	0.953***	1

According to Table 7, ROA has a positive relationship with bank capital and a negative relationship with credit dollarization and bank size at 1% statistical significance level. The positive correlation between ROA and deposit dollarization is found significant at 10% significance level. The dependent variable, ROA, has the highest correlation coefficient with bank capital.

On the other hand, at 1% statistically significance level, ROE has positive and significant correlation coefficients with bank size and growth. ROE's negative

correlation coefficients with deposit dollarization and credit dollarization are significant at 1% significance level. The negative correlation between ROE and bank capital is found significant at 10% significance level. ROE has the highest coefficient with bank size.

4.4. Stationarity Analysis

As mentioned by Maddala and Wu (1999), the generally used unit root tests, such as Dickey-Fuller, Augmented Dickey-Fuller and Phillips-Perron could be inadequate for panel data analyses. Therefore, the literature suggests using panel data unit root tests for increasing the power of single time series unit root tests. Thus, stationarity of the variables are tested through panel unit root tests.

Levin, Lin and Chu (2002) and Im, Pesaran and Chin (2003) tests are applied for testing the stationarity of the variables. The results of the tests are reported in Table 8.

Table 8- Results of Unit Root Tests for Levels

	Levin, Lin & Chu Test		**Im, Pesaran & Shin Test**	
	Without Trend	**With Trend**	**Without Trend**	**With Trend**
ROA	0.000	0.000	0.000	0.000
ROE	0.000	0.000	0.000	0.000
DEPOSIT DOLLARIZATION	0.000	0.000	0.001	0.000
CREDIT DOLARIZATION	0.070**	0.006	0.090**	0.040*

Table 8 (cont'd)- Results of Unit Root Tests for Levels

	Levin, Lin & Chu Test		Im, Pesaran & Shin Test	
	Without Trend	With Trend	Without Trend	With Trend
SIZE	0.006	0.000	0.921***	0.007
CAPITAL	0.000	0.000	0.000	0.005
GROWTH	0.065**	0.000	0.999***	0.000
INFLATION	1.000***	0.000	1.000***	0.003

Lags for Levin, Lin& Chu and Im, Pesaran & Shin tests are determined through Akaike Information Criteria. *,** and *** indicate rejecting of null hypothesis of stationarity at the 10%, 5% and 1% level of statistically significance, respectively.

The results show that at %1 statistically significance level ROA, ROE, deposit dollarization and capital variables are stationary at level. However, the results for credit dollarization, size, growth and inflation variables are mixed. For evaluating the difference between test results with and without trend, the graphics of the variables are used.

As is seen on the graphs at Appendix-B, the variables growth and inflation follows an increasing trend. Thus, the test results with trend are taken into consideration for these variables. Test results with trend indicate the stationarity of growth and inflation variables at level for the %1 statistically significance. On the other hand; the graphics of credit dollarization and size variables, do not show any trend.

Thus, first difference of these variables tested for stationarity. The results listed in Table 9.

Table 9- Results of Unit Root Tests for First Differences

	Levin, Lin & Chu Test		Im, Pesaran & Shin Test	
	Without Trend	With Trend	Without Trend	With Trend
ΔCREDIT DOLLARIZATION	0.000	0.000	0.000	0.000
Δ SIZE	0.000	0.000	0.000	0.000

Lags for Levin, Lin& Chu and Im, Pesaran & Shin tests are determined through Akaike Information Criteria. Δ denotes first difference.

According to the results, credit dollarization and size variables are stationary at first difference.

Thus, in the following parts, the first difference of the variables credit dollarization and size are used for the analysis.

4.5. Estimation Results

4.5.1. Estimation results of static panel data models

In the first stage of empirical analysis, static panel data estimations are conducted. The following static models are constructed, according to the results of the unit root tests.

Model 1.1:

$$ROA_{i,t} = \beta_0 + \beta_1 DepositDollarization_{i,t} + \beta_2 \Delta CreditDollarization_{i,t} + \beta_3 Capital_{i,t} + \beta_4 \Delta Size_{i,t} + \beta_5 Growth_t + \beta_6 Inflation_t + u_{i,t}$$

Model 1.2:

$$ROE_{i,t} = \beta_0 + \beta_1 DepositDollarization_{i,t} + \beta_2 \Delta CreditDollarization_{i,t} + \beta_3 Capital_{i,t} + \beta_4 \Delta Size_{i,t} + \beta_5 Growth_t + \beta_6 Inflation_t + u_{i,t}$$

where *i* denotes cross section as bank and *t* denotes time.

Initially, Model 1.1 and Model 1.2 are estimated by applying both Fixed Effect and Random Effect methods. The results are listed in Table 10.

Table 10- Fixed Effect and Random Effect Estimation Results

	Dependent Variable			
	ROA		**ROE**	
Independent Variables	*Fixed Effect (1.1)*	*Random Effect (1.1)*	*Fixed Effect (1.2)*	*Random Effect (1.2)*
Deposit Dollarization	0.000	-0.007**	-0.024	-0.041
	(0.006)	(0.003)	(0.020)	(0.017)**
ΔCredit Dollarization	-0.021***	-0.023***	-0.041*	-0.041 *
	(0.006)	(0.006)	(0.022)	(0.022)
Capital	0.027***	0.029***	-0.010**	-0.009*
	(0.001)	(0.001)	(0.005)	(0.005)
ΔSize	-0.006	-0.003	-0.037**	-0.035**
	(0.004)	(0.004)	(0.016)	(0.016)
Growth	0.113***	0.113***	0.664***	0.664***
	(0 .016)	(0.016)	(0.055)	(0.055)
Inflation	-0.188***	-0.184***	-1.102***	-1.094***
	(0 .028)	(0.029)	(0.094)	(0.095)
Constant	-0.532***	-0.543***	-3.083***	-3.096***
	(0.083)	(0.084)	(0.275)	(0.277)

Table 10 (cont'd)- Fixed Effect and Random Effect Estimation Results

	Dependent Variable			
	ROA		ROE	
Independent Variables	*Fixed Effect (1.1)*	*Random Effect (1.1)*	*Fixed Effect (1.2)*	*Random Effect (1.2)*
Number of observation	598	598	598	598
Number of groups	26	26	26	26
Hausman Test	[0.627]		[0.765]	

The values in parentheses are the coefficient standard errors. * ,** and *** show the significance at the 10%, %5 and 1 % levels, respectively. The values in brackets are p-values.

To decide on the selection of fixed effects or random effects methods, Hausman test is applied. The null hypothesis of the Hausman test states that the difference in coeffcients is not systematic. That is to say, null hypothesis indicates the consistency of random effects, whereas alternative hypothesis indicates fixed effects' consistency. The results of the Hausman test are presented in Table 11.

Table 11- Hausman Test Results

	Hausman Test (P –Value)
Model 1.1	0.627
Model 2.1	0.765

The p-values reported in Table 11 show that the null hypotheses of Hausman test cannot be rejected for both models. Therefore, the results indicate the consistency of random effect estimations.

Accordingly the Hausman test, for evaluating results of the static panel data analysis, the random effect estimation is chosen.

Nevertheless, some diagnostic tests should be done for testing the efficiency of the estimation results.

4.5.1.1. Diagnostic tests

4.5.1.1.1. Heteroscedasticity

The homoskedasticity of Model 1.1 and 1.2 are tested by the likelihood ratio test, developed by Wiggins and Poi (2001). The null hypothesis of this test assumes that disturbance term has a constant variance, which indicates the homoskedasticity of it. The alternative hypothesis; on the other hand, states heteroskedasticity of the disturbance term. The results of the tests are showed in Table 12.

Table 12- Results of LR tests

	Likelihood Ratio Test (P –Values)
Model 1	LR $\chi^2(25)$= 1035.34 (0.000)
Model 2	LR $\chi^2(25)$= 406.73 (0.000)

As is understood from the results in Table 12, the null hypotheses are rejected for both models, which means there are heteroskedasticity problems in both models.

4.5.1.1.2. Autocorrelation

For investigating whether there is autocorrelation problem or not, in the models, the autocorrelation test, developed by Wooldridge (2002) is used. The null hypothesis of the test assumes no first order autocorrelation, while the alternative hypothesis indicates the existence of first order autocorrelation. The results of the Wooldridge Autocorrelation tests for both models are summarized in Table 13.

Table 13- Wooldridge Autocorrelation Test Results

	Wooldridge Autocorrelation Test (P –Values)
Model 1	0.024
Model 2	0.002

Wooldridge autocorrelation test results indicate the rejection of null hypotheses at the 5% statistically significance level. Thus, there are first order autocorrelation in Model 1.1 and Model 1.2.

4.5.1.2. Robust estimations

To overcome the autocorrelation and heteroskedasticity problems, the models are estimated with clustered robust standard deviations and the results are demonstrated in Table 14.

Table 14- Random Effect Estimation Results

	ROA	**ROE**
	Random Effect (1.1)	*Random Effect (1.2)*
Deposit Dollarization	-0.007 (0.005)	-0.041* (0.022)

Table 14 (cont'd)- Random Effect Estimation Results

	ROA	**ROE**
	Random Effect (1.1)	*Random Effect (1.2)*
ΔCredit Dollarization	-0.023* (0.013)	-0.041 (0.028)
Capital	0.029*** (0.001)	-0.009* (0.005)
ΔSize	-0.003 (0.005)	-0.035*** (0.014)
Growth	0.113*** (0.032)	0.664*** (0.094)
Inflation	-0.184*** (0.045)	-1.094*** (0.132)
Constant	-0.543*** (0.175)	-3.096*** (0.532)
Number of observation	598	598
Number of groups	26	26
R^2- within **-between** **-overall**	0.556 0.775 0.603	0.216 0.194 0.192
Wald Statistics	8733.69 [0.000]	78.05 [0.000]

The values in parentheses are the coefficient standard errors. * ,** and *** denote the significance at the 10%, %5 and 1 %, respectively. The values in brackets are p-values.

According to estimation results, at the 1% statistical significance level capital ratio and growth have positive impacts ROA, whereas the sign of the significant

coefficient of inflation is negative. The credit dollarization has a negative effect on ROA at 10% significance level. The negative effects of deposit dollarization and size are found statistically insignificant.

When the dependent variable is ROE, the estimation results are slightly different. The effects of inflation and size on ROE are negative and significant at 1% significance level. The coefficient of growth is positive and significant at 1% significance level. At the 10% statistical significance level; on the other hand, deposit dollarization has a negative effect on ROE. The sign of capital ratio is found negative at the 10% significance level. The negative coefficient of credit dollarization is statistically insignificant.

Furthermore, the p-values of Wald statistics of both estimations show that all the coefficients in the model are different than zero.

4.5.2. Estimation results of dynamic panel data models

In order to take possible persistency in banks' profitability into consideration, the Model 1.1 and Model 1.2 are modified to Model 2.1 and Model 2.2, respectively, by adding the lag of endogenous variables to models.

Model 2.1:

$$ROA_{i,t} = \beta_0 + \beta_1 ROA_{i,t-1} + \beta_2 DepositDollarization_{i,t} + \beta_3 \Delta CreditDollarization_{i,t} + \beta_4 Capital_{i,t} + \beta_5 \Delta Size_{i,t} + \beta_6 Growth_t + \beta_7 Inflation_t + u_{i,t}$$

Model 2.2:

$$ROE_{i,t} = \beta_0 + \beta_1 ROE_{i,t-1} + \beta_2 DepositDollarization_{i,t} + \beta_3 \Delta CreditDollarization_{i,t} + \beta_4 Capital_{i,t} + \beta_5 \Delta Size_{i,t} + \beta_6 Growth_t + \beta_7 Inflation_t + u_{i,t}$$

where *i* denotes cross section as bank and *t* denotes time.

In System GMM estimation, all bank specific variables, deposit dollarization, credit dollarization, capital and bank size are described as endogenous variables. Lag of dependent variable is taken as predetermined by following the suggestion of Roodman (2009) and macroeconomic variables, growth and inflation, are assumed as exogenous. The estimation results are reported in Table 15.

Table 15- GMM Estimation Results[18]

	Dependent Variables				
	ROA (2.1)			**ROE (2.2)**	
Independent Variables	*One-Step System GMM (2.1.1)*	*Two-Step System GMM (2.1.2)*	**Independent Variables**	*One-Step System GMM (2.2.1)*	*Two-Step System GMM (2.2.2)*
$ROA_{i,t-1}$	0.162	0.165	**$ROE_{i,t-1}$**	0.467***	0.462***
	(0.120)	(0.119)		(0.059)	(0.076)
Deposit $Dollarization_{i,t}$	-0.015**	-0.014*	**Deposit $Dollarization_{i,t}$**	-0.067**	-0.069**
	(0.008)	(0.008)		(0.031)	(0.035)
ΔCredit $Dollarization_{i,t}$	-0.022	-0.023	**ΔCredit $Dollarization_{i,t}$**	-0.038*	-0.036
	(0.015)	(0.015)		(0.022)	(0.026)
Capital	0.027***	0.026***	**Capital**	0.000	0.000
	(0.003)	(0.003)		(0.003)	(0.004)
ΔSize	-0.019	-0.020	**ΔSize**	-0.012	-0.012
	(0.015)	(0.014)		(0.009)	(0.011)
Growth	0.120***	0.117***	**Growth**	0.721***	0.723***
	(0.031)	(0.030)		(0.120)	(0.126)
Inflation	-0.189***	-0.185***	**Inflation**	-1.143***	-1.142***
	(0.047)	(0.046)		(0.191)	(0.201)
Constant	-0.588***	-0.575***	**Constant**	-3.492***	-3.513***
	(0.164)	(0.157)		(0.603)	(0.649)
Number of observation	598	598	**Number of observation**	598	598
Number of groups	26	26	**Number of groups**	26	26
Wald Test [p-value]	$\chi^2(7)$= 39279.67 [0.000]	$\chi^2(7)$= 7751.60 [0.000]	**Wald Test [p-value]**	$\chi^2(7)$= 1009.31 [0.000]	$\chi^2(7)$= 249.72 [0.000]

[18] GMM estimations were conducted by using Roodman (2009)'s xtabond2 command for Stata 15.

Table 15 (cont'd)- GMM Estimation Results

	Dependent Variables				
	ROA (2.1)			**ROE (2.2)**	
	One-Step System GMM (2.1.1)	*Two-Step System GMM (2.1.2)*		*One-Step System GMM (2.2.1)*	*Two-Step System GMM (2.2.2)*
Arellano-Bond Tests	AR(1): z=-1.72 [0.085] AR(2): z=1.07 [0.285]	AR(1): z=-1.32 [0.188] AR(2): z=0.94 [0.348]	**Arellano-Bond Test**	AR(1): z=-1.89 [0.059] AR(2): z=1.71 [0.087]	AR(1): z=-1.65 [0.098] AR(2): z=1.53 [0.125]
Hansen Test	[1.000]	[1.000]	**Hansen Test**	[1.000]	[1.000]

The values in parentheses are the coefficient robust standard errors for one-step GMM estimations and Windmeijer-corrected robust standard errors for two-step system GMM estimations. * ,** and *** show the significance at the 10%, %5 and 1 % levels, respectively. GMM style instruments are ROA_{t-1} (ROE_{t-1}), deposit dollarization, credit dollarization, capital and size and (t-2) lag structure is defined for these instruments. The standard instruments are growth and inflation. The values in brackets are p-values. Arellano and Bond tests AR(1) and AR(2) are for first-order and second-order serial correlation, respectively. Hansen J test is for instrument validity and over-identification restrictions.

In Table 15, the results of estimations derived by applying both one-step and two-step system GMM approaches are listed. Between the one-step and two-step estimations results, there are only slight changes. However, as Windmeijer (2005) demonstrated, in estimating coefficients, two-step GMM performs pretty better than one-step GMM with smaller biases and standard errors. Therefore, as mentioned by Roodman (2009), the Windjmeier-corrected standard errors for two-step estimations are slightly superior to the one-step estimation. Therefore, in the evaluation of the estimation results in Table 15, the two-step GMM results are used.

According to dynamic panel data estimation results, bank capital, growth and inflation has significant effects on ROA, at %1 statistically significance level. The sign of coefficients are positive for capital and growth, while the coefficient of inflation is negative. In addition, at %10 significance level, deposit dollarization has a negative impact on ROA. However, the previous period ROA value does not have

any statistically significant effect on current period ROA. The negative effects of bank size and credit dollarization on ROA are also statistically insignificant.

In the estimation result for Model 2.2, in which the dependent variable is ROE, the significances of the coefficients differ. The impact of previous period ROE value on current period ROE is found positive at 1% statistical significance level. At the same significance level, growth has a positive impact on ROE, whereas the effect of inflation on ROE is negative. At 5% statistical significance level, the sign of coefficient of deposit dollarization is negative and significant. The results point out that the bank capital and size do not have any significant impact on ROE. Similarly, according to two-step results, the coefficient of credit dollarization is insignificant. But in one step estimation, the negative sign of coefficient of credit dollarization is statistically significant at 1% level.

The consistency of GMM estimators depends on absence of first order and second order serial correlation in error terms. To check whether there is a serial correlation in the models the Arellano-Bond (1991) tests are used. For verifying the absence of autocorrelation the null hypothesis of AR(1) should be rejected and the null hypothesis of AR(2) should be failed to reject. In addition, because of the lagged dependent variables, the presence of first order serial correlation is expected in GMM models and it does not indicate a problem. In the light of this information, Arellano-Bond tests results of two-step estimations, reported in Table 15, imply lack of serial correlation for the two-step GMM estimations.

Also, the validity of instruments is tested through Hansen test. The p–values of Hansen test, listed in Table 15, demonstrate the validity of instrumental variables. Moreover, Wald statistics of the estimations indicate the joint significance of explanatory variables.

As mentioned by Kutan et al. (2012), in bank management the the next period's financial plans are made according to the data of previous periods' and expectations about the future. In addition, extension of foreign currency loans for hedging against currency mismatch risk would show its effect on banks' income statement with a lag.

Thus, for further analysis of the impacts of both deposit and credit dollarization on bank performance, the Model 2.1 and 2.2 are estimated with different lags of these variables. Since the data is quarterly, estimations with 1 to 5 lags of deposit and credit dollarization are performed.

The estimation results, listed at Appendix-C, show that 1, 3 and 4 lags of deposit dollarization have significant and negative effects on ROA, at 5% statistical significance level. Furthermore, the negative effects of 2 and 5 lags of deposit dollarization on ROA are statistically significant at 10% level. However, only 2 lags of credit dollarization has a significant effect on ROA and the sign of the coefficient is positive.

The results for the model 2.2 indicate that, at 5% statistically significance, 3 and 4 lags of deposit dollarization has a significant and negative effect on ROE. On the other hand, the negative effect of 2 lags of deposit dollarization on ROE is found statistically significant at 1% level. In addition, the negative coefficient of 1 lag of credit dollarization is found statistically significant at 5% level. Moreover, 2 lags of credit dollarization has a positive impact on ROE, at 10% statistically significance level.

CHAPTER 5

CONCLUSION

The foreign currency operations of banks prepare a substructure for many risks regarding not only financial systems but also banks' own financial soundness.

As mentioned by Kutan et al. (2012), in dollarized economies, banks, which collect foreign currency deposits, usually extend foreign currency credits for avoiding currency risk. However, this application provides a kind of substitution of currency risk with credit risk, rather than a hedging against currency risk. Thus, banks' performances still could be affected by foreign currency fluctuations.

In this context, the main aim of this thesis is to study the effect of financial dollarization on the performance of banks in Turkey. For testing empirically, whether deposit and/or credit dollarization has statistically significant effects on bank performance, both static and dynamic panel data analyses are conducted by using the data of 26 banks' in Turkey for the period starting from first quarter of 2012 to fourth quarter of 2017.

By following the many works in the related literature, bank profitability is used as the indicator of bank performance in this thesis and two different measures of bank profitability, namely, ROA and ROE, are used as dependent variables.

For the static data analysis, both Fixed Effect Regression and Random Effect Regression models are used and the final method to be interpreted is determined as Random Effect accordingly Hausman test results. On the other hand, to consider the persistence in the profitability of banks, the lagged value of bank performance variables are added to analyses and both one-step and two-step system GMM approach is used for this dynamic panel data analysis. However, since two-step

GMM performs pretty better than one-step GMM in the interpretation of the estimation results two-step GMM results are used.

According to Random Effect regression results, the negative effect of deposit dollarization on ROA is insignificant. However, the GMM results indicates the statistically significance of negative impact of deposit dollarization on ROA, at 10% significance level. In addition, the random effect regression results show a negative and significant relationship between ROE and deposit dollarization at 10% significance level. In addition, the significance level and the size of the coefficient of deposit dollarization increased for the GMM results for the dependent variable ROE.

The negative coefficients of deposit dollarization are in line with the expectations, which formed by considering the negative impact of deposit dollarization on financial deepening and the transfer of exchange risk to credit risk in dollarized economies.

Although the main aim of this study to explore the impact of financial dollarization on the bank's performance, according to the most of the estimation results, credit dollarization does not have a statistically significant impact on bank performance. Only random effect regression results indicate a significant and negative impact of credit dollarization on ROA at 10% significance level and one step system GMM estimation shows the negative effect of credit dollarization on ROE is statistically significant at 1% level. However, the robustness of the results is not supported by other estimation results.

As explained previously, by considering the persistence in the profitability of banks by following Athanasoglou et al. (2006) and

Kutan et al. (2012), the lagged value of bank performance is added to models as independent variables in the GMM estimations. The impact of lagged value of ROA is found positive but insignificant. However, the coefficient of lagged values of ROE is positive and statistically significant at 1% significance level.

On the other hand, both random effect and GMM regression results show that the coefficients, showing the effect of bank capital on ROA, are positive and highly significant. The results are consistent with the findings of empirical studies of Molyneux and Thornton (1992), Naceur (2003) and Athanasoglou et al. (2005), and

support the idea of safety role of capital in financing process. But when the dependent variable is ROE, the negative coefficient of bank capital is found statistically significant at 10% significance level in random effect regression while the GMM result show insignificancy of coefficient.

The sign of the relationship between bank size and bank profitability is found negative in all estimation and it supports the view that, small banks could utilize considerably from growth, but the advantages of growth are gradually diminishing in the growth process (Regehr & Sengupta, 2016). However, it is surprising that the coefficient of bank size is found statistically significant only in random effect estimation in which the dependent variable is ROE.

All of the estimation results show a significant and positive relationship between economic growth and bank profitability. These results are consistent with the expectation of an increase in credit demand and a decline in default risk with the economic growth.

In addition, the negative and significant coefficient of inflation for all estimation results are compatible with the expectation stemming from the idea that inflation gives rise to default risk, which may reduce the banks' profitability.

To conclude, besides its substantial effects on the real sector, government debt management, monetary policy, and financial system, the study has shown that deposit dollarization also has a negative impact on profitability of the banks in Turkey, data of which are analyzed in this thesis, for the period between the years 2012 and 2017.

Thus, the policies aimed at decreasing inflation ratio and promoting use of domestic currency for reducing dollarization in Turkey could also be beneficial for banks in terms of their profitability.

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APPENDICES

APPENDIX A- The List of Banks

1. Akbank T.A.Ş.
2. Alternatif Bank A.Ş.
3. Anadolubank A.Ş.
4. Arap Türk Bankası A.Ş.
5. Bank Mellat
6. Burgan Bank A.Ş.
7. Citibank A.Ş.
8. Denizbank A.Ş.
9. Deutschebank A.Ş.
10. Fibabanka A.Ş.
11. Habib Bank Limited
12. HSBC Bank A.Ş.
13. ICBC Turkey Bank A.Ş.
14. ING Bank A.Ş.
15. QNB Finansbank A.Ş.
16. Societe Generale (S.A)
17. Şekerbank T.A.Ş.
18. Turkish Bank A.Ş.
19. Turkland Bank A.Ş.
20. Türk Ekonomi Bankası A.Ş.
21. Türkiye Cumhuriyeti Ziraat Bankası A.Ş.
22. Türkiye Garanti Bankası A.Ş.

23. Türkiye Halk Bankası A.Ş.

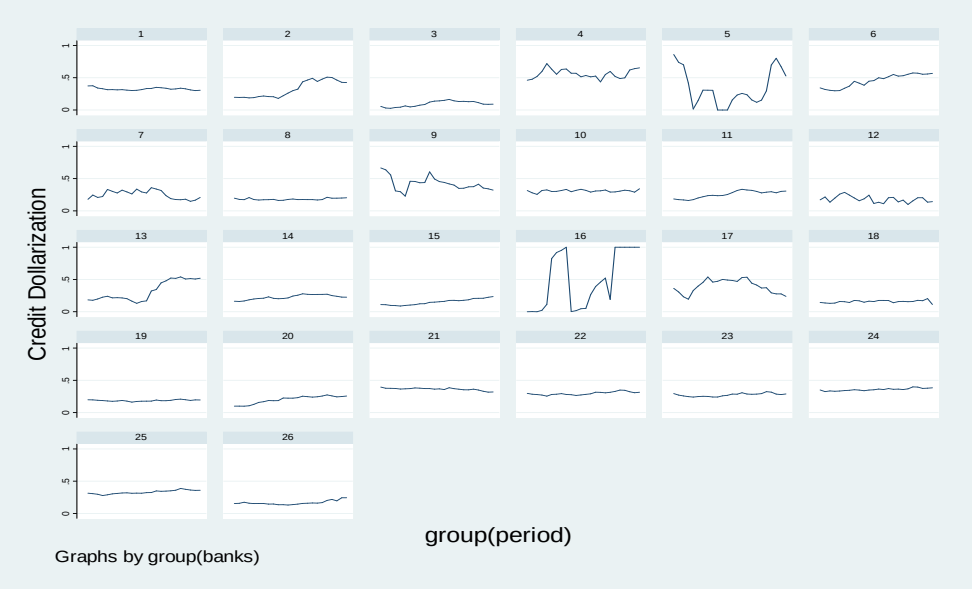
24. Türkiye İş Bankası A.Ş.

25. Türkiye Vakıflar Bankası T.A.O.

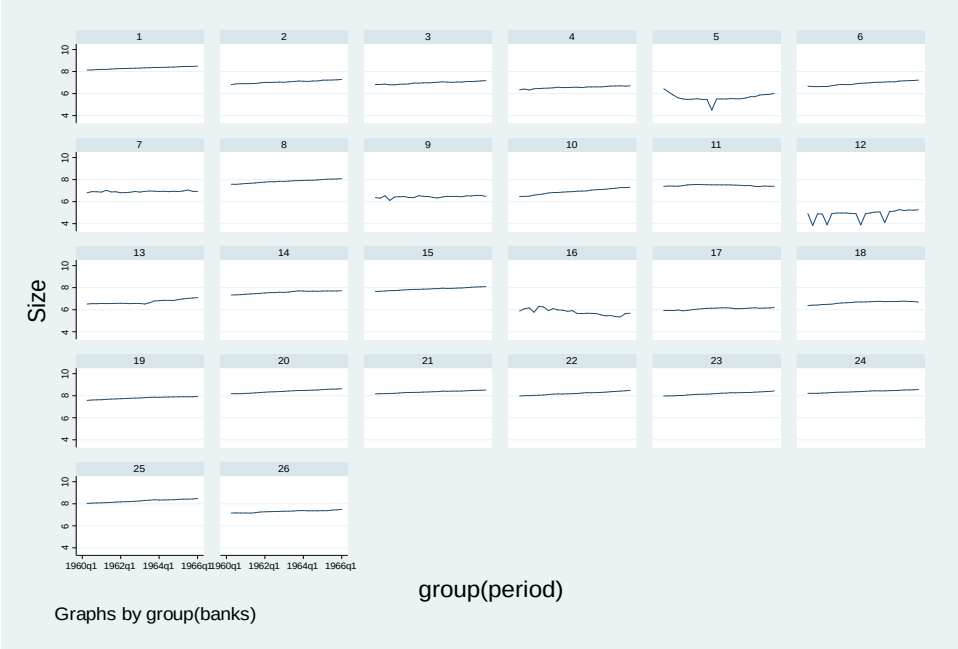
26. Yapı ve Kredi Bankası A.Ş.

APPENDIX B- Line Graphs of Variables for Stationarity Analysis

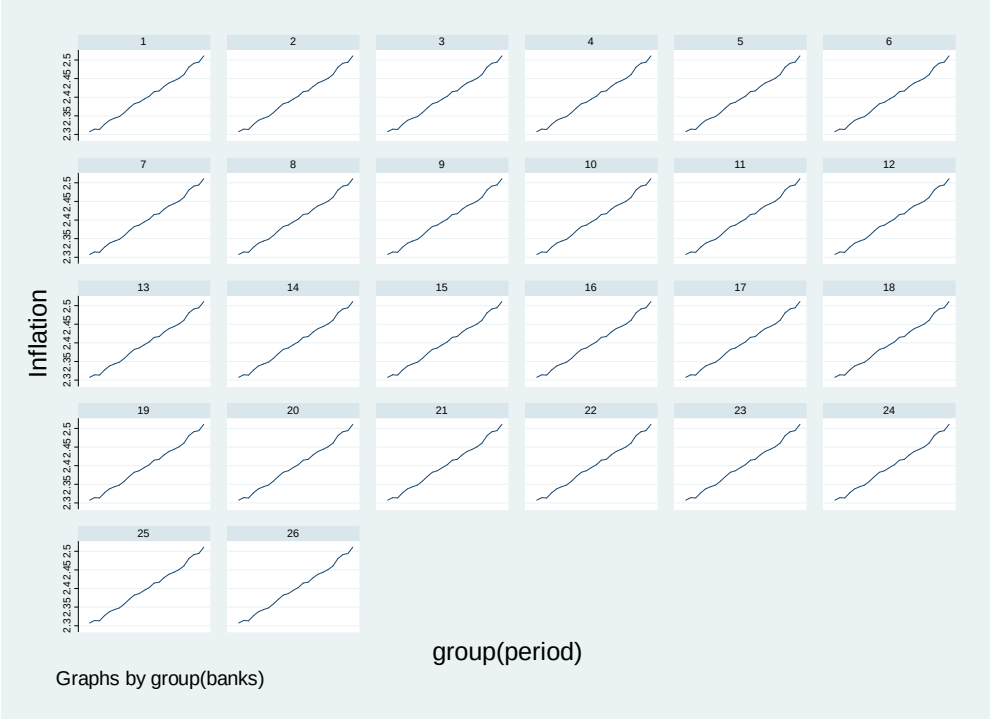
Credit Dollarization



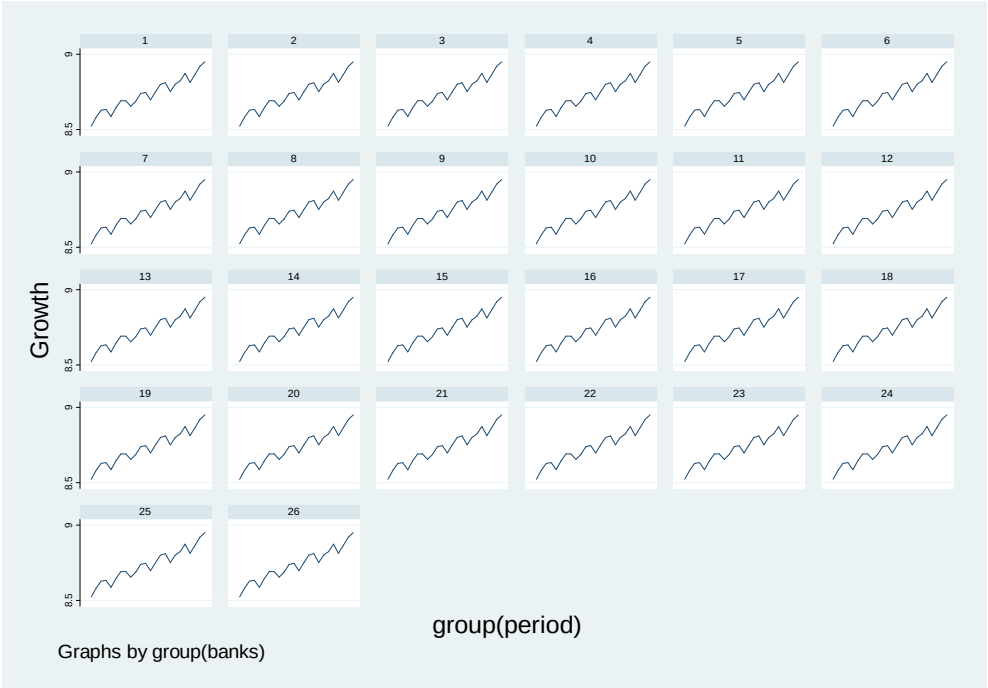
Size



Inflation



Growth



APPENDIX C- Estimation Results With Different Lag Variables

	Dependent Variable									
	ROA					ROE				
Indep. Variables	*Two-Step GMM* *(2.1-1)*	*Two-Step GMM* *(2.1-2)*	*Two-Step GMM* *(2.1-3)*	*Two-Step GMM* *(2.1-4)*	*Two-Step GMM* *(2.1-5)*	**Indep. Variables**	Two-Step GMM (2.2-1)	Two-Step GMM (2.2-2)	Two-Step GMM (2.2-3)	Two-Step GMM (2.2-4)	Two-Step GMM (2.2-5)
$ROA_{i,t-1}$	0.163 (0.130)	0.181 (0.137)	0.128 (0.117)	0.135 (0.154)	0.131 (0.163)	**$ROE_{i,t-1}$**	0.468*** (0.069)	0.519*** (0.037)	0.465*** (0.053)	0.477*** (0.060)	0.483*** (0.061)
Deposit Dollarization $_{i,t-1}$	-0.013** (0.006)					**Deposit Dollarization $_{i,t-1}$**	-0.048 (0.034)				
Deposit Dollarization $_{i,t-2}$		-0.013* (0.008)				**Deposit Dollarization $_{i,t-2}$**		-0.062* (0.036)			
Deposit Dollarization $_{i,t-3}$			-0.013** (0.005)			**Deposit Dollarization $_{i,t-3}$**			-0.052** (0.024)		
Deposit Dollarization $_{i,t-4}$				-0.016** (0.007)		**Deposit Dollarization $_{i,t-4}$**				-0.059** (0.027)	
Deposit Dollarization $_{i,t-5}$					-0.020* (0.010)	**Deposit Dollarization $_{i,t-5}$**					-0.058 (0.041)
ΔCredit Dollarization $_{i,t-1}$	-0.024 (0.016)					**ΔCredit Dollarization $_{i,t-1}$**	-0.120** (0.055)				
ΔCredit Dollarization $_{i,t-2}$		0.018** (0.008)				**ΔCredit Dollarization $_{i,t-2}$**		0.122* (0.065)			
ΔCredit Dollarization $_{i,t-3}$			-0.005 (0.008)			**ΔCredit Dollarization $_{i,t-3}$**			-0.028 (0.032)		
ΔCredit Dollarization $_{i,t-4}$				-0.005 (0.010)		**ΔCredit Dollarization $_{i,t-4}$**				-0.012 (0.019)	
ΔCredit Dollarization $_{i,t-5}$					0.001 (0.007)	**ΔCredit Dollarization $_{i,t-5}$**					0.002 (0.018)
Capital	0.027*** (0.005)	0.028*** (0.004)	0.030*** (0.004)	0.037*** (0.009)	0.037*** (0.010)	**Capital**	-0.001 (0.005)	0.001 (0.006)	0.003 (0.008)	0.005 (0.005)	0.004 (0.007)

Dependent Variable											
	ROA						ROE				
Indep. Variables	*Two-Step GMM* *(2.1-1)*	*Two-Step GMM* *(2.1-2)*	*Two-Step GMM* *(2.1-3)*	*Two-Step GMM* *(2.1-4)*	*Two-Step GMM* *(2.1-5)*	**Indep. Variables**	Two-Step GMM (2.2-1)	Two-Step GMM (2.2-2)	Two-Step GMM (2.2-3)	Two-Step GMM (2.2-4)	Two-Step GMM (2.2-5)
ΔSize	-0.021 (0.017)	-0.019 (0.015)	-0.009 (0.012)	-0.013 (0.018)	-0.011 (0.024)	**ΔSize**	-0.017 (0.015)	-0.004 (0.015)	-0.000 (0.014)	0.001 (0.011)	0.001 (0.014)
Growth	0.116*** (0.029)	0.119*** (0.030)	0.109*** (0.033)	0.102*** (0.027)	0.102*** (0.023)	**Growth**	0.706*** (0.124)	0.755*** (0.117)	0.690*** (0.138)	0.632*** (0.140)	0.652*** (0.137)
Inflation	-0.179*** (0.045)	-0.181*** (0.050)	-0.153*** (0.048)	-0.142*** (0.040)	-0.139*** (0.036)	**Inflation**	-1.089*** (0.190)	-1.143*** (0.196)	-0.991*** (0.227)	-0.916*** (0.225)	-0.922*** (0.222)
Constant	-0.577*** (0.149)	-0.598*** (0.151)	-0.575*** (0.177)	-0.541*** (0.148)	-0.548*** (0.125)	**Constant**	-3.500*** (0.643)	-3.798*** (0.584)	-3.604*** (0.677)	-3.275*** (0.707)	-3.436*** (0.692)
Number of observation	572	546	520	494	468	**Number of observation**	572	546	520	494	468
Number of groups	26	26	26	26	26	**Number of groups**	26	26	26	26	26
Wald Test [p-value]	$\chi^2(7)$= 5785.97 [0.000]	$\chi^2(7)$= 6244.49 [0.000]	$\chi^2(7)$= 3870.51 [0.000]	$\chi^2(7)$= 2944.69 [0.000]	$\chi^2(7)$= 2451.44 [0.000]	**Wald Test [p-value]**	$\chi^2(7)$= 158.71 [0.000]	$\chi^2(7)$= 518.91 [0.000]	$\chi^2(7)$= 349.27 [0.000]	$\chi^2(7)$= 357.35 [0.000]	$\chi^2(7)$= 165.81 [0.000]
Arellano-Bond Tests	AR(1): z=-1.25 [0.213] AR(2): z= 0.96 [0.336]	AR(1): z=-1.17 [0.243] AR(2): z= 0.99 [0.321]	AR(1): z=-1.21 [0.225] AR(2): z=0.78 [0.438]	AR(1): z= -1.33 [0.183] AR(2): z=1.01 [0.314]	AR(1): z= -1.29 [0.197] AR(2): z=0.86 [0.389]	**Arellano-Bond Tests**	AR(1): z=-1.97 [0.049] AR(2): z=1.99 [0.046]	AR(1): z= -2.01 [0.045] AR(2): z=1.68 [0.092]	AR(1): z= -1.64 [0.101] AR(2): z=1.60 [0.109]	AR(1): z=-1.60 [0.109] AR(2): z=1.36 [0.175]	AR(1): z=-1.61 [0.107] AR(2): z=1.42 [0.156]
Hansen Test	[1.000]	[1.000]	[1.000]	[1.000]	[1.000]	**Hansen Test**	[1.000]	[1.000]	[1.000]	[1.000]	[1.000]

The values in parentheses are the Windmeijer-corrected robust standard errors. * ,** and *** denote the significance at the 10%, %5 and 1 %, respectively. GMM style instruments are ROA_{t-1} (ROE_{t-1}), deposit dollarization, credit dollarization, capital and size and (t-2) lag structure is defined for these instruments. The standard instruments are growth and inflation. The values in brackets are p-values. Arellano and Bond tests AR(1) and AR(2) are for first-order and second-order serial correlation, respectively. Hansen J test is for instrument validity and over-identification restrictions.

APPENDIX D- Turkish Summary/Türkçe Özet

1970'li yıllardan itibaren birçok gelişmekte olan ekonomide paranın farklı fonksiyonlarını yerine getirmek üzere yabancı para birimleri kullanılmaya başlanmıştır. Bu yıllarda gayri resmi bir parasal ikame süreci olarak değerlendirilen dolarizasyon olgusu, gelişmekte olan ülkelerde 1980'li yılların sonlarında gerçekleştirilen sermaye hareketlerinin serbestleşmesine yönelik düzenlemelerin, kur rejimi değişikliklerinin ve bu ülkelerde yaşanan politik istikrarsızlıklar ile ekonomik krizlerin sonucunda derinleşerek günümüze kadar varlığını sürdürmüştür.

Bir ekonomideki finansal varlıkların ve yükümlülüklerin büyük bir bölümünün yabancı bir para birimleri cinsinden belirlenmiş olması halinde, yerli para birimi cinsinden belirlenmiş olan varlık ve yükümlülükler ile yabancı para birimleri cinsinden belirlenmiş olanlar arasında para birimi uyuşmazlığı ortaya çıkmaktadır. Para birimi uyuşmazlığı ekonomiler için bir finansal kırılganlık kaynağı oluşturmakta ve sonrasında ciddi makroekonomik risklerin ortaya çıkmasına neden olmaktadır. Döviz kuru rejiminden bağımsız olarak, dolarizasyon oranının yüksek olduğu ekonomilerde bankalar için para birimi uyuşmazlığı riski oluşmakta ve bu risk bankaların kur riskini artırmaktadır. Bu ekonomilerde, bankaların yabancı para birimleri cinsinden gerçekleştirdikleri işlemlerden kaynaklanan faiz oranı, kredi, ülke ve zaman dilimi farklılığı riskleri de kur riskine eşlik etmektedir. Söz konusu riskler, mevduat sahipleri ile borçlular arasında aracı olarak görev yapan bankaların performanslarında dolarizasyonun muhtelif etkilerinin görülmesine neden olabilmektedir.

Bu çalışmada, dolarizasyonun banka performansı üzerindeki etkisi araştırılmıştır. Tezin temel amacı, finansal dolarizasyonun Türkiye'de mukim bankaların performansı üzerindeki etkilerinin incelenmesidir.

Bu temel amaç çerçevesinde, öncelikle dolarizasyon hakkında ayrıntılı bir literatür taraması gerçekleştirilmiştir. Tezin giriş bölümünden sonraki ikinci bölümünü oluşturan literatür taraması bölümünde ilk olarak dolarizasyon olgusunun

ortaya çıkışı açıklanmış, daha sonra tam ve kısmi dolarizasyon sınıflandırması ile beraber varlık dolarizasyonu, yükümlülük dolarizasyonu ve finansal dolarizasyon kavramları ele alınmıştır. Ayrıca dolarizasyonun ölçüm yöntemlerine ilişkin bilgiler verilmiştir.

Dolarizasyon terimi ilk olarak yabancı para talebini anlatmak üzere, Latin Amerika ülkelerinin yabancı para olarak ABD dolarına gösterdikleri talebi göz önünde bulundurularak türetilmiştir. 1970'li ve 1980'li yıllarda, para ikamesi ve dolarizasyon terimleri birbirlerinin yerine kullanılmış olup, 1990'lı yıllarda dolarizasyon terimi ayrıca ABD dolarının bir ülkede yasal para birimi olarak kabul edilmesini anlatmak için de kullanılmaya başlanmıştır.

Literatürde dolarizasyon tam (resmi) ve kısmi (gayriresmi) dolarizasyon olmak üzere iki ana başlık altında incelenmekte olup, varlık dolarizasyonu, yükümlülük dolarizasyonu ve finansal dolarizasyon kavramları da kısmi dolarizasyonun alt sınıflandırmaları için kullanılmaktadır.

Tam dolarizasyon yabancı bir para biriminin bir ülkenin parasal otoriteleri tarafından resmi para birimi olarak kabul edilmesi olarak tanımlanmaktadır. Kısmı dolarizasyonda ise ekonomik aktörler yerli para birimlerini yabancı bir para birimi ile ikame ederek, ticari işlemlerini gerçekleştirmek ve finansal varlıklarını tahsis etmek üzere yabancı para birimini kullanmaktadırlar. Quispe-Agnoli (2002) tarafından belirtildiği üzere, kısmi dolarizasyonda kamu otoritelerinin yabancı para birimi kullanımını desteklemesi zorunluluğu yoktur. Varlık dolarizasyonu temel olarak, yerli para birimi cinsinden varlıkların, yabancı para birimi cinsinden varlıklarla ikame edilmesi olarak tanımlanabilir. Yükümlülük dolarizasyonu ise bir ülkedeki kamu ve bankacılık sektörü dâhil tüm ekonomik aktörlerin, yabancı para cinsinden yükümlüklerinin yüksek oranını anlatmak için kullanılmaktadır. Varlık ve yükümlülük dolarizasyonunun bir arada olduğu finansal dolarizasyon kavramı ise bir ekonomideki yerleşiklerin önemli miktarda yabancı para cinsinden varlık ve yükümlülüğünün bulunması olarak tanımlanabilir.

Literatür taraması bölümünde dolarizasyonun finansal sisteme olan etkilerinin araştırıldığı çalışmalar da incelenmiştir. Dolarizasyon ve finansal derinlik arasındaki ilişkinin incelendiği çalışmalarda, dolarizasyonun finansal derinlik üzerindeki etkisinin negatif olduğu, ancak yüksek enflasyon oranlarına sahip

ülkelerde yüksek dolarizasyon oranının daha derin finansal sistemlerle ilişkili olduğu belirtilmektedir. Diğer taraftan; dolarizasyon ve ekonomik krizler arasındaki ilişkiyi inceleyen çalışmalarda, dolarizasyonun ekonomik krizlerin ortaya çıkma ihtimalini artırdığına ilişkin bir sonuca ulaşılmamıştır.

Literatür taraması bölümünde, ayrıca dolarizasyonun bankacılık sistemine etkileri de incelenmiştir. Dolarizasyonun yüksek olduğu ekonomilerde, bankalar karşı karşıya kaldıkları kur riskini, yabancı para cinsinden kredi kullandırarak bertaraf etmekte, ancak bunun karşılığında kur riskinin yüklendiği kredi kullanıcılarının borçlarını ödeyememe ihtimali nedeniyle kredi riskini üstlenmektedir. Diğer taraftan; dolarizasyonun yüksek olduğu ekonomilerde, bankalar kur riskinin yanı sıra yabancı para cinsinden gerçekleştirdikleri işlemlerden kaynaklanan faiz oranı, kredi, ülke ve zaman dilimi farklılığı riskleri ile de karşı karşıya kalmaktadır.

Bunlara ek olarak, literatür taraması bölümünde dolarizasyonun banka performansı üzerindeki etkilerinin ve banka performansını belirleyen etmenlerin incelendiği çalışmalar da incelenmiştir.

Literatürde, banka performansı birçok yönden ele alınmış ve banka performansının ölçümü için çeşitli göstergeler kullanılmıştır. Dolarizasyon ve banka performansı arasındaki ilişkinin incelendiği çalışmalarda, banka performansı karlılık açısından ele alınmıştır. Bu nedenle, söz konusu çalışmalarda banka performansı karlılık, kredi kalitesi ve kredi büyümesi ölçütleri ile değerlendirilmiştir.

Dolarizasyonun banka performansına etkilerinin incelendiği çalışmaların ekonometrik analiz sonuçları birbirinden farklılık göstermekte olup, farklı ülke ya da ülke gruplarının verilerinin kullanıldığı çalışma sonuçlarına göre iki değişken arasındaki ilişkinin yönü ve istatiksel olarak anlamlılığı değişkenlik göstermektedir.

Literatür taraması bölümünde, dolarizasyon ve bankacılık sektörüne ilişkin çalışmaların yanı sıra banka performansının daha iyi analiz edilebilmesi ve ampirik analizde kullanılacak doğru değişkenlerin belirlenebilmesi amacıyla, banka performansının belirleyicilerinin incelendiği ampirik çalışmalar da incelenmiştir. Bu çalışmalarda, bankacılık sektörü yoğunlaşma oranı, faiz oranları, kredi büyümesi, ülke risk primi, banka sahipliği (kamu ya da özel), banka sermaye oranları, banka

büyüklüğü, sermaye piyasasının gelişmişliği, ekonomik büyüme ve enflasyon gibi değişkenlerin farklı banka performansı göstergeleri üzerindeki etkileri araştırılmıştır.

Tezin üçüncü bölümünde, Türkiye'de dolarizasyon ve bankacılık sistemi incelenmiştir. Bu bölümde öncelikle, dolarizasyonun Türkiye'deki tarihçesi araştırılmıştır. Türkiye'de kambiyo düzenlemelerinin temelini 25.02.1930 tarihli ve 1433 sayılı Resmi Gazete'de yayımlanan 1567 sayılı Türk Parasının Kıymetini Koruma Hakkında Kanun oluşturmaktadır. Kambiyo rejimine ilişkin usul ve esaslar ise dayanağını anılan Kanundan alan Kararlar ile düzenlenmektedir. Türkiye'ye döviz ithali 1955 yılında yayımlanan Türk Parası Kıymetini Koruma Hakkında 14 Sayılı Karar ile serbest bırakılmış ancak, getirilen dövizlerin Maliye Bakanlığınca belirlenecek müddetler içerisinde yetkili bankalardan birine satılması zorunlu kılınmıştır. Söz konusu Karar öncesinde, bankaların Maliye Bakanlığı tarafından verilen izne sahip olmayanlara döviz satmaları ve Türkiye'de yerleşik gerçek ve tüzel kişilerin sahip oldukları dövizleri Türkiye'de kullanmaları mümkün bulunmamaktaydı. Daha sonra, 1962 tarihli Türk Parası Kıymetini Koruma Hakkında 17 Sayılı Karar ile Türkiye'ye döviz ithalinin serbest olduğu, beyana veya herhangi bir işleme tabi tutulamayacağı belirtilerek, Türkiye'de efektif döviz alımının serbest bırakılmıştır. Aynı Karar ile Türkiye'de yerleşik kişilerin yurda getirilmesi mecburi olmayan dövizler karşılığında döviz hesabı açtırmalarına imkân sağlanmıştır. Bu düzenleme, Türkiye'de dolarizasyon olgusunun gelişimi ile ilgili yapılan ilk kambiyo mevzuatı değişikliği olarak kabul edilebilir. Söz konusu düzenleme sonrasında, 1967 yılında uygulamaya konulan dövize çevrilebilir mevduat hesapları ve 1976 yılında açılmaya başlanan kredi mektuplu döviz tevdiat hesapları, Türk ekonomisinde dolarizasyon olgusunun oluşması için gerekli koşulların ilk olarak bu yıllarda oluştuğunu göstermektedir.

1980'li yıllarda uygulamaya konulan 24 Ocak Kararları kapsamında muhtelif kambiyo mevzuatı değişiklikleri yapılmış, 1983 tarihli Türk Parası Kıymetini Koruma Hakkında 26 Sayılı Karar ile Türkiye'de yerleşik kişilerin yurda getirmekle yükümlü oldukları dövizlerin bir kısmı ile vadesiz döviz tevdiat hesabı açmalarına izin verilmiştir.

Diğer taraftan; 1984 tarihli Türk Parası Kıymetini Koruma Hakkında 30 Sayılı Karar ile de Türkiye'de yerleşik kişilerin yurt dışından kredi kullanmasına

izin verilmiş ve belirli koşullar altında Türkiye'deki bankalarca Türkiye'de yerleşik kişilere döviz kredisi kullandırılmasına imkân sağlanmıştır.

1989 tarihli Türk Parası Kıymetini Koruma Hakkında 32 Sayılı Karar ile Türk ekonomisindeki liberalizasyon reformları devam ettirilmiştir.

Söz konusu mevzuat değişikliklerinin ve finansal liberalizasyon reformlarının yanı sıra enflasyon ve döviz kuru hareketleri Türkiye'de dolarizasyon oranının gelişmesinde önemli rol oynamıştır.

Daha sonra, 2000'li yılların başlarında yaşanan ekonomik krizler, ekonomiye duyulan güvensizlik ve yerli para biriminin değer kaybedeceğine dair beklentiler Türkiye'de dolarizasyon olgusunun derinleşmesine neden olmuştur.

Tezin Türkiye'de dolarizasyon ve bankacılık sistemi isimli üçüncü bölümünde, Bankacılık Düzenleme ve Denetleme Kurumu (BDDK) verileri kullanılarak, Türkiye'de yerleşik bankaların 2002 ve 2018 yılları arasındaki yabancı para mevduat ve kredi tutarları ile mevduat ve kredi dolarizasyonu oranları hesaplanmıştır. Mevduat dolarizasyonunun hesaplanmasında Türkiye'de yerleşik bankaların yabancı para kredilerin M2 para arzına oranı, kredi dolarizasyonunun hesaplanmasında ise söz konusu bankaların yabancı para kredilerinin toplam kredilerine oranı kullanılmıştır.

Yapılan hesaplamalara göre, Türkiye'de yerleşik bankaların mevduat dolarizasyonu oranı 2018 yılı sonu itibarıyla %49 seviyesine ulaşmıştır. Diğer taraftan; Türkiye'de yerleşik bankaların kredi dolarizasyonu oranı 2018 yılı sonunda yaklaşık %40 olarak kaydedilmiştir. Söz konusu oranlar birlikte değerlendirildiğinde, Türkiye'de hem mevduat hem de kredi dolarizasyonunun önemini koruduğunu söylemek mümkündür.

Çalışmanın üçüncü bölümünde, ayrıca Türkiye'deki bankaların yabancı para pozisyonlarına da yer verilmiştir. Bankacılık Düzenleme ve Denetleme Kurumu verilerine göre, 2019 yılı Ocak ayı itibarıyla bankaların toplam yabancı para varlıkları 2.596.936,52 milyon TL, toplam yabancı para yükümlülükleri ise 2.581.884,44 milyon TL'dir. Söz konusu verilere göre, 2019 yılı Ocak ayı itibarıyla bankaların yabancı para net genel pozisyonu ise 15.052,08 milyon TL'dir. Bunlara ek olarak, 2019 yılı Ocak ayı itibarıyla, bankaların yabancı para mevduatlarının

toplam yabancı para yükümlülüklerine oranı %33,80; bankaların yabancı para kredilerinin toplam yabancı para varlıklarına oranı ise %36 olarak kaydedilmiştir.

Tezin dördüncü bölümünde, tezin temel amacı çerçevesinde gerçekleştirilen ekonometrik analizlere yer verilmiştir. Bu bölümde, finansal dolarizasyonun banka performansı üzerindeki etkisi hem statik hem de dinamik panel veri analizi yöntemleri kullanılarak incelenmiştir. Statik panel veri analizi bölümünde, oluşturulan modeller sabit etkiler ve rastgele etkiler yaklaşımları ile tahmin edilmiş ve yorumlanacak nihai model Hausman Testi'nin sonuçlarına göre belirlenmiştir.

Daha sonra Athanasoglou, Delis and Staikouras (2006) and Kutan, Ozsoz and Rengifo (2012)'nun çalışmalarında da dikkate alınan, bankaların karlılığındaki devamlılık göz önünde bulundurularak, bağımlı değişkenlerin bir önceki dönem değerleri modellere bağımsız değişkenler olarak dâhil edilmiştir. Elde edilen dinamik modeller, genelleştirilmiş momentler metodu (GMM) kullanılarak tahmin edilmiştir.

Ekonometrik analiz için öncelikle Türkiye Bankalar Birliği'nin veritabanında yer alan Türkiye'de mukim 46 bankanın verileri temin edilmiştir. Ancak dengeli panel veri yapısının oluşturulabilmesi için; mevduat kabul etmemeleri nedeniyle yatırım ve kalkınma bankalarına, kredi kullandırmadığı tespit edilen bankalara ve Türkiye'de son birkaç yıldır faaliyet gösteren bankalara ait veriler analize dâhil edilmemiştir. Sonuç olarak, yapılan analizlerde Türkiye'de mukim 26 bankaya ait finansal veriler kullanılmıştır.

Veri boyutunun küçük ve özellikle araç değişken sayısının fazla olması durumunda GMM tahmin edicileri yanlı olabilmektedir. Bu nedenle, GMM için gerekli olan yeterli ve etkin veri boyutuna ulaşılabilmesini teminen analizlerde çeyrek dönemlik veriler kullanılmıştır. GMM'in yatay kesit sayısının, zaman serisi sayısına eşit veya zaman serisi sayısından büyük olmasına ilişkin kısıtlaması nedeniyle, analizde kullanılan nihai veri 2007 yılının ilk çeyreğinden 2017 yılının son çeyreğine kadar olan dönemi kapsamaktadır.

Gerçekleştirilen ampirik analizde, bağımlı değişken olarak banka performansına ilişkin iki farklı gösterge, aktif karlılık oranı (ROA) ve özkaynak karlılık oranı (ROE) kullanılmıştır. Tezin temel amacının finansal dolarizasyonun banka performansı üzerine etkisinin incelenmesi olması nedeniyle, mevduat

dolarizasyonu ve kredi dolarizasyonu analizlere bağımlı değişken olarak dâhil edilmiştir. Mevduat dolarizasyonu, yabancı para mevduatların toplam mevduatlara oranı ile hesaplanmış olup, benzer şekilde kredi dolarizasyonu ölçütü olarak yabancı para kredilerin toplam kredilere oranı kullanılmıştır. Dolarizasyonun etkilerini izole etmek için bazı makroekonomik ve bankalara özgü değişkenler de analize dâhil edilmiştir. Bankalara özgü değişkenler olarak; banka özkaynaklarının bankanın toplam varlıklara oranını gösteren sermaye değişkeni ve banka varlıklarının logaritması ile ölçülen banka büyüklüğü değişkeni kullanılmıştır. Analizde, makroekonomik değişkenler olarak, Türkiye'nin gayri safi yurt içi hasılasının (GSYİH) logaritması ile ölçülen ekonomik büyüme değişkenine ve tüketici fiyat endeksinin (TÜFE) logaritması alınarak hesaplanan enflasyon değişkenine yer verilmiştir. Analizde kullanılan GSYİH verileri Türkiye İstatistik Kurumu'nun, TÜFE verileri ise Türkiye Cumhuriyet Merkez Bankası'nın veritabanından temin edilmiştir.

Değişkenlerin durağanlık seviyeleri Levin, Lin and Chu (2002) ve Im, Pesaran and Chin (2003) testleri kullanılarak belirlenmiştir. Test sonuçları % 1 istatistiksel anlamlılık düzeyinde, ROA, ROE, mevduat dolarizasyonu ve sermaye değişkenlerinin seviye düzeyinde durağan olduğunu göstermiştir. Kredi dolarizasyonu, banka büyüklüğü, ekonomik büyüme ve enflasyon değişkenleri için test sonuçları, değişkenlerde trend olup olmadığının tespit edilebilmesi amacıyla söz konusu değişkenlerin grafikleri ile birlikte değerlendirilmiştir. Sonuç olarak kredi dolarizasyonu ve banka büyüklüğü değişkenlerinin birinci dereceden farklarının durağan olduğu, diğer tüm değişkenlerin ise seviye düzeyinde durağan olduğu tespit edilmiştir. Bu nedenle tahminlerde kredi dolarizasyonu ve banka büyüklüğü değişkenlerinin birinci dereceden farkları kullanılmıştır.

Değişkenlerin durağanlık seviyeleri belirlendikten sonra, bağımlı değişkeni sırasıyla ROA ve ROE olan, 1.1 ve 1.2 modelleri olmak üzere iki statik model oluşturulmuştur. Oluşturulan modeller sabit etkiler ve rastgele etkiler yöntemleri kullanılarak tahmin edilmiştir. İki yöntemden hangisinin seçileceğini belirlemek üzere Hausman Testi uygulanmıştır. Hausman Testi'nin sonuçları rastgele etkiler modelinin daha tutarlı sonuçlar vereceğini göstermiştir.

Tahmin sonuçlarının etkinliğinin test edilmesi için diagnostik testler uygulanmıştır. Modellerde değişen varyans (hetereoskedastisite) sorununun olup olmadığı Wiggins ve Poi (2001) tarafından geliştirilen Olabilirlik Oranı Testi (Likelihood Ratio Test) ile sınanmıştır. Her iki model için de söz konusu testin, hata teriminin sabit bir varyansa sahip olduğunu varsaymakta olan boş hipotezi reddedilmiştir. Böylece her iki modelde de değişen varyans sorunu olduğu tespit edilmiştir. Modellerde otokorelasyon sorunu olup olmadığının tespit edilmesi için Wooldridge (2002) tarafından geliştirilen Otokorelasyon Testi uygulanmıştır. Her iki modele ilişkin test sonuçları, modellerde otokorelasyon sorununun var olduğunu göstermiştir. Tahmin sonuçlarına göre her iki modelde değişen varyans ve otokorelasyon problemlerinin saptanması nedeniyle, modeller kümelenmiş sağlam (clustered robust) standart sapmalar ile tekrar tahmin edilmiştir.

Bağımlı değişkeni ROA olan Model 1.1'in rastgele etkiler yöntemi ile gerçekleştirilen nihai tahmin sonuçlarına göre, %1 anlamlılık düzeyinde sermaye ve ekonomik büyüme değişkenlerinin ROA üzerindeki etkisi pozitif ve istatistiksel olarak anlamlı, enflasyonun ROA üzerindeki etkisi ise negatif ve istatistiksel olarak anlamlıdır. Ayrıca, %10 anlamlılık düzeyinde mevduat dolarizasyonunun ROA üzerindeki negatif etkisi istatistiksel olarak anlamlı bulunmuştur. Diğer taraftan; sonuçlara göre kredi dolarizasyonunun ROA üzerindeki negatif etkisi istatistiksel olarak anlamsızdır.

Bağımlı değişkenin ROE olan Model 1.2'nin rastgele etkiler yöntemi ile gerçekleştirilen nihai tahmin sonuçları, Model 1.1'in tahmin sonuçlarından bazı farklılıklar göstermektedir. %1 anlamlılık düzeyinde istatistiksel olarak anlamlı bulunan enflasyon ve banka büyüklüğü değişkenlerinin ROE üzerindeki etkisi negatif, ekonomik büyüme değişkeninin etkisi ise pozitiftir. Diğer taraftan; %10 anlamlılık düzeyinde, mevduat dolarizasyonunun ROE üzerindeki etkisi negatiftir. Aynı anlamlılık düzeyinde, sermaye değişkeninin ROE üzerindeki etkisi de negatif bulunmuştur. Ancak, tahmin sonuçlarına göre kredi dolarizasyonunun ROE üzerindeki etkisi istatistiksel olarak anlamsızdır.

Rastgele etkiler yöntemi kullanılarak gerçekleştirilen tahminler sonrasında, banka karlılıklarındaki devamlılığı dikkate almak amacıyla, Model 1.1 ve 1.2'ye bağımlı değişkenlerinin bir önceki dönem değerleri bağımsız değişkenler olarak

eklenerek, sırasıyla Model 2.1 ve 2.2 oluşturulmuştur. Bir başka ifade ile Model 2.1'de ROA'nın bir önceki dönemdeki değerine, Model 2.2'de ise ROE'nin bir önceki dönemdeki değerine bağımsız değişken olarak yer verilmiştir.

Oluşturulan dinamik modeller, sistem GMM yaklaşımı ile tahmin edilmiştir. Sistem GMM tahmininde, bankalara özgü mevduat dolarizasyonu, kredi dolarizasyonu, sermaye ve banka büyüklüğü değişkenleri içsel (endojen) değişkenler olarak tanımlanmıştır. Roodman (2009)'un önerisini takip edilerek, bağımlı değişkenlerin bir önceki dönem değerlerinin belirlenmiş (predetermined) değişkenler olduğu varsayılmıştır. Makroekonomik değişkenler, ekonomik büyüme ve enflasyonun ise dışsal (ekzojen) değişkenler olarak kabul edilmiştir.

Model 2.1 ve 2.2 hem tek aşamalı hem de iki aşamalı sistem GMM yaklaşımı ile tahmin edilmiştir. Tek aşamalı ve iki aşamalı tahmin sonuçları arasında sadece küçük farklılıklar olduğu gözlemlenmiştir. Ancak; Windmeijer (2005)'e göre, katsayı tahminlerinde iki aşamalı sistem GMM yaklaşımı, tek aşamalı GMM yaklaşımından daha iyi sonuçlar vermektedir. Bu yüzden, tahmin sonuçlarının değerlendirilmesinde ve yorumlanmasında iki aşamalı sistem GMM yaklaşımı sonuçları kullanılmıştır.

Model 2.1'in tahmin sonuçlarına göre; %1 anlamlık düzeyinde sermaye ve ekonomik büyüme değişkenlerinin ROA üzerindeki etkisi pozitif, enflasyon için negatiftir. Ayrıca, mevduat dolarizasyonunun ROA üzerindeki negatif etkisi %10 anlamlık düzeyinde istatiksel olarak anlamlı bulunmuştur. Ancak, tahmin sonuçları ROA'nın bir önceki dönem değerinin cari dönemdeki ROA değeri üzerinde istatistiksel olarak anlamlı bir etkisi olmadığını göstermiştir. Banka büyüklüğü ve kredi dolarizasyonu değişkenlerinin ROA üzerindeki negatif etkisi de istatistiksel olarak anlamsız bulunmuştur.

Bağımlı değişkeni ROE olan Model 2.2 ile bağımlı değişkeni ROA olan Model 2.1'in tahmin sonuçlarında değişkenlerin katsayılarının anlamlılık düzeylerinde farklılıklar bulunmaktadır. Model 2.2'nin tahmin sonuçlarına göre ROE'nin bir mnceki dönem değerinin cari dönemdeki ROE değeri üzerindeki etkisi negatif ve %1 anlamlılık düzeyinde istatistiksel olarak anlamlıdır. Aynı anlamlılık düzeyinde, ekonomik büyümenin ROE üzerindeki etkisi pozitif, enflasyonun ROE üzerindeki etkisi ise negatif bulunmuştur. %5 anlamlılık düzeyinde, mevduat

dolarizasyonunun ROE üzerindeki etkisi negatif ve istatistiksel olarak anlamlıdır. Tahmin sonuçlarına göre, sermaye, banka büyüklüğü ve kredi dolarizasyonu değişkenlerinin ROE üzerindeki etkileri istatistiksel olarak anlamsızdır. Ancak, tek aşamalı GMM sonuçlarına göre, %1 istatistiksel anlamlılık düzeyinde kredi dolarizasyonunun ROE üzerindeki etkisi negatiftir.

GMM tahmin edicilerinin tutarlılığı hata terimleri arasında birinci dereceden veya ikinci dereceden seri korelasyon olmamasına bağlıdır. Bu nedenle, modellerde seri korelasyon olup olmadığı Arellano-Bond (1991) Testi ile sınanmıştır. Test sonuçları iki aşamalı GMM sonuçlarında seri korelasyon sorununun olmadığını göstermiştir. Ayrıca, kullanılan araç değişkenlerin geçerliliği Hansen Testi ile sınanmıştır. Hansen Testi sonuçları araç değişkenlerin geçerli olduğunu göstermiştir.

Tezin sonuç bölümünde, gerçekleştirilen ekonometrik analiz sonuçları dolarizasyon ve banka performansının incelendiği diğer çalışmaların sonuçları ile karşılaştırılarak değerlendirilmiştir.

Mevduat dolarizasyonunun finansal derinlik üzerindeki negatif etkisi ve dollarizasyonun var olduğu ülkelerde kur riskinin kredi riskine dönüştüğü göz önünde bulundurulduğunda, mevduat dolarizasyonun banka performansı üzerindeki etkisinin negatif olması beklenmektedir. Mevduat dolarizasyonun banka performansı değişkenleri üzerindeki etkisinin negatif olduğunu gösteren tahmin sonuçları da söz konusu beklentilerle uyumludur.

Tezin temel amacı finansal dolarizasyonun banka performansı üzerindeki etkisinin araştırılması olmakla beraber, ekonometrik analiz sonuçları birlikte değerlendirildiğinde, kredi dolarizasyonunun banka performansı üzerinde istatistiksel olarak anlamlı bir etkisi bulunmadığı değerlendirilmektedir. Yalnızca rastgele etkiler yöntemi sonuçlarına göre % kredi dolarizasyonunun ROA üzerindeki negatif etkisi ve tek aşamalı GMM yaklaşımı sonuçlarına göre kredi dolarizasyonunun ROE üzerindeki negatif etkisi %10 anlamlılık düzeyinde istatiksel olarak anlamlı bulunmuştur.

Daha önce de belirtildiği üzere, GMM tahminlerinde kullanılan modellere bankaların karlılığındaki devamlılık göz önünde bulundurularak, bağımlı değişkenlerin bir önceki dönem değerleri bağımsız değişkenler olarak dâhil edilmiştir. ROA'nın bir önceki dönem değerinin cari dönem ROA değeri üzerindeki

pozitif etkisi istatistiksel olarak anlamsız bulunurken, ROE'nin bir önceki dönem değerinin cari dönem ROE değeri üzerindeki etkisi pozitif ve %1 anlamlılık düzeyinde istatistiksel olarak anlamlı bulunmuştur.

Diğer taraftan; hem rastgele etkiler hem de GMM tahmin sonuçları, banka sermayesinin ROA üzerindeki etkisini gösteren katsayıların pozitif ve istatistksel olarak anlamlı olduğunu göstermektedir. Söz konusu sonuçlar Molyneux ve Thornton (1992), Naceur (2003) ve Athanasoglou, Brissimis ve Delis (2008) 'in ampirik çalışmalarının bulguları ile tutarlı olup, sermayenin finansman sürecinde güvence sağlama fonksiyonu taşıdığı fikrini desteklemektedir. Öte yandan, bağımlı değişken ROE olduğunda, banka sermayesi değişkeninin negatif katsayısı, rastgele etkiler yönteminin kullanıldığı tahmin sonuçlarına göre %10 anlamlılık düzeyinde istatistiksel olarak anlamlı bulunurken, GMM yaklaşımının kullanıldığı tahmin sonuçları katsayının istatistiksel olarak anlamsız olduğunu göstermektedir.

Banka büyüklüğünün banka performansı üzerindeki etkisi tüm tahmin sonuçlarına göre negatif bulunmuş olup, bu sonuçlar Regehr and Sengupta (2016) tarafından ifade edilen küçük bankaların büyümeden geniş ölçüde yararlanabildiği, ancak büyümeden sağlanan faydaların büyüme süreci içerisinde azalarak ortadan kalktığına ilişkin görüşü desteklemektedir. Ancak, banka büyüklüğünün banka performansı üzerindeki etkisi, ROE bağımsız değişkeni ile gerçekleştirilen tahminler arasında yalnızca rastgele etkiler yöntemi ile gerçekleştirilen tahmin sonuçlarına göre istatistiksel olarak anlamlı bulunmuştur.

Tüm tahmin sonuçları ekonomik büyümenin banka performansı üzerindeki etkisinin pozitif ve istatistiksel olarak anlamlı olduğunu göstermektedir. Bu sonuçlar, ekonomik büyüme ile kredi talebinde yaşanacak artış ve temerrüt riskinde yaşanacak azalma beklentisi ile tutarlıdır.

Bunlara ek olarak, tüm tahmin sonuçlarında enflasyonun banka performansı üzerinde negatif ve istatistiksel olarak anlamlı bulunan etkisi, enflasyonun temerrüt riskinde artışa sebep olarak bankaların karlılığını azaltabileceği yönündeki görüşü desteklemektedir.

Sonuç olarak, bu çalışma 2012 ve 2017 yılları arasında mevduat dolarizasyonunun çalışmada verileri kullanılan Türkiye'de mukim bankaların karlılıkları üzerinde negatif etkisi olduğunu göstermektedir. Bu kapsamda;

Türkiye'deki dolarizasyon oranının düşürülmesi için, enflasyon oranının azaltılmasını ve yerli para birimi kullanımının teşvik edilmesini amaçlayan politikaların, bankaların karlılığı üzerinde olumlu etkileri olabileceği değerlendirilmektedir.

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