Hacettepe University Graduate School of Social Sciences

Department of Economics

MACROECONOMIC DETERMINANTS OF DOLLARIZATION

Muhammed Emin KARAARSLAN

Ph.D. Dissertation

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ACCEPTANCE AND APPROVAL

The jury finds that Muhammed Emin KARAARSLAN has on the date of June 11, 2024 successfully passed the defense examination and approves his PhD. thesis titled “Macroeconomic Determinants of Dollarization”.

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ABSTRACT

KARAARSLAN, Muhammed Emin. *Macroeconomic Determinants of Dollarization*, Ph.D. Thesis, Ankara, 2024.

The dollarization phenomenon, which generally means the substitution of local currency or assets with foreign equivalents and which is important for developing countries has been the subject of many economic analyses and discussions, especially in the fields of monetary theory and finance, and the factors affecting this phenomenon have been investigated both for country groups and for individual countries. In this thesis, the macroeconomic determinants of dollarization are investigated by panel ARDL method on a sample including mostly developing countries. As a result of the empirical analysis, findings are obtained for the whole sample in the long run and for each country in the short run. According to the results, in the long run, inflation rate, export to import coverage ratio, exchange rate volatility and economic freedom index have a statistically significant and positive effect on dollarization. The effects of GDP growth rate and interest rate are also statistically significant but negative. The results of the analyses for the entire dataset show that none of the variables has a statistically significant effect in the short run. However, it is also found that there will be a reorientation towards the long-run coefficient estimates after a short-term shock. The results of the short-run analyses differ for each country. It is observed that the short-run coefficient estimates for some countries are statistically insignificant. In addition, the statistically significant coefficients are found to affect the dollarization level of countries in different directions.

Keywords

Dollarization, Developing Countries, Monetary Theory, Exchange Rate, Panel ARDL

ÖZET

KARAARSLAN, Muhammed Emin. *Dolarizasyonun Makroekonomik Belirleyenleri*, Doktora Tezi, Ankara, 2024.

Genel olarak yerel para veya varlıkların yabancı eşdeğerleriyle ikame edilmesi anlamına gelen ve gelişmekte olan ülkeler için önemli olan dolarizasyon olgusu, özellikle para teorisi ve finans alanlarında birçok ekonomik analiz ve tartışmaya konu olmuş ve bu olguyu etkileyen faktörler hem ülke grupları hem de tek tek ülkeler için araştırılmıştır. Bu tezde, dolarizasyonun makroekonomik belirleyicileri, çoğunluğu gelişmekte olan ülkelerden oluşan bir örneklem üzerinde panel ARDL yöntemi ile araştırılmıştır. Ampirik analiz sonucunda uzun dönemde tüm örneklem için, kısa dönemde ise her bir ülke için bulgular elde edilmiştir. Sonuçlara göre, uzun dönemde enflasyon oranı, ihracatın ithalatı karşılama oranı, döviz kuru oynaklığı ve ekonomik serbestlik endeksi dolarizasyon üzerinde istatistiksel olarak anlamlı ve pozitif bir etkiye sahiptir. GSYİH büyüme oranı ve faiz oranının etkileri de istatistiksel olarak anlamlı ancak negatiftir. Tüm veri seti için yapılan analizlerin sonuçları, değişkenlerin hiçbirinin kısa vadede istatistiksel olarak anlamlı bir etkiye sahip olmadığını göstermektedir. Ancak, kısa vadeli bir şok sonrasında uzun vadeli katsayı tahminlerine doğru bir yönelim olacağı da tespit edilmiştir. Kısa dönem analizlerinin sonuçları her ülke için farklılık göstermektedir. Bazı ülkeler için kısa dönem katsayı tahminlerinin istatistiksel olarak anlamsız olduğu görülmektedir. Ayrıca, istatistiksel olarak anlamlı bulunan katsayıların ülkelerin dolarizasyon düzeyini farklı yönlerde etkilediği tespit edilmiştir.

Anahtar Sözcükler

Dolarizasyon, Gelişmekte Olan Ülkeler, Para Teorisi, Döviz Kuru, Panel ARDL

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ABBREVIATIONS

ARDL:	Autoregressive Distributed Lags
CDS:	Current Default Swap
CIPS:	Cross-Sectionally Dependent Im-Pesaran-Shin
FE:	Fixed Effects
GDP:	Gross Domestic Product
GMM:	Generalized Method of Movements
IMF:	International Monetary Fund
MVP:	Minimum Variance Portfolio
OLS:	Ordinary Least Squares
PMG:	Pooled Mean Group
POLS:	Pooled Ordinary Least Squares
US:	United States

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INTRODUCTION

Every development in the economy affects the decisions of the economic decision-making units. In the meantime, developing technology and communication opportunities help these units to implement their decisions quickly. Technological developments not only accelerate communication, but also facilitate it. From an economic point of view, thanks to this facilitation, the speed of capital movements and economic activities has increased and thereby the options for each actor have been diversified and their volumes have expanded.

Today all economic actors, including households, can easily invest in financial assets in almost all over the world. The motivation for investment preference is to preserve or increase the value of the assets owned. This attitude may lead to the abandonment of the local currency, the foreign currency to come to the fore and to take a more prominent role in the domestic economy. Although there are different definitions in the literature, this situation is expressed as "dollarization" (Baliño, 2003; Borensztein & Berg, 2000; De Nicoló, Honohan, & Ize, 2005).

The dollarization phenomenon can be evaluated in two ways. The first is full dollarization, which is defined by Borensztein and Berg (2000) as "*The term dollarisation is shorthand for the use of any foreign currency by another country.*" For example, Panama and Ecuador use the American dollar, Liechtenstein the Swiss franc, Kosovo the Euro, and Bhutan the Indian Rupee, which is called full dollarization. Apart from this, as Borensztein and Berg (2000) stated, informal dollarization is the situation in which economic actors turn to foreign assets in order to protect the value of their assets as a result of the depreciation of the local currency.

Dollarization is a situation generally faced by developing and underdeveloped countries. Therefore, studies have focused on these countries (see; Ajide, Raheem, & Asongu, 2019; Bacha, Holland, & Gonçalves, 2007; Balima, 2017; Cachanosky, Ocampo, & Salter, 2023; Court, Ozsoz, & Rengifo, 2010; Krupkina & Ponomarenko, 2017; Luca & Petrova, 2008; Milambo, 2010; Neanidis & Savva,

2009; Raheem & Asongu, 2018). Developing and underdeveloped countries are at the center of dollarization, as the economic relations in developed countries establish more confidence both in terms of size and in terms of the established system (Horváth, 2013; Linders, de Groot, & Nijkamp, 2005; Volland, 2010). In countries where dollarization is observed, high inflation and interest rate practices play an active role (Borensztein & Berg, 2000). Certainly, it cannot be explained why a country finds its local currency less attractive based on inflation and the interest rate alone. As a matter of fact, there are different approaches investigating the determinants of dollarization in studies. Examples of these include institutional quality (Basso, Calvo-Gonzalez, & Jurgilas, 2007; Ize, 2005; Neanidis & Savva, 2013; Rennhack & Nozaki, 2006), policy predictability (Brahma, 2017; Honig, 2006; Neanidis & Savva, 2006), monetary policy (Basso et al., 2007; Lin & Ye, 2013), and other indicators and variables (Bocola & Lorenzoni, 2020; Raheem & Asongu, 2018) in dollarization studies.

There are different problems that developing countries experience as a result of dollarization. The most important problem experienced in dollarized economies is that the economic policies implemented cannot provide the desired efficiency and the existing problems become more complex. In this regard, Yeyati (2006) stated that dollarization has been seen as an impediment for monetary policy efficiency. Likewise, Court et al. (2010) indicated that dollarization has unfavourable effects on financial development. Also, Galindo, Izquierdo, and Montero (2007) asserted that dollarization may have unfavourable effects on employment. These unfavourable phenomena which are monetary policy inefficiency, financial underdevelopment and unemployment, can affect the important features such as economic independence and sovereignty as well as economic growth and development of a country. This argument has been confirmed by many previous studies (Benhabib & Spiegel, 2000; Burggraeve, de Walque, & Zimmer, 2015; Twinoburyo & Odhiambo, 2018). If the determinants of the rise in dollarization, or alternatively, the decline in confidence in the domestic currency, are identified, policymakers will have the opportunity to implement requisite measures and avert potential issues that may arise in the future.

The problem sought to be investigated in this thesis is to find out how the changes in macroeconomic variables affect dollarization in long term and short term. When macroeconomic variables are concerned, a wide range of indicators pointing to different aspects of the economy may come to mind. Therefore, in order to make this thesis as comprehensive as possible, the indicators chosen point to different aspects of the economy. These aspects have been chosen to represent international trade and money market, domestic monetary policy, domestic fundamental economic stability, the overall strength of the economy and the environment for the realisation of economic activities. These economic phenomena are important in terms of representing different aspects of the economic structure as well as responding to different policy implementations.

In previous studies, financial variables have generally been at the forefront, while macroeconomic variables other than inflation rate and interest rate have remained in the background. For example in the studies conducted by Basso, Calvo-Gonzalez, and Jurgilas (2011); De Nicoló et al. (2005); Luca and Petrova (2008); Rennhack and Nozaki (2006), investigation of the effects of financial variables such as foreign assets, financial market depth, interest rate margins and MVP, on dollarization is the main objective. In this context, the inclusion of other fundamental macroeconomic phenomena in the analysis will be useful in eliminating the deficiency observed in dollarization studies. Another contribution of this thesis to the research on the dollarization phenomenon is related to the scope of the dollarization indicator. Previous studies have generally used the ratio of foreign currency deposits to total deposits (see; Ajide et al., 2019; Aktaş & Aydınlık, 2022; Balima, 2017; De Nicoló et al., 2005; Lin & Ye, 2013; Rennhack & Nozaki, 2006). However, this approach brings along an important deficiency. This deficiency is the assumption that domestic investors prefer only foreign currency as their foreign investment preference. In this case, all other foreign investment instruments will be excluded from the evaluation. Since the dollarization phenomenon is considered as the preference of foreign assets over domestic options in the literature, the use of only deposits in the empirical analysis creates a deficiency that needs to be addressed. To address the aforementioned deficiency, this thesis will develop a more inclusive variable to be

used as a dollarization indicator. In this thesis, the share of all foreign assets in GDP, including foreign currency deposits, will be used as the dollarization variable. In this way, the dynamics of the dollarization phenomenon can be evaluated over all foreign assets.

Lastly, when it comes to economic dynamics, countries may have similarities and differences with each other. In order to overcome the complexity related to this situation, the selection of the analysis method applied is of great importance. Previous studies have included both approaches which are country-specific analysis and country group analysis (Court et al., 2010; De Nicoló et al., 2005; Kaya & Kara, 2022; Rennhack & Nozaki, 2006; Tufaner, 2021). Since countries from different regions of the world with different levels of development are considered in this thesis, it is assumed that the economic structure will be different from country to country. For this reason, an analysis method that will allow the evaluation of differences and commonalities together has been preferred. In line with this preference, Panel ARDL methodology is used in the empirical analysis. The fact that the Panel ARDL method not only provides separate results for cross-sections but also allows coefficient estimation for long and short run will provide a better understanding of the dynamics of the dollarization phenomenon. In this way, it is aimed to have more useful information in the process of forming policies towards dollarization.

In the context of the foregoing, this thesis differs from previous studies in many ways. These are the holistic approach in the dollarization indicator, the ability of the explanatory variables to represent economic dynamics in a broad framework, and the use of analysis methods that take into account the differences arising from the economic structure. This thesis aims to provide policymakers with a comprehensive analytical framework that clarifies the relationship between key macroeconomic indicators and dollarization, both essential for economic growth and development.

In the following part of the thesis, in Chapter 1, theoretical background of dollarization will be evaluated through both empirical and theoretical studies. In Chapter 2, empirical methodology used in the thesis will be explained and the

data will be presented. Later, results of the empirical analysis will be evaluated for long-term and short-term. Also, in the short term, country-specific findings will be presented and discussed. Lastly, in Chapter 3, policy implications regarding the findings of this thesis will be provided.

CHAPTER 1

THEORETICAL BACKGROUND AND EMPIRICAL STUDIES IN THE LITERATURE

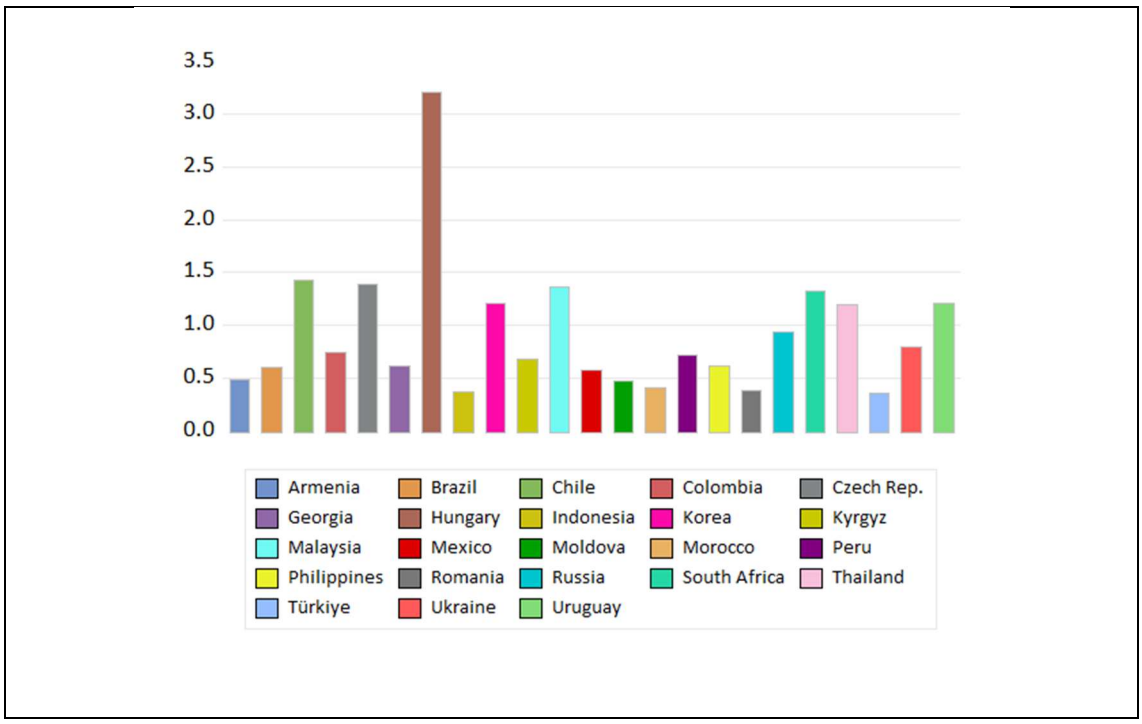
As stated by Rochon and Seccareccia (2003), the reason why the dollarization phenomenon came to the fore in the economic literature is that developing countries were adversely affected by capital movements during the crisis periods in the 1990s. Starting from the investigation of the reasons for the vulnerable structures of countries against capital movements, it has been understood that dollarization is a phenomenon that policy makers should take into account.

As mentioned before, the dollarization phenomenon is evaluated in two ways in the literature. These are full dollarization and informal dollarization (see; Borensztein and Berg, 2000). While the dynamics of informal dollarization have been investigated in dollarization studies, the phenomenon of dollarization has been handled from different perspectives. Depending on the perspective, the dollarization phenomenon has been named in different ways. For example, Ize and Yeyati (2003) refer to dollarization by using “financial dollarization” term, Aktaş and Aydınlık (2022) refer to dollarization by using “asset dollarization” term, and Rennhack and Nozaki (2006) refer to dollarization by using “liability dollarization” term. Besides, as Arteta (2002) states, in the literature the concept of financial dollarization refers to residents' preferences for acquiring foreign assets or liabilities, including asset substitution and hence asset dollarization. Following these examples, it can be understood that there is not a consensus on nomenclature of dollarization.

In this thesis, the ratio of all foreign assets to GDP is used as a dollarization indicator. Figure1 shows the dollarization levels of countries in 2021 based on the dollarization indicator used in this thesis. As can be seen from the figure, even the country with the lowest dollarization level has a significant ratio of 35%. This

once again shows the importance of foreign assets and the dollarization phenomenon for developing economies.

Figure1: Dollarization Levels of Countries (2021)



Source: IMF, International Investment Positions; Author's Drawing

The dollarization phenomenon has been handled in different ways in the literature. First, as a primary distinction, existing studies have approached the dollarization either empirically or theoretically. Examples of studies conducted with the theoretical models are Bocola and Lorenzoni (2020); Honig (2006); Ize (2005). However, there are several studies using empirical approaches on the subject. For example, (Ajide et al., 2019; Aktaş & Aydınlık, 2022; Arteta, 2002; Bacha et al., 2007; Bacha, Holland, & Gonçalves, 2009; Balima, 2017; Bannister, Turunen, & Gardberg, 2018; Basso et al., 2011; Brahma, 2017; Court et al., 2010; De Nicoló et al., 2005; Galindo et al., 2007; Honig, 2009; Kaya & Kara, 2022; Krupkina & Ponomarenko, 2017; Lin & Ye, 2013; Milambo, 2010; Neanidis & Savva, 2006, 2009, 2013; Raheem & Ajide, 2021; Raheem & Asongu, 2018; Rennhack & Nozaki, 2006; Tufaner, 2021; Urošević & Rajković, 2017; Vieira, Holland, & Resende, 2012). In addition, some studies have performed both theoretical modelling and empirical analysis (see amongst others; Bacha et al.,

2007; Basso et al., 2007, 2011; Ize & Yeyati, 2003; Luca & Petrova, 2008; Mwase & Kumah, 2015).

Another discrepancy among studies lies in the distinction made regarding the definition and structure of dollarization. In addition to the “dollarization” term, the “financial dollarization” term is also used in the studies. These terms refer to the assets of residents denominated in foreign currency. For example, Ajide et al. (2019); Aktaş and Aydınlık (2022); Bacha et al. (2007, 2009); Balima (2017); Brahma (2017); Court et al. (2010); De Nicoló et al. (2005); Krupkina and Ponomarenko (2017); Lin and Ye (2013); Milambo (2010); Neanidis and Savva (2006); Raheem and Ajide (2021); Raheem and Asongu (2018); Rennhack and Nozaki (2006); Tufaner (2021); Urošević and Rajković (2017); Vieira et al. (2012) used assets to measure dollarization level. There are also studies in which liabilities are taken into account in the measurement of dollarization. Examples of these are the studies by Bocola and Lorenzoni (2020); Galindo et al. (2007); Honig (2006); Luca and Petrova (2008). There are also studies that use both assets and liabilities as dollarization indicators. Examples of these studies are Arteta (2002); Bannister et al. (2018); Basso et al. (2007, 2011); Honig (2009); Kaya and Kara (2022); Neanidis and Savva (2009, 2013).

The general approach in empirical dollarization studies is to identify the factors that cause dollarization. Examples of these studies include Ajide et al. (2019); Aktaş and Aydınlık (2022); Arteta (2002); Balima (2017); Basso et al. (2007, 2011); Brahma (2017); De Nicoló et al. (2005); Honig (2009); Ize and Yeyati (2003); Kaya and Kara (2022); Krupkina and Ponomarenko (2017); Lin and Ye (2013); Luca and Petrova (2008); Milambo (2010); Mwase and Kumah (2015); Neanidis and Savva (2006, 2009, 2013); Raheem and Ajide (2021); Raheem and Asongu (2018); Rennhack and Nozaki (2006); Tufaner (2021); Urošević and Rajković (2017); Vieira et al. (2012). Another approach is not to investigate the effects of economic variables on dollarization, but to investigate the effect of dollarization on economic variables. Examples of these studies are those by Bannister et al. (2018); Court et al. (2010); Galindo et al. (2007). In this context, there are also few studies in which both the factors affecting dollarization and the

factors affected by dollarization are analysed. An example of these studies is Bacha et al. (2007, 2009).

The last distinction regarding dollarization studies is the sample of countries investigated. While some studies analyse country groups, others focus on a specific country. Based on this distinction, studies using panel data analysis include Ajide et al. (2019); Aktaş and Aydınlık (2022); Arteta (2002); Bacha et al. (2007, 2009); Balima (2017); Bannister et al. (2018); Basso et al. (2007, 2011); Brahma (2017); Court et al. (2010); De Nicoló et al. (2005); Galindo et al. (2007); Honig (2009); Krupkina and Ponomarenko (2017); Lin and Ye (2013); Milambo (2010); Neanidis and Savva (2009, 2013); Raheem and Ajide (2021); Raheem and Asongu (2018); Rennhack and Nozaki (2006); Urošević and Rajković (2017); Vieira et al. (2012). On the other hand, Kaya and Kara (2022); Neanidis and Savva (2006); Tufaner (2021) are examples of studies using time series analysis.

The distinctions highlighted in the aforementioned dollarization studies provide an indication of the general differences found in economic research. For this reason, it is necessary to provide more information about the studies. In the next section, individual analyses of the studies categorised above will be made.

1.1. THEORETICAL BACKGROUND AND MODELS

It would be useful to start by examining studies that use a theoretical framework. The first study we will examine is Ize (2005)'s, which has an important place in dollarization studies and draws a general theoretical framework on policy analysis. This study starts from a point where assets and liabilities are considered simultaneously, apart from the definitions of dollarization that have been previously found in the literature as "original sin" and "liability dollarization". The study then draws attention to four different features of monetary policy and emphasizes to their impact on dollarization, albeit through different channels. These features are credibility, fear of free floating, overvaluation overhang and asymmetry. The study mathematically demonstrates that each of the aforementioned features play different roles in the dollarization equilibrium, which is a major contribution for future dollarization studies. The features highlighted

here are frequently encountered in dollarization studies. Under the heading of credibility, some studies have analysed the institutional variables affecting dollarization (see; Basso et al., 2007; Ize, 2005; Neanidis & Savva, 2013; Rennhack & Nozaki, 2006); under the heading of fear of free fluctuation have analysed the MVP variable (see; Bacha et al., 2009; Court et al., 2010; Milambo, 2010); and under the heading of overvaluation protection, some studies have analysed restrictions on foreign assets variable (see; Arteta, 2002; Rennhack & Nozaki, 2006).

Ize and Yeyati (2003), one of the approaches that shaped the current theoretical framework of dollarization studies, argue that MVP preferences play an important role in dollarization forecasts. As will be seen in the following sections of this study, the proposed portfolio model approach has been widely used in many subsequent studies, both in its original form and with different additions and modifications. Basically, the portfolio model approach and MVP preferences represent a theoretical framework representing the actions taken by market actors to protect themselves from risks. In the study, it is argued that the intensification of the components in the MVP to foreign substitutes explains dollarization to a large extent, empirical analysis was also conducted to test this proposal. In the analysis, while the share of foreign currency deposits in total domestic and foreign deposits is used as an indicator of real dollarization, the dollar share in MVP is taken as an indicator of MVP dollarization. As a result of the analysis, it is concluded that there is a significant similarity between MVP dollarization and real dollarization, that is, MVP components can also be interpreted as factors affecting dollarization.

Another theoretical study that has an important place in dollarization studies is Honig (2006)'s modelling of the consequences of government actions in an open economy. It is a study that shows the importance of the interest rate as well as the inflation variable in dollarization studies. In the study, effects of short-term-oriented policies have been evaluated. In the model, attention is drawn to the consequences of the reaction to the usual effect of a shock on prices and exchange rate in the first period. In the model where the decline in confidence in

the local currency as a result of short-term oriented policies is followed by a shift towards foreign currency, this situation appears as a common behaviour of both lender and borrower actors. In the next stage of the study, it is pointed out that the lower the interest rate is applied in the current period, the more debt will emerge in the following periods, thus making the economy as a whole more fragile.

In dollarization studies, different reasons behind the preferences of economic actors have been listed. Although these reasons are close to each other, there are slight differences between them. For example, Honig (2006) explains the motivation for dollarization as a loss of faith in the local currency and thus in policies, while Ize (2005) and Bocola and Lorenzoni (2020) explains this situation from a more analytical framework and consider it as risk aversion or an optimization issue.

Some studies examine dollarization using first theoretical modelling and second test this model with empirical application. Basso et al. (2007) examined the role of interest rate and banks among the determinants of dollarization and tried to draw a theoretical framework through a two-period model. The inclusion of banks and the interest rate in the model, unlike previous theoretical models, created a structure that would cause the related variables to affect the equilibrium analysis. In order to test the proposed model empirically, a sample of 24 transition economies was analysed. Using both assets and liabilities variables as dollarization indicators, the study confirmed the relationship between MVP dollarization and actual dollarization previously proposed by Ize and Yeyati (2003). In a similar theoretical modelling, Basso et al. (2011) also investigated the effect of foreign banks on dollarization. Compared to the previous study, the findings of the study were found to be consistent with the general theory. In addition, the study, which argues that the presence of foreign banks has an effect by facilitating access to foreign funds, concludes that this situation only increases credit dollarization but decreases deposit dollarization.

Luca and Petrova (2008), following the portfolio model proposed by Ize and Yeyati (2003) in a framework where competitive and risk-averse firms and banks

are included in the model, concluded that the preferences of banks and firms as well as their number have an impact on dollarization. In order to test their model empirically, they used a sample of 21 transition economies and analysed both asset and liability indicators to represent the level of dollarization.

Although dollarization is generally highlighted as a problem of developing countries in the literature, Mwase and Kumah (2015) argued that real variables should be used as dollarization indicators in the theoretical model of their empirical analysis on low-income countries. In this context, they argued that the effect of exchange rate movements cannot be observed due to the use of nominal values of variables previously used in the literature.

The theoretical studies mentioned so far have covered the models built on the factors affecting dollarization. However, there are also models analysing the economic variables affected by dollarization. For example, Bacha et al. (2007) empirically tested the effect of a group of variables, including dollarization, on the real interest rate by using the MVP dollar share, which was previously proposed in the study of Ize and Yeyati (2003). As a result of the analysis, it is concluded that dollarization has a negative effect on the real interest rate and this effect is statistically significant.

In the next section, we examine the empirical studies that address the dollarization phenomenon through foreign country substitutes of financial assets.

1.2. EMPIRICAL STUDIES

The first study we will examine is Ajide et al. (2019), which investigates the determinants of financial dollarization in 25 sub-Saharan African countries, using data from 2001-2012 and the tobit regression method. In the study, dollarization is considered as the ratio of foreign currency deposits to broad money supply. The factors affecting dollarization are divided under two headings: economic and globalisation-related. Economic variables are interest rate, exchange rate volatility, inflation, exchange rate depreciation, GDP per capita growth rate, financial development and international reserves. Among the economic variables, inflation and exchange rate volatility are found to have a statistically significant

effect on dollarization. In addition, the effects of GDP per capita, financial development and international reserves variables used as control variables are also found to be statistically significant. Among these variables, inflation, exchange rate volatility and international reserves had a positive effect on dollarization, while GDP per capita and financial development had a negative effect.

Aktaş and Aydınlık (2022) investigated the determinants of deposit dollarization for 81 provinces of Turkey by using quarterly data for the years 2007-2019 with the random effects panel regression method. In the study, dollarization is considered as the ratio of foreign currency deposits to total deposits. The factors whose effects on dollarization are investigated are determined as exchange rate, CDS premiums, inflation rates, exports and imports of provinces. Empirical findings show that all variables had statistically significant and positive effects on dollarization.

Balima (2017) conducted a study in which the share of foreign currency deposits in total deposits is taken as a measure of financial dollarization for 114 developing countries using data for the years 1984-2009. In addition to bond market participation, which is the focus of the study, the economic factors affecting dollarization are real GDP per capita, the share of private loans in GDP, the real GDP growth rate, the inflation rate and the share of external debt stock in GDP. It is concluded that bond market participation and real GDP per capita have a negative effect on dollarization, while other economic variables have a positive effect on dollarization.

Brahma (2017) used data from 14 countries in the study investigating the effect of inflation targeting on dollarization. In the study where the share of foreign currency deposits in broad money supply is used as a dollarization indicator, economic variables are determined as GDP, interest rate and inflation rate. The results of the study show that GDP and interest rate have a negative effect on dollarization, while inflation rate has a positive effect.

De Nicoló et al. (2005), using the share of foreign currency deposits in total deposits as an indicator of dollarization, conducted a study including the data of 100 countries for the years 1990-2001, although they do not have regular data for all cross-sections. The economic variables, which have an effect on dollarization, are investigated in the framework of "Minimum Variance Portfolio", shortly MVP, in the literature. These variables were determined as inflation rate and exchange rate. Based on the empirical results, it is observed that MVP has a positive and statistically significant effect on dollarization. As the MVP variable is an indicator of the risk aversion preferences of the aforementioned economic variables in terms of its mathematical structure, it is understood that a result consistent with the literature has emerged.

Krupkina and Ponomarenko (2017) used quarterly data for 12 emerging economies between 1997 and 2013 and included estimations based on panel data analysis. The analysis includes the results of different estimators such as GMM, OLS and FE. In the study, the ratio of foreign deposits of households and non-financial sector institutions to total deposits is preferred to represent dollarization. In addition, the economic variables whose effect on dollarization is investigated are determined as the difference between foreign and source country interest rates, exchange rate and currency depreciation expectation, but since the main purpose of the study is to investigate the effect of past levels of dollarization on the current level, these economic variables are included as instrumental variables in GMM estimations. The results of the study show that the variable expressed as the difference between currency depreciation and interest rate spreads and the variable expressed as the difference between currency depreciation expectation and interest rate spreads have a negative effect.

Lin and Ye (2013) use the share of foreign currency deposits in total deposits as an indicator of dollarization as in the previous studies and aim to find the effect of inflation targeting on financial dollarization. In this context, annual data of 106 countries for the period 1985-2004 were used. The economic variables whose effects on dollarization are investigated are inflation, monetary growth rate and

real GDP per capita growth. The study concluded that inflation targeting has a negative and statistically significant effect on dollarization.

Instead of using the ratio of foreign currency deposits to broad money supply, which is frequently used in the literature as a dollarization indicator, Milambo (2010) uses a dollarization variable that is argued to be less vulnerable to exchange rate changes. As in previous studies, the dollarization variable focuses on foreign currency deposits. The economic variables whose effects on dollarization investigated are MVP, inflation, real exchange rate depreciation and interest rate differentials. Pooled least squares, fixed effects and random effects estimators were preferred among panel data analysis methods. The data on 18 sub-Saharan countries subject to the analysis cover the period between 1995-2007. The empirical results show that MVP, real exchange rate depreciation and interest rate differentials are statistically significant, while the inflation rate variable is not. These results are partially striking as there are some theoretical and empirical studies in the literature which indicate that real exchange rate depreciation has a positive effect on dollarization. Yet, this study shows that real exchange rate depreciation has a negative effect on dollarization. This result has been explained by the weakening of the relationship between financial dollarization and economic stability depending on the macroeconomic developments specific to the relevant period.

Raheem and Ajide (2021) used the ratio of foreign currency deposits to broad money supply as an indicator of dollarization and investigated the impact of foreign currency usage originated from developing tourism industry on dollarization. In the analysis, data covering the years 2001-2017 for 25 sub-Saharan African countries have been employed. There have been employed economic variables as control variables in the analysis. Selected control variables are exchange rate volatility, exchange rate depreciation, inflation, GDP per capita and international reserves. The data were analysed using panel data methods and tobit regression estimation. The results of the analysis show that exchange rate volatility, exchange rate depreciation and GDP per capita variables have a statistically significant effect on dollarization. Again, Raheem and Asongu (2018)

investigated the factors affecting dollarization in 26 sub-Saharan African countries using data from 2001-2012. In the study, the ratio of foreign currency deposits to broad money supply was again preferred as a dollarization indicator. The difference between this study and Raheem and Ajide (2021) is to investigate whether the ease of access to foreign assets has any effect on dollarization. Unlike the previous one, in this study, inflation rate, exchange rate volatility, GDP per capita and international reserves variables are found to be statistically significant.

Rennhack and Nozaki (2006) investigated the variables affecting dollarization and used the share of foreign currency deposits in total deposits as an indicator of dollarization. Although the focus of the study is on Latin American countries, detailed analyses were made for a wider group of countries and data for the years 1990-2001 were used. The economic factors whose effects are analysed have been listed as MVP, inflation rate, foreign currency deposit restrictions, government budget balance, nominal exchange rate depreciation, exchange rate flexibility, exchange rate movements and the ratio of foreign currency deposits to exports. The results of the cross country regression revealed that MVP and inflation rate variables had statistically significant effects on dollarization. The results of the panel regression revealed that only MVP variable had statistically significant effects on Latin American countries and highly dollarized countries. The institutional structure indicators whose effects are analysed have been listed as voice and accountability, regulatory quality, rule of law, control of corruption, democratic accountability, bureaucracy quality, internal conflict, law and order. The results of the cross country regression revealed that voice and accountability, regulatory quality and control of corruption had statistically significant and negative effects on dollarization. In other regressions, the effects of institutional quality variables were observed to be statistically insignificant.

Urošević and Rajković (2017) examined dollarization by dividing it into two classes as permanent and temporary, and used the ratio of foreign currency deposits with interest liabilities to domestic deposits with interest liabilities as a dollarization indicator. For the study, monthly data for the period between May

2005 and December 2013 were analysed using the panel data method. Their country sample consists of Central, Eastern and Southern European countries. While panel cointegration method is preferred for the analysis of long-run effects, short-run effects are estimated by GMM method. According to the long-run estimation results, inflation volatility and the pass through effect positively affect dollarization, while the effect of exchange rate volatility is found to be negative. In the short run, interest rate differentials, exchange rate depreciation rate and MVP have a statistically significant and positive effect on dollarization. However, the interest rate does not have a statistically significant effect.

Vieira et al. (2012) used the ratio of domestic banks' foreign currency deposits to total domestic bank deposits as an indicator of dollarization and analysed data for 79 countries and for the years 1996-2006. Panel data analysis method and GMM estimator were used in the study. As a result of the study, it is found that the previous period amount of dollarized deposits, inflation rate, previous period value of MVP variable and per capita income amount among the economic variables used have statistically significant effects on dollarization.

The empirical studies which have been discussed so far use the ratio of foreign assets to local assets as an indicator of dollarization. Next, we will review the studies that use foreign liabilities as well as foreign assets as an indicator of dollarization.

The first study we will examine in this context is Arteta (2002), which uses two variables as dollarization indicators: credit dollarization and deposit dollarization. Among these variables, credit dollarization is expressed as the ratio of private sector dollar loans to total private sector loans, while deposit dollarization is expressed as the ratio of dollar deposits to total deposits. Since the aim of this study is to examine the effect of exchange rate regime change on dollarization, the economic variables included in the analysis as control variables. Pooled OLS regression, which is one of the panel data methods, is used as the analysis method. Using data from 92 countries for deposit dollarization and 40 countries for loan dollarization, it is found that historical maximum level of inflation rate and restrictions on foreign currency deposits and loans have statistically significant

effects on both deposit and loan dollarization. It is also found that floating exchange rate regime has positive effect on deposit dollarization and negative effect on credit dollarization.

Honig (2009) investigated the factors affecting the dollarization of both deposits and loans. He conducted a study with data from 1988-2000, with a sample of up to 66 countries depending on data availability, with a focus on measuring the impact of exchange rate regime and institutional quality on dollarization. In the study, the ratio of dollar loans to total loans is used as an indicator of credit dollarization, while the ratio of dollar deposits to total deposits is used as an indicator of deposit dollarization. As a result of the analyses, the effect of the inflation rate and exchange rate depreciation, which were used in the estimations for loan dollarization and deposit dollarization, was either not statistically significant or the effect was found to be very small.

Neanidis and Savva (2009) examined the determinants of financial dollarization in the short run for 11 transition economies through two different variables, namely deposit dollarization and debt dollarization, and used different panel data estimators. The results of their analysis show that the effect of exchange rate depreciation on deposit dollarization in the short run is higher in countries with high levels of dollarization. Moreover, both deposit dollarization and debt dollarization are found to be affected statistically significantly by the difference between domestic and foreign interest rates. Neanidis and Savva (2013) also investigated the impact of institutional quality on dollarization through deposit dollarization and debt dollarization in a sample of 10 new member states of the European Union. It is concluded that the effects of the changes in inflation rate, exchange rate depreciation rate, MVP dollar share and interest rate spreads, on dollarization are significant and keeping with the empirical literature.

Neanidis and Savva (2006) investigated the effects of dollarization level volatility, the inflation rate volatility, the inflation rate itself and the level of dollarization itself on the level of dollarization and the inflation rate in 12 emerging market economies by using monthly data for each country using time series analysis method. As a measure of dollarization, the share of foreign currency deposits in

broad money supply is used as in the literature. Based on the results of the empirical analysis, it is concluded that both the volatility in the inflation rate and the level of dollarization have a statistically significant effect on both the inflation rate and the level of dollarization for most of the relevant countries.

There are also some empirical studies in the literature examining the dollarization phenomenon in Turkey empirically. One of them is Tufaner (2021) which investigated the economic factors affecting dollarization in Turkey and used the share of foreign currency deposits in broad money supply as an indicator of dollarization. The explanatory variables used in the study are international reserves, local and foreign interest rate spread, returns on financial investment instruments and real effective exchange rate. According to the results of the analysis, all variables are found to have statistically significant effects on dollarization. Moreover, it is concluded that there is a causality relationship from international reserves and returns on investment instruments to dollarization, and from dollarization to real effective exchange rate.

Kaya and Kara (2022), in their analysis of the macroeconomic factors affecting dollarization in Turkey and the relationship between dollarization and economic growth, used the combined dollarization index proposed by Reinhart, Rogoff, and Savastano (2003) as a dollarization indicator. In terms of its structure, this index includes both assets and liabilities. The ARDL method is used in the study; and thereby, both long-run and short-run effects can be analysed separately. The results of the analysis show that, although the short-run coefficients are not statistically significant, in the long-run current account deficit and inflation have a negative effect on dollarization, while risk premium, exchange rate, imports and interest rate have a positive effect. Moreover, it is concluded that there is a statistically significant causality relationship from dollarization to economic growth.

The empirical studies we have examined so far used asset or/and liability variables as dollarization indicators and investigated the economic factors affecting dollarization. From now on, we examine the studies in which

dollarization is used as an explanatory variable and its effect on other economic variables is investigated.

In the first study, Galindo et al. (2007) investigated the effects of real exchange rate fluctuations on employment in 9 Latin American countries and analysed the exogenous effect of dollarization. Using foreign currency liabilities as an indicator of dollarization, the study concluded that as the level of dollarization increases, the observed effect of exchange rate fluctuations on employment reverses.

Bacha et al. (2009) analysed the impact of systemic risks and dollarization on real interest rates in a sample of emerging market economies. Using the share of dollar deposits in total deposits as an indicator of dollarization, the study theoretically argues that systemic risks affect both dollarization and real interest rates, and that dollarization also affects real interest rates. In the study, the factors affecting dollarization are selected from institutional variables such as foreign currency deposit restrictions, judicial uncertainty and capital account liberalisation index. They find that deposit dollarization has a small but negative effect on the real interest rate.

Court et al. (2010) investigated the effects of dollarization on financial depth in a sample of developing countries and used the ratio of dollar deposits to total deposits in the banking system as a dollarization indicator and measured financial depth by the share of M2 or M3 money supply in nominal GDP depending on data availability. Although the sample includes data for 56 countries for the period 1990-2002, the scope of the dataset covers the years 1996-2002 and 44 countries when dollarization data is available. Contrary to the previous literature, the study show that dollarization has a statistically significant negative effect on financial depth. This effect was attributed to the economic conditions that emerged as a result of the observation of dollarization, which led to limitations in the use of domestic credit. However, in line with prior literature, that the dollarization phenomenon is found to mitigate the negative impact of inflation on financial deepening in high inflation countries. In a similar study, Bannister et al. (2018) examined the impact of dollarization on financial development using a sample of developing countries. The results of the study are in line with the

findings of Court et al. (2010) and indicate that dollarization has a negative effect on financial development and that this effect tends to be milder in countries with high inflation.

When we evaluate the studies in the existing literature, we observe that the theoretical framework for the dollarization phenomenon is based on the value and risk perceptions of market actors. The MVP approach, which occupies a prominent position in the realm of dollarization studies, corroborates this assertion. In addition, the factors identified as sources of risk have been addressed through markedly different approaches in these studies. While some studies give more importance to the institutional variables as the source of risk, some others have focused on economic and financial variables. However, it can be observed that the general consensus in the studies is that the source of risk can be from either of these two sides.

The empirical studies have been classified in different ways. First of all, while some studies consider the dollarization indicator only in terms of foreign exchange denominated in a certain currency, some studies consider foreign exchange denominated in all foreign currencies. As the evaluation on the currency axis provides a limited framework such as the amount of reserves and deposits, some studies developed different dollarization indicators. This distinction is followed by the use of foreign assets and liabilities as dollarization indicators. Some researchers have used only the shares of foreign assets and some others have used only the shares of foreign liabilities as dollarization indicators. Considering the way the studies deal with dollarization, it would be more useful for the comprehensiveness of the analyses to consider the dollarization indicator not only in terms of deposits or reserves, but also in terms of assets and liabilities in a broader framework.

Table1: Literature Summary

Authors	Country	Method	Findings
Ajide et al. (2019)	25 Sub-Saharan Countries	Tobit Regression	Globalization and macroeconomic instabilities increase dollarization.
Aktaş and Aydınlık (2022)	81 Province of Türkiye	Panel OLS, Random Effect	Macroeconomic indicators' effect on dollarization are positive.
Arteta (2002)	96 Countries	Pooled OLS	Floating exchange rate regimes are positively related with deposit dollarization.
Balima (2017)	114 Developing Countries	Average Treatment Effect	In countries where inflation targeting, non-pegged exchange rate regime and binding fiscal policies applied bond market participation has favourable effects on financial dollarization.
Basso et al. (2011)	24 Transition Economies	Standard Panel, Panel VAR	Availability of foreign funds increases credit dollarization while it decreases deposit dollarization.
Brahma (2017)	14 Developing Economies	Fixed Effect Panel Regression	Inflation targeting policies help to de-dollarization process.
De Nicoló et al. (2005)	100 Economies	OLS, 2SLS, GMM	Macroeconomic policies' credibility and institutional quality are important factors in determination of dollarization.
Honig (2009)	66 Countries	OLS, Random Effect, Fixed Effect	Government quality decreases dollarization.
Kaya and Kara (2022)	Türkiye	ARDL	Unfavourable macroeconomic changes increase dollarization.
Lin and Ye (2013)	106 Developing Countries	Propensity Score Matching Method	Inflation targeting policies help to reduce dollarization.
Luca and Petrova (2008)	21 Transition Economies	Pooled OLS, FE, First Difference	Main drivers of credit dollarization are deposit dollarization and banks' preferences on currency-matching
Milambo (2010)	18 Sub-Saharan Countries	Pooled LS, FE, RE	Institutional quality has vast importance in determination of dollarization.
Neanidis and Savva (2006)	12 Emerging Market Economies	Bivariate GARCH-in-Mean	Both inflation and currency substitution have positive effects on currency substitution.
Neanidis and Savva (2009)	11 Transition Economies	OLS, FE, RE, FGLS	Inflation, banks' currency matching preferences, financial integration and institutional quality have significant effects on dollarization.
Neanidis and Savva (2013)	10 EU Member Countries	FAVAR Model	Institutional quality advancements lead to a decrease in financial dollarization.
Raheem and Ajide (2021)	25 Sub-Saharan Countries	Tobit Regression	Dollarization has been positively related with tourism.

Source: Author's elaborations.

Table1 (Continued): Literature Summary

Raheem and Asongu (2018)	26 Sub-Saharan Countries	Tobit Regression	Foreign exchange earnings are positively related with dollarization.
Rennhack and Nozaki (2006)	62 Countries	Cross Country Regression, Panel Data Regression	Macroeconomic instability is positively related with dollarization.
Tufaner (2021)	Türkiye	Basic Regression and Granger Causality	Foreign currency earnings are positively related with dollarization where domestic currency earnings are negatively related.
Urošević and Rajković (2017)	5 CESE Countries	Panel Cointegration, GMM	Provides a validation of MVP method for dollarization studies. Short run and long run determinants of dollarization have been found to be different.
Vieira et al. (2012)	79 Countries	GMM	Inflation originated risks and instability causes permanence in dollarization.

Source: Author's elaborations.

When the empirical studies are analysed, it is observed that country groups with some certain characteristics have been investigated more intensively. The inevitability of this situation stems from the high significance of dollarization within developing economies. Even though the countries examined have similar economic structures, it has been observed that it is necessary to perform country-specific analysis in the empirical studies. Because, even when analysing similar groups of countries, it has been observed that the effect of the same variable on dollarization may vary across different studies. In Table1, summary of empirical studies in the literature can be found.

In conclusion, using a more comprehensive measure for the dollarization indicator in future studies and conducting empirical analyses both for country groups and for individual countries will contribute to understanding the dollarization phenomenon.

CHAPTER 2

DATA, EMPIRICAL METHODOLOGY AND FINDINGS

When the previous studies on dollarization are evaluated, it is understood that the issue should be examined from different aspects. Briefly, these aspects are the structure of the dollarization indicator, the scope of explanatory variables and the evaluation of different economic structures of countries.

It was observed that previous studies mostly used foreign currency deposits as a dollarization indicator in the analysis (Ajide et al., 2019; Aktaş & Aydınlık, 2022; De Nicoló et al., 2005; Lin & Ye, 2013). It was thought that using only the amount of deposits as a dollarization indicator would exclude other foreign investment instruments from the evaluation. Therefore, a new variable including all foreign assets was calculated as a dollarization indicator.

Another topic that this thesis will contribute to the literature is the scope of explanatory variables used. In the literature, there are studies in which macroeconomic variables are used as control variables (Ajide et al., 2019; Arteta, 2002) or other variables are the focus of the analysis (Brahma, 2017; Raheem & Ajide, 2021). It is thought that not evaluating the fundamental macroeconomic variables with a holistic approach will cause deficiencies in fully understanding the economic structure and the change in the level of dollarization. Therefore, in this thesis, the effect of fundamental macroeconomic variables on dollarization will be investigated.

The last topic that this thesis will contribute to the literature is the examination of the differences in the dollarization processes of countries with different economic structures. In the literature, the issue of dollarization has been frequently examined in the context of developing countries (Bacha et al., 2009; Balima, 2017; Court et al., 2010; Galindo et al., 2007). However, it is thought that the evaluation of the differences of countries will provide a better understanding of the dollarization phenomenon. Therefore, in this thesis, analyses will be conducted for all countries in the data set and for individual countries.

Briefly, the main objective of this thesis is to investigate the effects of fundamental macroeconomic variables on dollarization for selected countries as a whole and individually. Both the variables representing dollarization and the variables whose effects on dollarization are investigated have been intended to be more inclusive indicators. Thus, it is expected that the importance of the research results and policy recommendations will increase.

In this section of the thesis, firstly, the selected variables will be explained in detail. Then, the empirical methodology will be introduced. In the last part of this section, the empirical findings will be presented and discussed.

2.1 DATA

The empirical analysis in this thesis is conducted on a data set covering 23 countries, mostly developing countries. The selection of the countries is based on two criteria. The first criterion is the availability of the data, and the second criterion is the absence of full dollarization in the country, that is, the country's use of its own currency as the official currency. The Euro area countries are excluded from the sample because a common currency is used in the majority of the European Union countries. Moreover, even if some of the member countries do not use the Euro, they are economically integrated into the union. The fact that there are developed countries in the Union causes the economic dynamics of other countries to diverge from developing countries. Besides, the fact that there are small gaps at the level of variables for many countries has been another factor limiting the data set. In Table2, the countries which has been analysed in this thesis, has been presented.

Considering the time dimension, the only criterion is to obtain the data in the widest possible time interval. As a result, availability of the data led to the formation of a dataset covering the years 2000-2021.

Table2: Country List

Armenia	Brazil	Chile	Colombia	Czechia
Georgia	Hungary	Indonesia	South Korea	Kyrgyz Rep.
Malaysia	Mexico	Moldova	Morocco	Peru
Philippines	Romania	Russia	South Africa	Thailand
Türkiye	Ukraine	Uruguay		

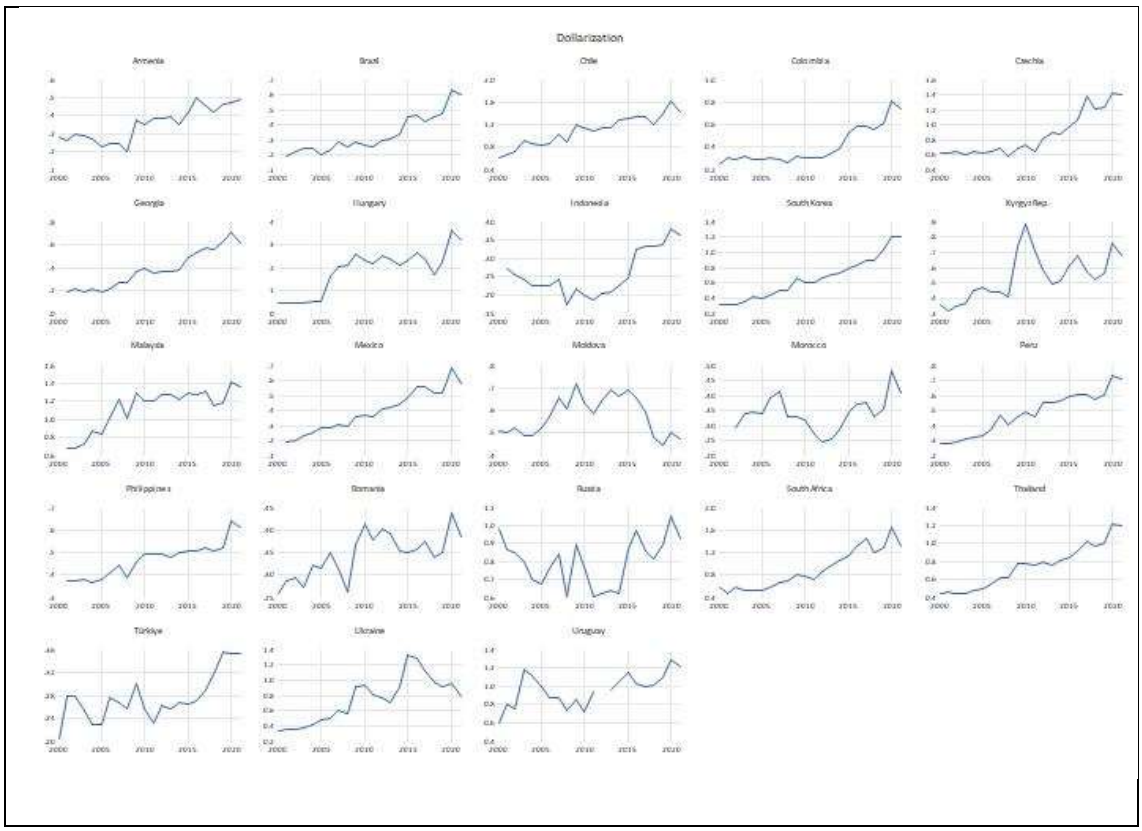
2.1.1 Dollarization Variable

A quick survey of the previous literature reveals that different measures of dollarization have been used. As previously stated, foreign currency deposits, foreign currency assets and/or foreign currency liabilities or other indices and variables have been used as dollarization indicators. In this thesis, unlike previous studies, it is aimed to use a variable that will represent the "dollarization" level of the relevant economy as comprehensively as possible. Because using just deposits as an indicator of dollarization may result in evaluating the issue in a limited framework. Therefore, in this thesis, foreign assets which are considered in a broader scope, are used as a dollarization indicator. To this end, the share of total foreign assets in GDP has been used as dollarization indicator.

It has been stated that there are different definitions of dollarization in different studies in the literature (Court et al., 2010; Ize, 2005; Ize & Yeyati, 2003; Krupkina & Ponomarenko, 2017). In addition, different variables have been used as dollarization indicators in previous studies (Ajide et al., 2019; Brahma, 2017; Ize & Yeyati, 2003; Urošević & Rajković, 2017). The basis for the construction of the dollarization indicator to be used in this thesis is the dollarization phenomenon defined as "asset dollarization". This expression is defined by De Nicoló et al. (2005) as "*Financial dollarization (also referred to as asset substitution) consists of residents' holdings of financial assets or liabilities in foreign currency*". Also, (Craig & Waller, 2004) is one of the most important examples of different dollarization indicators. The contribution of the construction of this variable to the literature is that the dollarization phenomenon will be able to represent the preference for

foreign assets in a holistic manner, rather than being expressed only in terms of deposit preferences. Moreover, the ratio of total assets to GDP will provide a comparison between the size of the economy and the amount of foreign assets. These two contributions will provide a more comprehensive dollarization indicator by taking into account both all foreign assets and the size of the economy.

Figure2: Dollarization Levels for Selected Countries



Source: IMF, International Investment Positions; Author's Drawing

Data for foreign assets have been obtained from International Monetary Fund's "*Balance of Payments and International Investment Position Statistics*" database. The data classified in the "International Investment Positions" classification under this data set were used. Headings under this classification are "direct investments", "portfolio investments", "other investments" and "reserve assets". As mentioned earlier, one of the objectives of this thesis is to address dollarization in a broader and comprehensive scope. This indicator allows us to achieve that objective by including a broader range of foreign assets rather than only including foreign currency deposits. Data for GDP have been obtained from World Bank

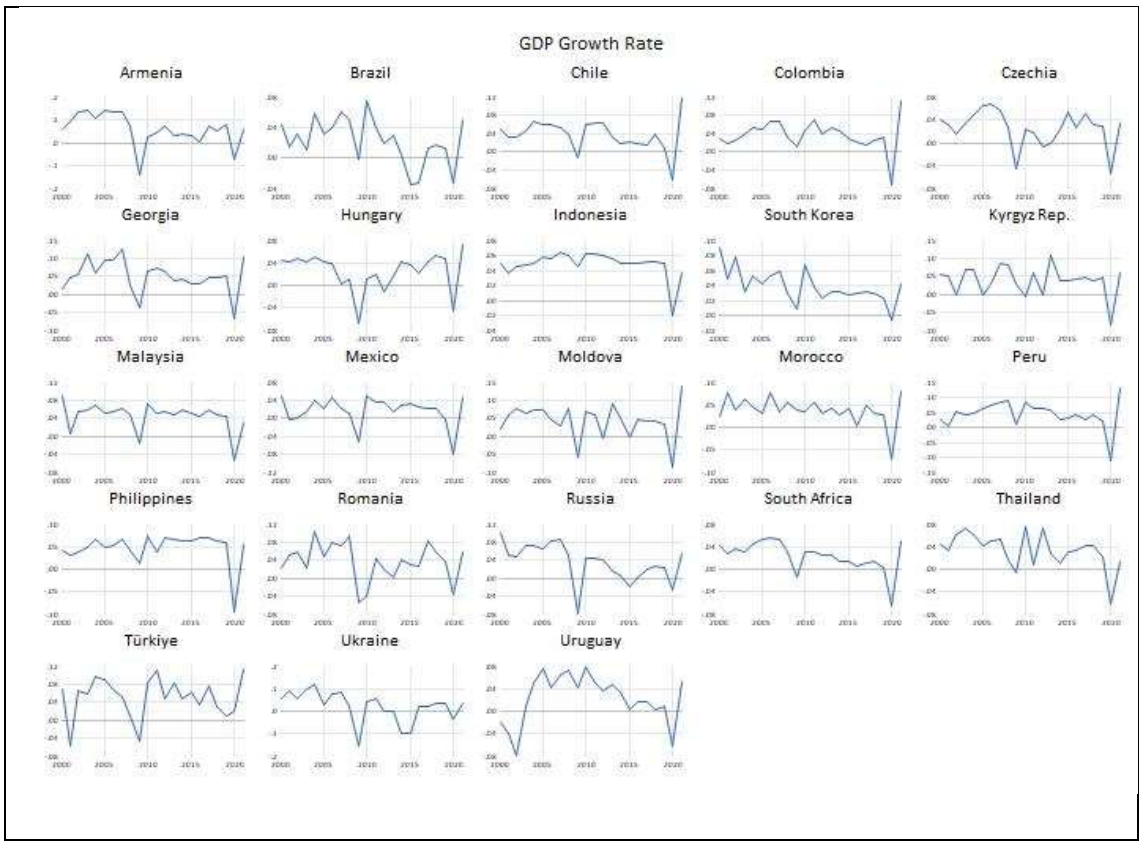
World Development Indicators database. In the following Figure2, the dollarization levels for countries have been presented.

2.1.2 Overall Performance of the Economy

In this thesis, in order to reflect the overall performance of the economy, annual real GDP growth rate variable has been chosen.

Data for growth rate have been obtained from World Bank World Development Indicators database. In the following Figure3, GDP growth rate of countries are presented.

Figure3: GDP Growth Rates



Source: World Bank, World Development Indicators; Author's Drawing

2.1.3 Domestic Economic Stability

Inflation stands as a highly important macroeconomic indicator. It affects many other economic variables as interest rates, consumption, production level

(Coibion, Georgarakos, Gorodnichenko, & Van Rooij, 2023; Gillman & Kejak, 2005; Gocer & Ongan, 2020). Dollarization is likewise significantly affected by the inflation level in an economy. In essence, inflation rate is an indicator of domestic economic stability and previous dollarization studies often emphasized the impact of inflation on dollarization level through instability property of it. In fact, in most of the dollarization studies it has been stated that inflation is the primary driver of dollarization (De Nicoló et al., 2005; Ize & Yeyati, 2003; Lin & Ye, 2013; Mwase & Kumah, 2015).

In this thesis, in order to investigate the effects of inflation on dollarization, annual inflation rate for countries has been employed. Data for inflation rate has been obtained from IMF International Financial Statistics database.

2.1.4 Domestic Money Market

When we look at the monetary policy implementations of some countries during the Covid-19 period, it can be seen that the interest rate does not move in a direct correlation with inflation (see; Greenwood, 2023; Hammer, 2021; Labonte, 2021). In this thesis, annual average deposit interest rate is used as the interest rate variable. The data is obtained from the IMF International Finance Statistics database. The first reason for using the annual average deposit rate is that the interest rate applied to deposits may differ from the policy rate. This may cause reliability problems in understanding the behaviour of market actors through statistical analyses. As a matter of fact, again during the Covid-19 period, it was observed that some financial institutions applied deposit and loan interest rates above the policy rate (Beyer et al., 2024; Hammer, 2021).

Another reason for using the annual average deposit rate in the analysis is that the policy rate variable is a low-frequency data. In other words, although this rate provides information about the direction of monetary policy, the preferences of market actors may be more related to the equilibrium in the money market that occurs at higher frequency intervals. At this point, it is conceivable to include interest rate volatility in the analysis instead of the interest rate, but in such a case it would not be possible to understand the money market sentiment.

In this context, just as the inflation rate indicates the stability of the domestic economy, we can consider the annual average deposit interest rate as a money market indicator rather than a purely quantitative variable.

2.1.5 Exchange Rate Movements

If the exchange rate is considered as the value of foreign currency, a direct positive relationship with dollarization is inevitable. However, just like in the goods and services market, there are different factors that determine the equilibrium price in the foreign exchange market (Obstfeld & Stockman, 1985; Stein & Allen, 1997). Considering this situation, although there are studies investigating the direct effect of exchange rate on dollarization (Galindo et al., 2007; Honig, 2009; Raheem & Asongu, 2018), a different approach is needed.

In dollarization studies, determinant role of confidence in the economy have gained an important place. As a matter of fact, although the high inflation level in an economy is considered as the main cause of the dollarization phenomenon, it is also observed that the deterioration in economic confidence also accelerates dollarization (De Nicoló et al., 2005; Quispe-Agnoli, 2002). Therefore, understanding how exchange rate movements affect economic confidence is highly important. Policy makers develop policies in response to exchange rate movements. Having the opportunity to know the indirect effects of their policies on dollarization in advance will help them to produce more efficient policies for the economy in general.

In this thesis, using an exchange rate volatility the magnitude of the movement of the domestic currency against the foreign currency is measured. Most of the developing countries are vulnerable to foreign exchange rate movements due to their economic structure (Cartapanis & Dropsy, 2005; Seth & Ragab, 2012). The currencies of developed countries almost always have an upward trend in developing countries, i.e. the foreign currency appreciates. If the volatility variable is used, an inference can also be made about the speed of this general upward trend.

The exchange rate volatility variable used in the analysis is constructed by calculating a single volatility value for the relevant year using daily US Dollar closing prices for each country. Following Farkas (2015) and Kayalıdere (2013) the volatility used in this thesis is calculated as follows;

$$R_t = ln\left(\frac{ExchangeRat\ _t}{ExchangeRate_{t-1}}\right) \quad (1)$$

$$\sigma_{i,j} = \sqrt{\frac{\sum_{t=1}^{N}(R_t-\mu)^2}{N}} \quad (2)$$

$$VOL_{i,j} = \sqrt{252} * \sigma_{i,j} \quad (3)$$

where "R" is the daily return of exchange rate at day "t", "μ" is the average value of "R" at year "j". Thus, $\sigma_{i,j}$ is the standard deviation of exchange rate movements in country "i" at year "j". Finally exchange rate volatility of country "i" at year "j", i.e. $VOL_{i,j}$, is obtained by multiplying the standard deviation by the square root of the number of trading days, 252.

Here, exchange rate is the domestic currency exchange rate of 1 US dollar. Most of the data is obtained from the Bank of International Settlements Exchange Rates dataset. Data on 4 countries for which data are not available in the mentioned source were obtained from the Investing[1] website.

2.1.6 International Trade

International trade has a direct impact on a country's foreign assets. Because, as a result of exports or imports, foreign currency cash flows are usually realised. In the literature, the effect of different indicators of international trade on dollarization has been investigated (Aktaş & Aydınlık, 2022; Drenik & Perez, 2021). However, apart from investigating the effect of exports or imports on dollarization only through their quantities, including their proportional movements in this analysis will provide different benefits.

[1] Obtained from https://investing.com/currencies at date 05.12.2023.

Especially in developing countries, the production structure may be dependent on imports in terms of both raw materials and technology (Carrasco & Tovar-García, 2021; Yuksel & Zengin, 2016). This situation may lead to a co-movement between exports and imports. On the other hand, an increase in the export-import ratio implies an increase in income in foreign currencies. Therefore, the cross-section coefficient estimates for this variable will also allow us to comment on the confidence in the economy in that country.

In this thesis, the ratio of exports to the import coverage ratio is used to investigate the impact of international trade on dollarization. Data on this variable is obtained from the IMF Direction of Trade Statistics database. The variable showing the ratio of exports to imports was calculated by directly proportioning the current export and import data obtained.

2.1.7 Environment for Economic Activities

In the literature, the effect of institutional structure on dollarization has been measured with different variables. It also has been observed that more than one institutional variable has been included in a study (Honig, 2006, 2009; Krupkina & Ponomarenko, 2017; Rennhack & Nozaki, 2006). In this thesis to capture the effect of institutional structure on dollarization, the "Economic Freedom Index" variable is used.

The data for this variable was obtained from the Fraser Institute Economic Freedom of the World: 2022 Annual Report (Gwartney et al., 2022). This index measures the extent to which the economic environment of countries is supportive of freedom within the framework of policies and institutions. Consisting of 42 different subsections under 5 main categories, the index value will be extremely useful for the purposes of this thesis. Because the main categories in the index are size of government, legal system and property rights, sound money, freedom to trade internationally and regulations. When these categories are analysed, it will be seen that each of them emphasises a different aspect of the free economic environment. As a result, the use of this variable has been a more

useful choice as it approaches the concept of economic freedom from a more holistic framework.

2.2 EMPIRICAL METHODOLOGY

In this thesis, the impact of the aforementioned macroeconomic variables on dollarization is investigated using data for 23 countries for the period 2000-2021. Following some preliminary diagnostic tests, the data are analysed using the panel autoregressive distributed lags (ARDL) method which has been developed by Pesaran, Shin, and Smith (1999),. These preliminary diagnostic tests are the cross-sectional dependence of the variables and the unit root analysis performed accordingly. Then, Panel ARDL estimation results are presented. The most important advantage of this method is that it is possible to estimate coefficients for both the long run and the short run. In addition, another important advantage is the possibility of estimating the short-run coefficient for each cross-section separately. Detailed information on the results of preliminary diagnostic tests and estimation method is presented below.

2.2.1 Cross-Sectional Dependency

Since data for 23 different countries are used in the thesis, in case of any cross-sectional dependence in the variables, the results of the unit root tests may be erroneous.

Table3: Cross-Sectional Dependency Test Results (Variable)

	Asset/GDP	GDP Growth	Inflation Rate	Interest Rate	Exchange Rate Volatility	Export/Import	Economic Freedom
Breusch-Pagan LM	2667.595 0.0000	1916.844 0.0000	687.8738 0.0000	1894.551 0.0000	676.8884 0.0000	927.9909 0.0000	1567.205 0.0000
Pesaran scaled LM	107.3419 0.0000	73.96687 0.0000	19.3325 0.0000	72.97586 0.0000	18.84414 0.0000	30.00701 0.0000	58.42354 0.0000
Bias-corrected scaled LM	106.7942 0.0000	73.41925 0.0000	18.78488 0.0000	72.42824 0.0000	18.29652 0.0000	29.45939 0.0000	57.87592 0.0000
Pesaran CD	46.64548 0.0000	41.76759 0.0000	17.35785 0.0000	31.86248 0.0000	16.29931 0.0000	5.541417 0.0000	15.03555 0.0000

In such a case, the reliability of the estimators may be questioned in estimation methods where the stationarity of the series is important. For this reason, cross-sectional dependence of our variables and panel itself has been tested using different methods. In Table3 above the results of the cross-sectional dependence tests for each variable are presented. In the tests, the null hypothesis is “no cross-section dependence”.

As it can be seen from the results in Table3, all variables are cross sectionally dependent. Also as it can be seen below, in Table4, panel itself is cross sectionally dependent. Therefore, when investigating the stationarity properties of series cross-sectional dependency must be considered and tests which take into account this property must be employed.

Table4: Cross-Sectional Dependency Test Results (Model)

	Statistic	**Prob.**
Breusch-Pagan LM	1205.799	0.0000
Pesaran scaled LM	**42.35710**	**0.0000**
Pesaran CD	14.71561	0.0000

2.2.2 Panel Unit Root

In econometric analysis, stationarity of series has an important place in both time series and panel data models. Because a non-stationary series does not have features such as constant variance and constant mean, which ensure the significance of statistical analyses. However, the degree of integration of the series is also important for econometric analysis. Some analysis methods can be applied for stationary series at level and some for stationary series at the same difference level.

In this thesis we employ Panel ARDL, method which developed by Pesaran et al. (1999), enables reliable forecasting between series with different orders of integration. The most important constraint in this context is that none of the series can reach stationarity at the second or at higher difference.

As mentioned earlier, stationarity in panel data analysis can be tested by different methods according to the presence of cross-sectional dependence. According to the results of the cross-sectional dependence test, cross-sectional dependence is observed in the series. In this case, stationarity analysis was performed with the CIPS (Cross-Sectionally Dependent Im-Pesaran-Shin) test of Pesaran's (2007), which is one of the methods sensitive to cross-sectional dependence. The unit root test results are presented in Table5 below. As it can be seen in Table5, dollarization, interest rate, export to import coverage ratio and economic freedom variables are stationary at their first difference, i.e. I(1). Other variables GDP growth rate, inflation rate and exchange rate volatility variables are stationary at level, i.e. I(0).

Table5: Unit Root Test Results

		Constant		**Constant and Trend**	
		I(0)	**I(1)**	**I(0)**	**I(1)**
Asset/GDP	t-Statistic	-2.1243	**-2.9701**	-1.8777	**-3.26406**
	p-value	<0.10	<0.01	>0.10	<0.01
GDP Growth	t-Statistic	**-3.3529**	**-5.9705**	**-3.3314**	**-5.5269**
	p-value	<0.01	<0.01	<0.01	<0.01
Inflation Rate	t-Statistic	**-3.5714**	**-5.1312**	**-3.4526**	**-5.14113**
	p-value	<0.01	<0.01	<0.01	<0.01
Interest Rate	t-Statistic	-2.0934	**-3.5225**	-1.9963	**-3.40863**
	p-value	>0.10	<0.01	>0.10	<0.01
Exchange Rate Volatility	t-Statistic	**-2.9799**	**-4.9672**	**-3.2646**	**-5.27363**
	p-value	<0.01	<0.01	<0.01	<0.01
Export/Import	t-Statistic	-2.0501	**-3.9642**	-2.3687	**-3.87295**
	p-value	>0.10	<0.01	>0.10	<0.01
Economic Freedom	t-Statistic	-2.1437	**-3.7213**	-2.1862	**-3.68595**
	p-value	<10	<0.01	>0.10	<0.01

These results provide convenience to proceed to panel ARDL estimation. Even though it is not a prerequisite to perform panel ARDL estimation, many studies investigate the co-integration feature of series in panel data applications. In this thesis, since the order of integration for each variable is different and there are 7 variables in total, co-integration tests are not performed.

2.2.3 Panel ARDL Method

The primary objective of this thesis is to measure the effect of inflation rate, interest rate, economic growth rate, exchange rate volatility, export to import coverage ratio and economic freedom index on dollarization. Given the test results, it is concluded that there is a cross-section dependence in the explanatory variables. As a result of the unit root tests that take into account the cross-sectional dependence, it is seen that the explanatory variables are at different levels of stationarity.

However, the panel ARDL approach analysis allows estimation using variables with different orders of integration. The functional modelling for this thesis is as follows:

$$DR = f(Inf, Int, Grth, Exc, ExpImp, EcoFree) \quad \text{..... (1)}$$

$$DR_{it} = \beta_0 + \beta_1 Inf_{it} + \beta_2 Int_{it} + \beta_3 Grth_{it} + \beta_4 Exc_{it} + \beta_5 ExpImp_{it} + \beta_6 EcoFree_{it} + u_{it} \quad \text{..... (2)}$$

$$\Delta DR_{it} = \sum_{j=1}^{p} \alpha_{ij} DR_{i,t-j} + \sum_{j=0}^{q} \theta_{ij}{}' X_{i,t-j} + \mu_i + \varepsilon_{it} \quad \text{..... (3)}$$

where “DR” is dollarization indicator, “Inf” is inflation rate, “Int” is interest rate, “Grth” is real economic growth rate, “Exc” is exchange rate volatility, “ExpImp” is exports to import coverage ratio, “EcoFree” is economic freedom index indicator. In equation 3, “i” represents countries, “t” represents time and “j” determines “p” and “q” which stand for optimal lag length. Again, in equation 3 “X” represents the vector of explanatory variables mentioned above.

The error correction equation form of the model is as follows:

$$\Delta DR_{it} = \varphi_i (DR_{i,t-1} + \beta`_i X_{it}) + \sum_{j=1}^{p-1} \alpha_{ij} \Delta DR_{i,t-j} + \sum_{j=0}^{q-1} \theta_{ij}{}' \Delta X_{i,t-j} + \mu_i + \varepsilon_{it} \quad (4)$$

where “α” and “θ” show short term dynamics, “β`” is the coefficient vector that shows long term impacts. According to the coefficient estimates using AIC as the

model selection criterion, it is concluded that the optimum lag is ARDL(1,2,2,2,2,2,2,2,2)[2].

Hausman test was applied to determine which of the panel ARDL estimators, Mean Group, Dynamic Fixed Effects and Pooled Mean Group methods gives more reliable results in the long run. According to the test results, it is observed that the results of the PMG (Pooled Mean Group) estimator give reliable results in long-run coefficient estimation. The advantageous aspect of the PMG estimator is that it is possible to estimate common long-run and short-run coefficients for the whole data set.

In the next section, firstly, long-run and short-run coefficient estimates for the whole dataset will be presented. Then, short-run coefficient estimates for the cross-sections will be introduced.

2.3 FINDINGS

In this section, the results of Panel ARDL will be presented. Firstly, Table6 below presents the long-run coefficient estimates for the entire panel.

Table6: Long Term Coefficients

Variable	Interest Rate	Inflation Rate	Export/Import	Exchange Rate Volatility	GDP Growth Rate	Economic Freedom Index
Coefficient (P>|z|)	-1.111718 0.0000	1.370114 0.0000	0.148325 0.0000	0.459817 0.0016	-4.334987 0.0000	2.241001 0.0000

According to the results, all of the selected macroeconomic variables have a statistically significant effect on dollarization in the long run. However, as it can be seen, the direction and magnitude of this effect differ among the variables.

The variables that have a positive effect on dollarization are inflation rate, exchange rate volatility, export to import coverage ratio and economic freedom

[2] Econometric analyses have been conducted by using EViews software.

index. According to the findings, a 1-unit increase in the inflation rate leads to a 1.37-unit increase in the dollarization rate; a 1-unit increase in exchange rate volatility leads to a 0.46-unit increase in the dollarization rate; a 1-unit increase in the ratio of exports to imports leads to a 0.15-unit increase in the dollarization rate; and finally, a 1-unit increase in the economic freedom index leads to a 2.24-unit increase in the dollarization rate.

Considering the previous empirical literature the results regarding the inflation rate and exchange rate volatility are in line with the literature (Arteta, 2002; De Nicoló et al., 2005; Galindo et al., 2007; Honig, 2009; Lin & Ye, 2013; Mwase & Kumah, 2015; Raheem & Asongu, 2018). However, there is no consensus in the literature on the effects of export to import coverage ratio and economic freedom index.

When the long-run coefficient estimates are evaluated, it is observed that there are variables that have a negative effect on the dollarization rate. These are interest rate and GDP growth rate. According to the results, a 1 unit increase in the interest rate leads to a 1.11 unit decrease in the dollarization rate, while a 1 unit increase in the GDP growth rate leads to a 4.34 unit decrease in the dollarization rate. Looking at the earlier research, it is seen that the coefficient estimates for these two variables are generally in line with the literature (Ajide et al., 2019; Balima, 2017; Basso et al., 2007; Brahma, 2017). However, short-term coefficient estimates for all variables in the specific cross-sectional context contain important findings.

After the long-run findings, the short-run coefficient estimates will now be presented. The Table7 below shows the short-run coefficient estimates for the entire dataset.

Table7: Short Term Coefficients

Variable	Coefficient	Prob.
Error Correction Term	-0.226471	0.0226
D(Interest Rate)	-6.289362	0.2664
D(Interest Rate(-1))	2.215126	0.4730
D(Inflation Rate)	0.306736	0.6431
D(Inflation Rate(-1))	0.458179	0.1327
D(Growth Rate)	-0.420072	0.5105
D(Growth Rate (-1))	-0.434429	0.4444
D(Exchange Rate Volatility)	-0.251343	0.1719
D(Exchange Rate Volatility (-1))	-0.017144	0.9309
D(Export/Import)	0.317476	0.3729
D(Export/Import (-1))	-0.217212	0.1872
D(Economic Freedom)	0.537701	0.4453
D(Economic Freedom (-1))	-0.658362	0.2471
C	-0.134093	0.0737

According to the results, none of the variables were found statistically significant in the short run. This can be explained by the fact that each cross-section has its own short-run dynamics. Therefore, it would be useful to analyse the short-run coefficient estimates of each cross-section separately. However, as seen in Table7, the error correction mechanism is statistically significant. Another favourable result is that the coefficient of the error correction term is negative. According to this result, it is understood that even if there is a shift away from equilibrium due to any shock in the short run, there will be a movement back towards the long run coefficients.

Table8: Panel Causality Test Results

	W-Stat.	Prob.
Economic Freedom ≠> Dollarization	1.65745	0.1501
Export/Import ≠> Dollarization	2.09276	0.0087
GDP Growth ≠> Dollarization	1.08987	0.9167
Inflation Rate ≠> Dollarization	0.82924	0.4159
Interest Rate ≠> Dollarization	0.79959	0.3700
Exchange Rate Volatility ≠> Dollarization	1.40928	0.4456

In order to check robustness of the short run estimation results, panel causality test proposed by Dumitrescu and Hurlin (2012) has been applied. The null hypothesis of this test is "*variable x does not homogeneously cause variable y*". Failing to reject the null hypothesis means that there is a heterogeneous causality from first variable towards the second variable. Results of the test are presented in Table8 above.

Results of panel causality test reveal that for all variables except export coverage ratio of import there are heterogeneous causality relationships between cross sections. Together with this result, the long-run coefficient estimates given above are calculated for the entire panel. However, it is important to note that analyses should also be conducted for cross-sections. For this reason, short-run coefficient estimates for cross-sections are given in the Table9 below.

Table9: Cross-sectional Short Term Coefficients

	Armenia	**Brazil**	**Chile**	**Colombia**	**Czech Republic**
Error Correction	**-0.146535** **0.0000**	0.149447 0.0000	**-0.113821** **0.0011**	0.228625 0.0001	0.275046 0.0012
D(Interest Rate)	1.379649 0.138	-1.783264 0.0001	-4.946897 0.3926	-4.789637 0.101	-126.4396 0.9118
D(Interest Rate(-1))	-0.923484 0.1248	-0.21275 0.1952	-0.356929 0.8779	-0.958874 0.069	66.26594 0.9194
D(Inflation Rate)	**-0.480815** **0.0122**	2.103582 0.0001	3.785995 0.2192	5.54403 0.0901	11.73248 0.2404
D(Inflation Rate(-1))	-0.257407 0.1255	0.446947 0.0145	1.690691 0.3698	3.140147 0.0419	1.891257 0.5774
D(Growth Rate)	-0.093023 0.1461	-2.633589 0.0002	**-1.202472** **0.0442**	-2.428307 0.0012	1.501582 0.4702
D(Growth Rate (-1))	**-0.425978** **0.0024**	-1.06375 0.0002	0.589597 0.6127	-1.004321 0.0084	-1.400165 0.2565
D(Exchange Rate Volatility)	0.003031 0.9831	0.248786 0.0000	-1.748683 0.0976	-1.012741 0.0007	-0.539676 0.4505
D(Exchange Rate Volatility (-1))	**-0.561964** **0.004**	-0.319309 0.0000	0.45861 0.2892	-1.186697 0.0017	-0.546194 0.402
D(Export/Import)	**-0.358471** **0.0026**	0.031256 0.0011	**0.110024** **0.0048**	-0.295912 0.0000	5.789348 0.3985
D(Export/Import (-1))	**0.688071** **0.0026**	0.220438 0.0000	0.059416 0.1065	-0.093641 0.0032	0.90688 0.7594
D(Economic Freedom)	**-2.048005** **0.0392**	-1.958205 0.0006	-3.229455 0.2736	0.000173 0.9992	11.08903 0.3933
D(Economic Freedom (-1))	-1.766852 0.1117	0.918875 0.002	-0.772762 0.894	-0.206492 0.2302	1.789712 0.7674
C	**-0.139891** **0.0000**	0.159212 0.0000	**-0.045699** **0.0023**	0.271038 0.0001	0.126085 0.0022

Notes: For green coloured countries, error correction term is negative and statistically significant. The second entry in each row represents the related p-value.

Table9 (Continued): Cross-sectional Short Term Coefficients

	Georgia	Hungary	Indonesia	South Korea	Kyrgyz Republic
Error Correction	**-0.279802 0.0000**	**-0.086018 0.0016**	0.210962 0.0022	0.183704 0.0000	**-0.980644 0.0000**
D(Interest Rate)	-0.940993 0.3031	-0.061165 0.9988	0.687544 0.232	2.046041 0.5779	**8.938411 0.0099**
D(Interest Rate(-1))	-0.217852 0.6722	-14.7796 0.7131	-0.756203 0.0077	1.244103 0.3865	**-3.379542 0.0061**
D(Inflation Rate)	**-0.403628 0.0032**	0.415681 0.978	-0.806016 0.0082	0.189521 0.6057	**-1.624761 0.0000**
D(Inflation Rate(-1))	0.149987 0.2662	1.351508 0.948	-0.001495 0.9851	-0.739587 0.1388	**-0.884874 0.0000**
D(Growth Rate)	**0.53193 0.0072**	-11.26683 0.0919	-1.248307 0.1592	-1.817079 0.0044	**2.709345 0.0015**
D(Growth Rate (-1))	**0.250681 0.0316**	-11.62613 0.2615	-1.027588 0.4114	-0.923253 0.0087	**0.82316 0.0008**
D(Exchange Rate Volatility)	0.052347 0.5095	-2.676456 0.5294	0.207435 0.0073	-0.207936 0.0002	**-0.93064 0.0000**
D(Exchange Rate Volatility (-1))	**-0.148966 0.0501**	-2.507159 0.8414	-0.061821 0.4537	0.312569 0.0003	**-0.712324 0.0002**
D(Export/Import)	**-0.176346 0.0552**	3.829931 0.8462	0.158543 0.0000	0.371573 0.0006	**0.509275 0.0000**
D(Export/Import (-1))	**-0.640331 0.0003**	-2.779616 0.7829	0.114142 0.0000	-0.152495 0.0015	**0.10193 0.0001**
D(Economic Freedom)	0.368441 0.2649	5.516282 0.9123	0.15408 0.2084	0.07454 0.7422	**-1.962213 0.0037**
D(Economic Freedom (-1))	**-0.561813 0.0403**	1.072707 0.9742	-0.90207 0.0061	-2.328094 0.0072	**1.647723 0.0011**
C	**-0.254969 0.0001**	**0.061719 0.0005**	0.233636 0.0017	0.231746 0.0000	**-0.729561 0.0000**

	Malaysia	Mexico	Moldovia	Morocco	Peru
Error Correction	**-1.040599 0.0000**	**-0.063751 0.0048**	0.029099 0.0217	0.011551 0.0331	**-1.261835 0.0000**
D(Interest Rate)	-28.42675 0.6539	-0.181663 0.9602	0.109475 0.7031	-5.456372 0.7563	**3.4036 0.0006**
D(Interest Rate(-1))	10.00159 0.6963	-1.766117 0.4668	0.409315 0.078	-4.163821 0.799	**3.509848 0.0006**
D(Inflation Rate)	-0.025967 0.9603	-0.51099 0.6335	-0.314447 0.0453	0.678479 0.0288	**-2.891877 0.0008**
D(Inflation Rate(-1))	-0.600445 0.4362	-0.136664 0.89	-0.071782 0.2449	2.622671 0.0159	**-1.943286 0.0004**
D(Growth Rate)	**3.197105 0.0098**	-0.272696 0.1822	-0.532981 0.014	-0.500165 0.0074	**4.231241 0.0007**
D(Growth Rate (-1))	**1.261573 0.0098**	-0.153671 0.2549	-0.523426 0.0242	-0.083703 0.5068	**1.711361 0.0004**
D(Exchange Rate Volatility)	**0.908736 0.0223**	**0.112722 0.0211**	-0.097194 0.3846	0.452163 0.0069	**0.241548 0.0799**
D(Exchange Rate Volatility (-1))	**0.723419 0.0719**	-0.050294 0.3651	0.008138 0.908	0.91385 0.0013	**1.16124 0.0002**
D(Export/Import)	**-3.327376 0.0003**	**0.897809 0.0248**	0.293726 0.077	1.34872 0.0007	**-0.504592 0.0000**
D(Export/Import (-1))	**-1.640623 0.0201**	0.32246 0.2867	-0.822901 0.0112	-0.406794 0.0006	**-0.244019 0.0000**
D(Economic Freedom)	3.708532 0.1271	**-1.418956 0.0569**	1.062099 0.2895	0.59072 0.0089	**0.686999 0.0047**
D(Economic Freedom (-1))	**5.6495 0.0211**	-1.008447 0.1003	-0.526615 0.2913	-1.639665 0.0001	**-0.472584 0.007**
C	**-0.439485 0.0003**	**-0.063455 0.0145**	0.012661 0.0103	0.0107 0.0215	**-1.177031 0.0000**

Table9 (Continued): Cross-sectional Short Term Coefficients

	Philippines	Romania	Russia	South Africa	Thailand
Error Correction	**-0.129279 0.0006**	**-0.025516 0.0147**	**-0.660116 0.0000**	0.103399 0.0009	0.036729 0.0000
D(Interest Rate)	0.001625 0.9973	**1.01774 0.023**	3.529185 0.0778	1.962582 0.8455	2.144754 0.0000
D(Interest Rate(-1))	0.364939 0.924	-0.389306 0.0742	-0.809158 0.4519	-10.48066 0.5898	6.339541 0.0000
D(Inflation Rate)	**-0.74123 0.0058**	-0.339992 0.1019	**-1.09888 0.0075**	-2.624784 0.2113	-2.496209 0.0000
D(Inflation Rate(-1))	-0.103484 0.9385	-0.160581 0.4505	-0.173493 0.3992	3.894146 0.4046	-1.254195 0.0000
D(Growth Rate)	0.366128 0.652	**-0.436954 0.0122**	0.843171 0.0692	-2.326166 0.3018	-2.369863 0.0000
D(Growth Rate (-1))	0.17144 0.7318	**-0.324619 0.0025**	-0.110706 0.4471	3.680043 0.4839	-1.627876 0.0000
D(Exchange Rate Volatility)	**0.467821 0.013**	-0.184103 0.1014	**-0.542106 0.0002**	1.547749 0.0256	-0.853161 0.0000
D(Exchange Rate Volatility (-1))	0.069202 0.6888	0.101759 0.1653	-0.132279 0.2479	2.541979 0.0057	-0.947438 0.0000
D(Export/Import)	**0.110317 0.0221**	0.005629 0.824	**-0.458167 0.0000**	0.831441 0.0018	-0.806896 0.0000
D(Export/Import (-1))	-0.02152 0.1407	0.09856 0.0723	**-0.055433 0.0002**	-0.842268 0.0046	0.714979 0.0000
D(Economic Freedom)	-0.056557 0.7472	0.359284 0.112	-0.240181 0.6129	0.771711 0.7472	5.126177 0.0000
D(Economic Freedom (-1))	0.048614 0.7307	**-0.797621 0.0407**	**1.628567 0.0078**	-1.852741 0.6498	-4.697028 0.0000
C	**-0.090264 0.0003**	-0.021033 0.0598	**-0.45879 0.0001**	0.104514 0.0001	0.043191 0.0000

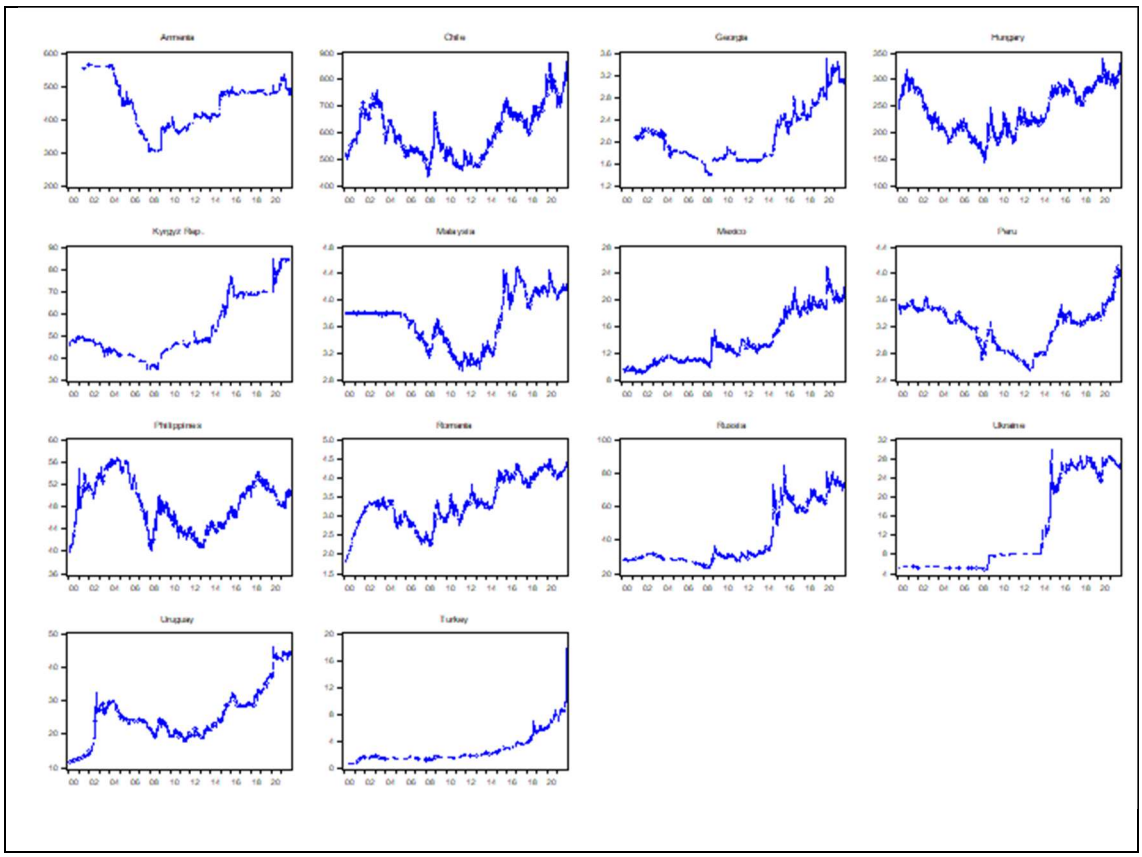
	Türkiye	Ukraine	Uruguay
Error Correction	**-0.036430 0.0001**	**-0.407245 0.0000**	**-1.205792 0.0000**
D(Interest Rate)	-0.025584 0.6722	**1.502259 0.034**	**1.673772 0.0013**
D(Interest Rate(-1))	**-0.186707 0.0008**	**1.650769 0.0138**	0.542853 0.2542
D(Inflation Rate)	0.051760 0.3209	**-0.290493 0.0105**	-2.796502 0.1312
D(Inflation Rate(-1))	**0.226929 0.0002**	**-0.425663 0.0078**	**1.876789 0.0133**
D(Growth Rate)	**-0.350904 0.0004**	**1.067755 0.0077**	**3.369425 0.012**
D(Growth Rate (-1))	**-0.410818 0.0030**	**0.595182 0.0038**	1.63111 0.0708
D(Exchange Rate Volatility)	**-0.049800 0.0003**	-0.148049 0.0928	**-1.032684 0.0062**
D(Exchange Rate Volatility (-1))	**0.112090 0.0003**	**0.553854 0.0152**	-0.176576 0.3522
D(Export/Import)	-0.158230 0.1489	**0.35904 0.0009**	**-1.258689 0.0002**
D(Export/Import (-1))	**-0.352622 0.0026**	**0.117644 0.0353**	**-0.288137 0.0069**
D(Economic Freedom)	-0.099874 0.3676	-0.136483 0.8771	-5.991019 0.0807
D(Economic Freedom (-1))	**-0.543382 0.0004**	-0.39112 0.507	-9.430739 0.0554
C	**-0.022201 0.0001**	**-0.166468 0.0000**	**-0.729804 0.0001**

When the short-term coefficient estimates of the cross-sections are analysed, it is observed that the coefficients of some variables are statistically significant and some are not. It can also be seen that the effect of some variables is in the opposite direction to theoretical expectations. In some countries, even if the error correction coefficient is statistically significant, the sign of the coefficient is not negative. These countries are Brazil, Colombia, Czech Republic, Indonesia, South Korea, Moldova, Morocco, South Africa, Thailand. The positive error correction coefficient may arise due to different reasons. The first one is that the model does not converge to long-run equilibrium in case the of a short-run shock. The second reason is the possibility of a specification error in the model (Nkoro & Uko, 2016). In other words, it can also be defined as the weak short-run explanatory power of the model for the relevant cross-section. In the second case, even though the coefficients of other explanatory variables are statistically significant, there is a possibility of an error in the structure of the model. For this reason, it was decided that the short-term findings for the related countries should not be interpreted.

Armenia, Chile, Georgia, Hungary, Kyrgyz Republic, Malaysia, Mexico, Peru, Philippines, Romania, Russia, Türkiye, Ukraine and Uruguay are found to be the countries whose error correction mechanism works properly. Since there is no modelling error barrier as mentioned above, the short-term coefficient estimates for these countries can be interpreted. It should be noted that, as expressed in the model in equation (4), the variables for which coefficient estimates are made for difference variables. However, inflation, interest rate and growth rate are proportional indicators. When such indicators are expressed in difference variables, the increase or decrease can also be interpreted as a velocity indicator. For example, if the inflation rate is higher in the second year of two consecutive years in a country with a positive inflation rate, then it can be understood that inflation is accelerating. Therefore, when making short-term policy recommendations, it will be necessary to address the details of the variables related to the cross-sections. Similarly, since the exports to the import coverage ratio is also a proportional variable, the interpretation of the short-term coefficient estimates can be interpreted as a faster increase in the amount exports compared

to the amount of imports. Unlike the variables mentioned above, the exchange rate volatility variable is not a proportional variable. However, as it can be seen in Figure4, the exchange rate in selected countries has a tendency to rise. Therefore, the use of the volatility variable by taking its difference can provide information about the acceleration of volatility in successive years.

Figure4: Nominal Exchange Rates of Selected Countries (USD)



Source: Bank of International Settlements

According to Table8 above, it can be seen that the variable showing the first difference of the interest rate gives statistically significant results for 6 countries. The direction of this effect is positive. In other words, an increase in the rate of increase in the interest rate leads to an increase in the dollarization rate. As mentioned earlier, in dollarization studies, a negative relationship between interest rate and dollarization is generally observed. However, the reason why dollarization increases as the rate of increase in the interest rate increases can be explained by the decrease in confidence in the economy. An increase in the rate of increase in the interest rate may indicate an inflationary pressure

beforehand. In this context, this finding in this thesis becomes somewhat more meaningful when the previous dollarization studies which emphasized the effect of confidence on dollarization, are taken into consideration (see, for example, De Nicoló et al., 2005; Quispe-Agnoli, 2002).

According to the findings, one lagged value of the interest rate difference is statistically significant for five countries. This effect is positive for two countries and negative for three countries. This can be explained by the current economic conditions of the countries and the confidence in the policies implemented. Because, it can be assumed that in countries with a negative coefficient, necessary measures have been taken against inflation and confidence in economic policies has been established. In such a situation, actors may shift their foreign assets to local instruments with the idea that the value gain may be higher with the possible economic recovery. However, if the expected efficiency of monetary policy cannot be achieved due to the sticky nature of inflation in countries with negative coefficient, both production costs may have increased and confidence in the imminent economic recovery may not have been established (Constancio, 2015; Yellen, 2017). In this case, market actors may channel their assets to investment instruments abroad.

The coefficient estimates for the first difference of the inflation variable are statistically significant for seven countries. All of the observed effects are negatively related to dollarization. This finding is in line with some previous works (see, for example, Edwards & Magendzo, 2001). But, this finding in particular needs more attention in future studies. On the other hand, the one lagged value of the inflation rate differential is found to be statistically significant for five countries and the effect here indicates a convergence to the observed effect in the long run. The coefficients are positive for two countries and negative for three countries.

The coefficient estimates for the variable expressing the difference of the economic growth rate and its one lagged form are statistically significant for nine countries. These effects are positive for six countries and negative for three countries in both variables. The positive relationship can be explained by the

production structure of the economy in developing countries. External dependence on production resources is a common situation in developing countries (Carrasco & Tovar-García, 2021; Yuksel & Zengin, 2016). Therefore, utilisation of the gains from economic growth in the short term in foreign assets may be necessary for the continuity of future production. If this cycle can be broken and the production structure becomes sustainable with domestic resources, this may indicate the development of the economy (Adewale, 2017; Irwin, 2021, pp. 7-9)

The coefficient estimates of the variable expressing the difference of exchange rate volatility are statistically significant for nine countries. Four of the coefficients are positive and the other five are negative. The reason for the negative coefficient can be attributed to profit realisation. As mentioned before, the general trend of exchange rate in developing countries is upward. Therefore, an increase in volatility will mean a faster rise in the exchange rate. In such a case, in the short run, actors will have the opportunity to acquire local assets at cheaper prices. On the other hand, the positive coefficient can be attributed to the vulnerability to foreign exchange in emerging economies (Cartapanis & Dropsy, 2005; Seth & Ragab, 2012). Since the rate of increase in the exchange rate will quickly undermine confidence in the economy, dollarization will increase. As a matter of fact, in the one-lag coefficient estimation of the same indicator, the positive coefficient for four countries and the negative coefficient for three countries were found statistically significant, converging to the long-run effect. As stated earlier, findings of this thesis for the-long-run effect of exchange rate on dollarization is in line with the previous studies (see, Arteta, 2002; Galindo et al., 2007; Raheem & Asongu, 2018).

The short-run effect of the ratio of exports to imports is mixed both in the first difference and in its lagged form. Statistically significant coefficient estimates are positive in five countries and negative in six countries at first difference. In the one lagged value of this variable, the coefficients found positive for four countries and negative for six countries are statistically significant. The negative coefficient can be explained by the healthier functioning of the economy and the

establishment of confidence (Beybur, 2022; De Nicoló et al., 2005; Guo & He, 2020) while the positive coefficient can be attributed to the external dependence in production (Carrasco & Tovar-García, 2021; Krueger, 1997). Therefore, it would be useful to analyse each country in detail under its own conditions in order to make a better interpretation of this variable.

Unlike other variables, the economic freedom variable provides more information about the institutional structure. The positive effect observed for this variable in the long run is generally in the opposite direction in the short run. In the difference variable, four of the five statistically significant coefficients are negative while one of them is positive. Although the coefficient estimates are positive for three countries and negative for five countries in the lagged state of the difference variable, it still points to the difference between short-run and long-run dynamics. In the short run, the positive developments in economic institutions had a negative impact on dollarization through the confidence building channel (Bruno, Crosilla, & Margani, 2019; Guo & He, 2020). The reason for the opposite effect in the long run can be explained by the fact that the necessary production structure reforms in the developing country economy cannot be easily realised and therefore long-term confidence in the economy cannot be established (Cachanosky & Ravier, 2015; Nowzohour & Stracca, 2020; Papazian, 2009).

The production structure and related economic dynamics in developing countries can be very different from each other. This situation may be caused by many different factors such as the size of the economy, political developments, geographical location, demographic structure and natural resources. For this reason, it is imperative that the findings of econometric analyses should be subjected to a detailed country-specific analysis. In this way, the dynamics of the relevant country's economy and the relationship between the variables used in this thesis can be better understood and reliable policy recommendations can be made. In this context, in the next section, interpretations and policy implications will be made regarding the findings of the analysis presented above.

CHAPTER 3

DISCUSSION AND POLICY IMPLICATIONS

In this section, the findings of the econometric analysis in the previous chapter will be evaluated. In making this assessment, the contributions of this thesis to the study of the dollarization phenomenon will be discussed first. Subsequently, the contributions of this thesis to policy implementation will be thoroughly explicated. While making these evaluations, the findings of the econometric analysis will be interpreted together with other studies in the literature.

Each of the explanatory variables used for the econometric analysis in this thesis is chosen to represent a different macroeconomic perspective. These are domestic monetary policy, domestic economic stability, overall performance of the economy, international trade, international money market equilibrium and the environment in which economic activities take place. Deposit interest rate, inflation rate, GDP growth rate, export-import coverage ratio, exchange rate volatility and economic freedom index variables were chosen to represent these perspectives. It has been observed that different variables have been used in the relevant empirical literature. These can be classified as financial variables, institutional variables and policy preference variables (see, Basso et al., 2011; De Nicoló et al., 2005; Luca & Petrova, 2008; Neanidis & Savva, 2009; Rennhack & Nozaki, 2006). While the explanatory variables used in this thesis represent macroeconomic phenomena from a holistic perspective, they also encompass financial, institutional, and policy preference variables. In this context, this thesis contributes to the development of a holistic approach in dollarization studies.

Another contribution of this thesis to dollarization studies is the structure of the dollarization indicator utilized in the analysis. Previous studies have used the share of foreign currency deposits in total deposits as a dollarization indicator (Aktaş & Aydınlık, 2022; Balima, 2017; De Nicoló et al., 2005; Lin & Ye, 2013; Rennhack & Nozaki, 2006), the share of foreign currency deposits in money supply (Ajide et al., 2019; Brahma, 2017; Milambo, 2010; Raheem & Ajide, 2021) and the MVP variable developed by Ize and Yeyati (2003) have been frequently

used (Bacha et al., 2007; Basso et al., 2007, 2011). However, there are also different dollarization indicators used in the literature (Craig & Waller, 2004; Milambo, 2010). When these indicators are evaluated together with the definitions of dollarization in the related literature, it is inferred that they are insufficient to meet the economic phenomenon represented, especially in the context of asset dollarization. This is because the existing indicators do not include in the analysis all the alternatives to which market actors can direct their investments in order to preserve the value of their assets. The variable proposed in this thesis, which includes all foreign assets, is thought to put an end to the inadequacy of dollarization indicators.

The dollarization indicator used in this thesis will have other effects beyond the inferences made above regarding the gap it will fill in the literature. As it is frequently stated in the literature, dollarization is a phenomenon observed in developing countries (Ajide et al., 2019; Bacha et al., 2007; Balima, 2017; Cachanosky et al., 2023; Court et al., 2010; Krupkina & Ponomarenko, 2017; Luca & Petrova, 2008; Milambo, 2010; Neanidis & Savva, 2009; Raheem & Asongu, 2018). Besides, most of the international trade have been exercised by using currencies of developed countries (Auboin, 2012). Therefore, it is not possible to make inferences about the dynamics of preferring foreign assets for developed countries. However, the variable used in this thesis is constructed from data on different asset types. By this way, in future research it will be possible to make inferences about the dynamics of preferring foreign assets for developed countries. Also, if further research includes which sub-component of the dollarization level has how much share, it will make it possible to draw inferences about the structure of the dollarization phenomenon not only for developing countries but also for developed countries.

Studies in the literature have generally investigated the long-run effects of explanatory factors (Bacha et al., 2009; Bannister et al., 2018; Court et al., 2010; Ize & Yeyati, 2003; Krupkina & Ponomarenko, 2017; Rennhack & Nozaki, 2006; Urošević & Rajković, 2017). However, there are also studies investigating short-term effects (Kaya & Kara, 2022; Neanidis & Savva, 2009; Urošević & Rajković,

2017). In this thesis, the impact of explanatory factors on the dollarization phenomenon is investigated separately for both the long run and the short run. In this way, findings on how the dynamics of the dollarization phenomenon change over time have been obtained.

As explained above, this thesis has filled some of the gaps observed in the literature by making theoretical and practical contributions to dollarization studies. Based on these contributions and inferences, it paves the way for more detailed conclusions to be drawn in future studies.

3.1. KEY FINDINGS AND IMPLICATIONS

As mentioned earlier, the econometric analysis revealed that all of the variables in the model have statistically significant effects on dollarization in the long run. According to the results of the econometric analysis, it was concluded that none of the short-run coefficient estimates for the entire data set were statistically significant, only the coefficient expressing the error correction mechanism was statistically significant. The coefficient of the error correction term was calculated as -0.23. As it is stated in the literature, error correction term indicates the absorption of any shock per period (see; Narayan & Smyth, 2006; Nkoro & Uko, 2016). Therefore, these results indicate that in case of any shock in the short run, the system converges to the long run coefficient estimates after approximately 4.4 periods[3]. The reason why the coefficient estimates for other variables are not statistically significant is that each country has a different economic structure. Such a situation makes it necessary to evaluate each country according to its own conditions and to formulate policy proposals taking into account those conditions.

[3] As Yerdelen Tatoğlu (2017, pp. 288) stated error correction coefficient shows the convergence amount per period. Then, mathematically;

$$1 - t \times ECC = 0$$

is the equation to find required number of periods to converge to the long run coefficients where “t” is the number of periods and “ECC” is the error correction coefficient. Rearranging this equation for “t” gives;

$$t = \frac{1}{ECC}$$

According to the estimates of the short-run coefficients for cross-sections, the error correction mechanism variable is statistically significant for 14 countries and the coefficient estimate is negative. Under the condition that the error correction term is statistically insignificant or positive, two alternate possibilities exist. The first one is that the system does not converge to the long-run coefficient estimates in case of any short-run shock. The other situation is that there is an error in the model specification. There is no method to determine which of these possibilities is valid. Therefore, policy implications based on the short-run coefficient estimates of the relevant countries are avoided.

Among the selected indicators, inflation rate, exchange rate volatility, ratio of exports to imports and economic freedom index variables have a positive effect on dollarization in the long run. This effect is observed as 1.37 units increase in inflation rate, 0.15 units increase in export-import coverage ratio, 0.46 units increase in exchange rate volatility and 2.24 units increase in economic freedom index for each unit increase in these variables. Within the chosen indicators, interest rate and GDP growth rate have a negative effect on dollarization in the long run. This effect is observed as a decrease of 1.11 units for the interest rate and 4.34 units for the GDP growth rate in the dollarization variable for each unit increase in the variables. This effect, the magnitude and direction of which differ according to the variables, requires a more comprehensive analysis in order to make policy recommendations based on this effect.

The positive effect of inflation rate on dollarization is in line with the findings of many studies in the literature (Ajide et al., 2019; Aktaş & Aydınlık, 2022; Balima, 2017; Brahma, 2017; Neanidis & Savva, 2009). The fact that the dollarization rate increases by 1.37 units for each unit increase in inflation in this thesis indicates the importance of the related indicator. In the literature, not only the effect of inflation rate on dollarization but also its importance in the de-dollarization process has been investigated (Cakir, Atamanchuk, Al Riyami, Sharashidze, & Reyes, 2022). Moreover, it can be concluded that this finding once again proves the impact of the inflation rate on the dollarization phenomenon. Policy makers should also take into account the fact that monetary easing policies have a

greater effect on the dollarization rate than the expected effect on inflation. When the policy instruments used in the fight against inflation are evaluated together with the existence of the dollarization phenomenon, it is necessary to take into account another finding of this thesis. The negative effect of GDP growth rate on dollarization makes it possible to infer that the use of monetary policy instruments to fight inflation will yield positive results. Ize and Parrado (2002), emphasised that fiscal policy implementations should not conflict with monetary policy implementations in order to fight inflation. There is an important issue that should not be ignored in inflation-oriented policy implementations. The desired level of effectiveness of the implemented policies can be achieved with a holistic approach. For example, while determining interest rate through contractionary monetary policy instruments, policy implementation should be supported by other instruments such as reserve requirement ratios that will control credit utilisation in line with the target. Otherwise, the desired results will not be achieved and high interest rates and high inflation rates, which are frequently observed in developing countries during crisis periods, will occur at the same time (Mishkin, 1996).

The effect of foreign trade on dollarization has been examined in different aspects in different studies. In this thesis, by using the ratio of exports to imports, the effect of foreign trade deficit on dollarization has been investigated. In this respect, the use of the ratio of exports to imports has made another theoretical contribution to dollarization studies. The analysis reveals that this ratio has a statistically significant effect on dollarization. This effect is positive and it is calculated that each unit increase in the ratio causes a 0.15 unit increase in the variable representing dollarization.

It is not possible to compare the results of the long-run analyses of foreign trade due to the different structure of the variables used in the previous studies compared to this thesis. However, the related finding of the thesis is keeping with the previous empirical evidence which point outs that exports positively affects dollarization (Aktaş & Aydınlık, 2022; Drenik & Perez, 2021). When the results of the short-term analysis are analysed, it is seen that the positive and negative effects are almost equal to each other. This situation can be interpreted as a

result of the different levels of development of countries, as previously mentioned in the inferences regarding the dollarization variable.

Although the dollarization phenomenon is a source of vulnerability for developing countries (De Nicoló et al., 2005; Honig, 2006, 2009; Sosa & Garcia-Escribano, 2011), when the variable used in this thesis is evaluated specifically, positive situations may also arise under certain conditions. The difference of the dollarization indicator used in this thesis from other studies is that it uses foreign assets with a holistic approach. Therefore, investments made abroad are also expressed by a positive change in the dollarization indicator. It has an important place in neoclassical theory that exports contribute to the creation of a favourable environment for the development of the country's economy and it has also been shown in previous studies (Mbaku, 1989; Poon, 1994; Sharma & Dhakal, 1994). Under these conditions, although encouraging exports will lead to a positive movement in dollarization, policy makers should implement practices that increase the share of exports in foreign trade based on the implications of this thesis.

There are many policies that can be implemented to increase exports. However, since these policies have also effects on the foreign exchange market, the domestic market for goods and services and the international market for goods and services, they need a very sensitive implementation process. For example, if there is no limit in policies to increase exports, this may lead to an increase in inflation as domestic market supply will be adversely affected (Mamun & Laborde Debucquet, 2024).

The effects of exchange rate on dollarization have been handled in different ways in the literature, just like in foreign trade. In this thesis, the effect of exchange rate movements on dollarization, rather than the level of exchange rate, is investigated. To do this, exchange rate volatility variable is used. The reason for the choice of this variable is that since the exchange rate in developing countries is in a continuous upward trend, sudden movements within this upward trend are thought to be a clearer indicator of deterioration. As a result of the analysis, for

each unit increase in the exchange rate volatility variable, a 0.46 unit increase in the dollarization variable was calculated.

Exchange rate vulnerability is a phenomenon observed in dollarized economies (Bacha et al., 2007; Bannister et al., 2018; Basso et al., 2007; Court et al., 2010; Honig, 2006). Therefore, exchange rate-driven problems on the production system and market equilibrium can be observed from time to time. The volatility variable used in the thesis also draws attention to an important relationship since it associates dollarization with exchange rate movements outside the general course. Monetary policy instruments are of great importance in the implementation of policy proposals for exchange rate volatility. This is because in addition to supply and demand, the actions of the monetary policy authority also play a decisive role in the formation of the exchange rate (B. D. Krušković, 2017).

Since there is a positive relationship between exchange rate volatility and dollarization variable in the long run, the focus of policy makers in long-run exchange rate policies should be to ensure stability in the course of the exchange rate. The fact that the short-run results differ across countries, just like the findings on foreign trade, is a consequence of the fact that countries have different economic dynamics. In the event of a sudden rise in the exchange rate due to political or economic reasons, short-term actions can be taken through market operations and banking regulations. However, the most important actions are to ensure an exchange rate course in line with long-term exchange rate targeting (B. Krušković, 2020). This requires the maintenance of foreign exchange reserves sufficient for strategic market actions (Cordero, 2008).

In dollarization studies in the literature, variables related to institutional structure are frequently included. The reason for this is that the economic environment has an impact on activities as well as economic variables. In this thesis, the variable used for institutional structure is the economic freedom index. This variable, which consists of many sub-indices, has a holistic structure since it includes all aspects of the economic environment. As a result of the analysis, for each unit increase in the economic freedom index variable, a 2.24 unit increase in the dollarization variable was calculated.

The economic freedom index includes many sub-components to ensure market equilibrium in developing countries. These components are indicators closely related to economic development. Therefore, just like the ratio of exports to imports, the increase in the level of dollarization caused by the economic freedom index variable may not necessarily indicate a negative situation. Therefore, when considered within the framework of policies towards dollarization, balanced practices should be at the forefront. For example, policies to be implemented under the heading of the size of the state in the economy, one of the sub-components of the index, should be balanced in a way that does not cause negative situations such as the exclusion of the private sector. In the policies to be implemented under the title of sound money, another sub-component, policies that will not harm the general balance should be implemented by taking into account the money market balances. Another sub-component, freedom to trade internationally, requires policy choices to be made by considering the balances of foreign trade, foreign exchange market and international capital mobility. Finally, in the policies to be implemented under the headings of regulations, legal system and property rights, policies should be implemented in such a way as to ensure the establishment of an environment of political and economic confidence and a path that supports economic development should be followed.

The interest rate variable has been used in different ways in dollarization studies. In this thesis, deposit interest rate is also used. The estimated effect of the interest rate variable on dollarization in this thesis is in line with the studies in the literature (Basso et al., 2007; Brahma, 2017; Neanidis & Savva, 2009). The reason for including this variable in the analysis is that it represents the domestic monetary policy. As mentioned while giving policy propositions regarding the inflation rate, the interest rate has an important place among monetary policy instruments. The results found here also support the previous results.

The negative effect of the increase in interest rates on dollarization can be explained by the confidence in local economic conditions and the appreciation of investments denominated in the currency of the related country, which are the underlying factors of the dollarization phenomenon. Under this result, the

importance of correct monetary policy implementations can be understood once again. Once more, different domestic market dynamics should be taken into account in determining the interest rate. A higher interest rate than necessary may lead to debt dollarization as it makes it cheaper to borrow abroad (Bocola & Lorenzoni, 2020). In this case, a high level of debt dollarization combined with vulnerability to exchange rates would further increase economic risks.

In dollarization studies, GDP indicator has been frequently examined in different aspects. In this thesis, GDP growth rate is used as an indicator of the general economic environment. As a result of the analysis, for each unit increase in the GDP growth rate variable, a decrease of 4.34 units in the dollarization variable was calculated. This coefficient shows the extent to which economic growth affects the confidence in the economy in developing countries.

Although economic growth is of great importance in developing countries, the importance of development has been emphasised many times in economic theory (Cypher, 2014). For this reason, the policies formed for the economic structure should be not only growth-oriented but also development-oriented. Because if the production system is not transformed into a sustainable structure while economic growth is realised, existing vulnerabilities can lead to much heavier costs in the event of a crisis.

Since the economic growth rate variable is the result of a more comprehensive and complex network of relationships than the above-mentioned variables, policy implications regarding this variable should be formulated by considering much more equilibrium. However, since the sections on the above-mentioned variables provide policy implications in different areas such as monetary policy, fiscal policy, international trade policy, foreign exchange market and economic institutions, the policy implications in this section will be clearer. In this context, GDP growth rate targets for the dollarization phenomenon should be set by taking into account each situation in the markets mentioned above. In a growth path that deviates from the equilibrium path, regardless of whether it is above or below the equilibrium path, the economic development process will fail, even though

economic growth is taking place, as the balances in other markets will be disrupted.

The long-run findings of the empirical analyses so far have been used to draw policy implications for the establishment of a healthy economic system. In general, the policy implications emphasise the importance of balanced and coordinated policy implementation. Although each of the selected variables represents different areas of the economy, the fact that their relations with each other are also included in the policy propositions shows the importance of the mentioned balance and coordination.

Although the policy proposals put forward are supported by studies in different fields, different countries have different economic conditions. For this reason, it is important to make both holistic and individual assessments at the same time. To this end, in the subsequent sections, country-specific assessments will be conducted.

3.1.1. Armenia

In the short-run coefficient estimates for Armenia, statistically significant results were obtained for inflation rate, GDP growth rate, exchange rate volatility, exports to imports ratio and economic freedom index variables at different lags. The coefficient of the error correction term is calculated as -0.15. According to this result, it can be said that the coefficients converge to the long-run equilibrium approximately 6.7 periods after any shock in the short run.

The first difference variable of the inflation rate yielded statistically significant results. The coefficient of the parameter was calculated as -0.48. According to these results, an increase in the inflation rate in the short run leads to a decrease in the level of dollarization. As mentioned in the literature, although there is a positive relationship between the inflation rate and the dollarization level in the long run, it has been revealed in previous studies that there may be different dynamics in the short run (see, for example, Urošević & Rajković, 2017). Since such an economic environment will bring higher inflation expectations for future periods, foreign securities may be transferred to domestic assets for short-term

gains. The one lagged difference variable of the growth rate yielded statistically significant results. The coefficient of the parameter is calculated as -0.43. The growth rate variable is an indicator of general economic performance. The fact that it is a lower frequency indicator than the inflation rate or the interest rate makes it econometrically logical that the one lagged period parameter is significant. The effect of the acceleration in exchange rate volatility in the previous period on the current period is calculated as -0.56 in the parameter estimates. This shows that this variable has different effects in the short term compared to the long term dynamics. In the ratio of exports to imports variable, the acceleration in the current period causes a decrease in the level of dollarization, while the acceleration in the previous period causes an increase in the level of dollarization. As mentioned earlier, the components of the dollarization indicator may cause the findings in this thesis to differ from the literature. In the case of Armenia, the way in which the income generated from foreign trade is utilised in the short run should be investigated in more detail. An increase in the economic freedom index variable in the current period leads to a decrease in the level of dollarization in the short run. This may be due to macroprudential measures as stated by Cakir et al. (2022) or the increase in confidence in the economic environment and institutional quality in the country.

The policy recommendations made for Armenia may be valid for most of the developing countries. Nevertheless, small differences should be taken into account and policy implications should include long-term objectives.

3.1.2. Chile

In the short-run coefficient estimates for Chile, GDP growth rate, exchange rate volatility and the ratio of exports to imports were statistically significant at the first difference. The coefficient of the error correction term was calculated as -0.11. According to this result, it can be said that the coefficients converge to the long-run equilibrium approximately 9.1 periods after any shock in the short run.

The effect of the parameter expressing the acceleration in the GDP growth rate in the current period on dollarization is calculated as -1.2. This indicates that

economic improvements in the short term may have a similar effect as in the long term. Under these circumstances, the policy that should be implemented is to maintain policies in line with long-term targets by making use of the current confidence environment. A recent increase in exchange rate volatility has a negative effect on the level of dollarization in Chile, contrary to the long-run findings. This may be due to the fact that domestic market actors use foreign assets for their short-term financing needs due to the volatility. As stated by Leitner and Stehrer (2013), this finding is supported by the fact that especially small-scale firms tend to use internal resources during crisis periods. An increase in the ratio of exports to imports may have led to an increase in Chile's dollarization level in the short run. As mentioned in the long-run policy implications, this may not always be negative. Because as economic development takes place, an increase in foreign assets is expected due to both investments and low-cost production opportunities. However, considering the situation here, it can be understood that the income obtained from exports is not utilised domestically due to low confidence in the economy. Because, as stated by Cerda, Silva, and Valente (2018), there is an important relationship between economic confidence and investment in Chile. The policy that should be implemented under these conditions is to make arrangements to establish economic confidence in a way that will serve the realism of long-term development policies and the predictability of economic developments.

In the case of Chile, the focus of the policy proposals is on the establishment of economic confidence. Even if policies in line with economic theory are implemented in the country, the factors affecting the decision-making processes of market actors need to be improved in order to achieve the expected results.

3.1.3. Georgia

In the short-run coefficient estimates for Georgia, statistically significant results were obtained at different lags for all indicators except the interest rate variable. The coefficient of the error correction term was calculated as -0.28. According to this result, it can be said that the coefficients converge to the long-run equilibrium approximately 3.6 periods after any shock in the short run.

As in the case of Armenia, the first difference variable of the inflation rate yielded statistically significant results. The coefficient of the parameter was calculated as -0.40. According to these results, an increase in the rate of inflation in the short run leads to a decrease in the level of dollarization. The parameters expressing the acceleration in the GDP growth rate were found to have a positive effect on dollarization. This implies that economic improvements in the short run have the opposite effect on dollarization in the long run. The policy that should be implemented under these conditions is to establish economic stability and predictability in a way to increase the confidence of market actors in the economy. For this purpose, options to strengthen policy instruments should be implemented by taking into account the preferences of market actors in the crisis environment, and the favourability of domestic investments should be increased through sustainable growth policies. Improvements in both logistical facilities and legal regulations are as important as economic incentives for sustainable growth. Again, in the same direction as in the Armenia case, the effect of the acceleration in exchange rate volatility in the previous period on the current period is calculated as -0.15 in the parameter estimates. Since this situation will cause foreign resources and assets to become more expensive in the short run, it may lead to a shift towards domestic investment instruments. Moreover, as stated by Héricourt and Poncet (2015), the negative impact of exchange rate volatility on exports may also cause the exchange rate to have a negative effect on dollarization. In such a case, the policy to be implemented is to maintain the balance of the exchange rate level in line with long-term policies against the foreign resource inflow that will be experienced during the rebalancing process. The acceleration in the ratio of exports to imports in the current and the previous period led to a decrease in the level of dollarization. Such a situation indicates a preference for investing foreign trade gains in domestic investments rather than in foreign assets. The policy that should be implemented under these conditions, which are extremely important for both employment and price stability in the long run, should be labour market and investment incentives to ensure the continuity of the current preferences. An increase in the economic freedom index variable in the previous period leads to a decrease in the level of dollarization in the short

run. This indicates that the confidence in the economic environment and institutional quality in the country has increased. The policy to be implemented under this condition is to keep the level of dollarization under control through policies related to other variables in line with long-term economic objectives. Because, if the balances in other variables are ignored in the economic policies to be implemented, an increase in the dollarization level may be observed with the liberalised capital movements.

3.1.4. Hungary

As a result of the empirical analysis, the short-run coefficient estimates for Hungary did not yield statistically significant results in any variable except the economic growth rate variable. In the economic growth rate variable, the results were significant at the 10% level. The error correction term was calculated as -0.08. According to this result, it can be said that the coefficients converge to the long-run estimates in approximately 11.6 periods.

When the current situation is evaluated, it is understood that the variables affecting the dollarization level of the country in the short term are different from those discussed in this thesis. The country's geopolitical position and international economic relations are of great importance in the emergence of this situation. Because being a member country of the European Union requires harmonisation with the union in the policies it implements, even though it uses its own currency. As a result of the policies in line with the European Union, the majority of which consists of developed economies, the dynamics of the Hungarian economy differ from other developing countries.

3.1.5. Kyrgyz Republic

All of the short-run coefficient estimates for the Kyrgyz Republic are statistically significant. The coefficient of the error correction term is calculated as -0.98. According to this result, it can be said that the coefficients converge to the long-run equilibrium after any shock in the short run, and this convergence will take a short time of approximately 1.02 period.

The results regarding the acceleration in the inflation rate and growth rate are in the opposite direction with the long-run findings. These findings can be better understood when evaluated with the previous findings of Fontanez (2012) that foreign resource inflows due to financial market crises abroad had significant effects on the growth of the Kyrgyz economy. Domestic investments, which became relatively cheaper as a result of inflation, encouraged de-dollarization, while the wealth generated by the acceleration in growth was invested in foreign investment instruments. The policy that should be implemented under these conditions is to establish economic development with a holistic approach by implementing monetary and fiscal policies that ensure price stability in line with long-term targets. In the analysis, it is concluded that the increase in the ratio of exports to imports increases the level of dollarization in the short run. It was mentioned earlier that such a result may occur when the income from exports is not utilised domestically due to low confidence in the economy. The increase in exchange rate volatility was found to have a negative effect on the level of dollarization in the short run. This can be attributed to both low-cost domestic investment opportunities and the rising cost of foreign asset acquisition due to the rising exchange rate. However, there has been found no study investigating the relationship between the exchange rate and domestic investments in Kyrgyz Republic to assess the validity of the above inference. In the coefficient estimates of the effect of the rate of increase in interest rates on dollarization in the short run for the Kyrgyz Republic, the findings in the current period and the previous period differ. While the increase in the rate of increase in interest rates in the current period has a positive effect on the level of dollarization, the increase in the rate of increase in interest rates in the previous period has a negative effect on the level of dollarization. When evaluated together with other findings, this finding constitutes a unity. Under these circumstances, the primary objective of the policies to be implemented should be to establish confidence in market actors.

3.1.6. Malaysia

In the short-run coefficient estimates for Malaysia, statistically significant results were obtained for GDP growth rate, exchange rate volatility, exports to imports

ratio and economic freedom index variables. The coefficient of the error correction term was calculated as -1.04. According to this result, it can be said that the coefficients will converge to the long-run equilibrium after any shock in the short run, and this convergence will be rapid (Narayan & Smyth, 2006).

The analysis reveals that an increase in exchange rate volatility and an increase in the economic freedom index have the same directional effects on dollarization in the short run and the long run in Malaysia. In the short run, an increase in the rate of economic growth has a positive effect on the level of dollarization. When these findings are evaluated together, it can be said that the underlying reason is economic confidence, as stated by Umezaki (2019). However, for such an assessment, other conditions of the economy should also be taken into consideration. If there is a decline in foreign trade, especially in exports and investments, along with the above factors in the relevant economy, this finding will gain importance. Indeed, the analysis shows that an increase in the rate of increase in the ratio of exports to imports leads to a decrease in the level of dollarization. This finding supports the above-mentioned inference regarding the relationship between economic confidence and dollarization.

3.1.7. Mexico

In the short-run coefficient estimates for Mexico, exchange rate volatility, exports to imports ratio and economic freedom index variables were statistically significant at the first difference. The coefficient of the error correction term was calculated as -0.06. According to this result, it can be said that the coefficients converge to the long-run equilibrium approximately 16.7 periods after any shock in the short run.

The analysis reveals that an increase in exchange rate volatility and an increase in the ratio of exports to imports in Mexico have the same directional effects on dollarization in the short run and in the long run. These results will make sense when evaluated together with the findings related to both import dependence in production and the economic confidence environment (Carrasco & Tovar-García, 2021; Pacheco-López, 2005).

The results of the analysis show that a short-term increase in the economic freedom index has a negative impact on the level of dollarization. The factors that cause this situation to develop can be explained by the positive changes in the macroeconomic variables in the sub-components of the relevant index. Since these changes will play a role in establishing short-term economic confidence, they are likely to have triggered the domestic investment and asset acquisition process. As stated in the inference in the previous paragraph, these results will become more useful for policymakers when the impact of economic confidence on investments is taken into account. Under these circumstances, the policy that should be implemented would be to ensure economic growth and reduce vulnerability by implementing incentives that will transform capital flows into long-term investments in the domestic market in order to make economic stability permanent.

3.1.8. Peru

All of the short-run coefficient estimates for Peru are statistically significant. The coefficient of the error correction term is calculated as -1.26. According to this result, it can be said that the coefficients converge to the long-run equilibrium after any shock in the short run, and this convergence will not take a long time (Narayan & Smyth, 2006).

When the variables are evaluated individually, it is observed that the increase in the rate of increase in the interest rate, the rate of increase in the growth rate and the exchange rate volatility in the short term has a positive effect on dollarization, while the increase in the rate of increase in the inflation rate and the rate of increase in the ratio of imports to exports has a negative effect on dollarization. In general terms, when all these findings are evaluated together, it can be stated that confidence in economic policies cannot be established and production and investment mechanisms do not work in a way to serve the development process (Vasquez, 2019). The policies that should be implemented under current conditions cannot be expressed in a simple way. In this framework, all kinds of capital, natural resources and socio-economic opportunities of the country should

be evaluated together, where it is necessary to plan structural reforms in all areas of the economy.

3.1.9. Phillippines

In the short-run coefficient estimates for the Philippines, statistically significant results were obtained in the first difference of the inflation rate, exchange rate volatility and the ratio of exports to imports. The coefficient of the error correction term is approximately -0.13. According to this result, it can be said that the coefficients converge to the long-run equilibrium approximately 7.7 periods after any shock in the short run.

According to the results of the analysis, the short-term coefficient estimate of the first difference variable of the inflation rate is calculated as -0.74. In the literature, the findings in the study of FoEh et al. (2020) on the effects of inflation on investments and on remittance sending show that foreign assets decrease in the short run to meet financing needs. According to the results of the analysis, in the short run, the increase in exchange rate volatility and the increase in the ratio of exports to imports lead to an increase in dollarization, just like in the long run. Possible reasons for similar findings mentioned earlier for Mexico and Chile are also valid for the Philippines. The concentration of the Philippine economy in certain sectors causes the country's economy to be fragile (Monsod & Gochoco-Bautista, 2021). The policies that should be implemented in the current situation should primarily be designed to establish economic confidence and build a sustainable production structure.

3.1.10. Romania

In the short-run coefficient estimates for Romania, statistically significant results were obtained at different lags of interest rate, economic growth rate and economic freedom index variables. The coefficient of the error correction term was calculated as approximately -0.03. According to this result, it can be said that the coefficients converge to the long-run equilibrium approximately 33 periods after any shock in the short run.

In the coefficient estimates of the effect of the rate of increase in interest rates on dollarization in the short run for Romania, the increase in the rate of increase in interest rates in the current period positively affected the level of dollarization. This finding is opposite to the long-run findings. Also it will become more meaningful when evaluated together with the finding that the increase in the interest rate negatively affects domestic investments in studies in the literature specific to the Romanian economy (see, for example, Stoicuța, 2022). The reason for this situation can be shown as rising domestic investment costs in the short run. When the short-run relationship between the level of dollarization and other variables is evaluated, the findings that the increase in the GDP growth rate and the economic freedom index negatively affect the level of dollarization allow inferences that there is no confidence-based fragility in the Romanian economy.

When the current outlook is analysed in its entirety, it is clear that the focal point of monetary policy implementations should be the stability in macroeconomic indicators, both in the long run and in the short run.

3.1.11. Russia

In the short-run coefficient estimates for Russia, statistically significant results were obtained for different lags of the inflation rate, exchange rate volatility, export-import coverage ratio and economic freedom index variables. The coefficient of the error correction term is calculated as -0.66. According to this result, it can be said that the coefficients converge to the long-run equilibrium approximately 1.5 periods after any shock in the short run.

According to the results of the analyses, all coefficient estimates are found to be inverse to the long-run effect. Although there are studies with findings supporting the long-run effects (see, Izatov, 2015), the findings regarding the short-run contradict the studies in the literature (see, Piontkovsky, 2003; Ponomarenko, Solovyeva, & Vasilieva, 2011). As stated in Ono (2021), the dependence of the Russian economy on energy exports, together with inflation and exchange rate movements, may cause the depreciation of the Russian Ruble to cause a rapid

increase in exports. Nevertheless, the dynamics of the impact of this situation on dollarization need to be investigated in more detail in future studies.

3.1.12 Ukraine

In the short-run coefficient estimates for Ukraine, statistically significant results were obtained at different lags for all indicators except the economic freedom index variable. The coefficient of the error correction term was calculated as approximately -0.40. According to this result, it can be said that the coefficients converge to the long-run equilibrium approximately 2.5 periods after any shock in the short run.

In the short run, an increase in variables other than the inflation rate has a positive effect on dollarization. The important point here is that the findings on the GDP growth rate and the interest rate are in the opposite direction to the long-run findings. In the study of Mykytiuk et al. (2020), the importance of foreign direct investments for the Ukrainian economy was expressed. In this context, it was concluded that the increase in FDI will increase GDP growth. Based on this result, it is understood that the creation of a favourable environment for the increase in foreign investments will also bring unfavourable developments. A kind of dilemma emerges. When evaluated under the current conditions, the direction of the short-run coefficients for the Ukrainian economy becomes significant. As previously stated by Mykytiuk et al. (2020), economic stability and sustainable growth will be more possible if structural adjustments in the Ukrainian economy are made with a focus on getting rid of dependence on foreign investment. In the study by Puzikova (2023), as a result of the analysis of the Ukrainian economy and the situation of foreign investments, it was stated that most of the foreign investments coming to the country belong to Ukrainian and Russian citizens. This situation again shows us the low level of confidence of market actors in the Ukrainian economy. Given these circumstances, the short-term findings are coherent.

3.1.13. Uruguay

In the short-run coefficient estimates, statistically significant results were obtained for Uruguay in all indicators. The coefficient of the error correction term was

calculated as -1.20. According to this result, it can be said that the coefficients converge to the long-run equilibrium after any shock in the short run, but this convergence will be fluctuating (Narayan & Smyth, 2006).

According to the short-run coefficient estimation results for the inflation rate, an increase in the inflation rate in the short run leads to an increase in the level of dollarization, in line with the long-run findings. In the short run, an increase in the rate of increase in the interest rate and GDP growth rate have a positive effect on dollarization. Possible reasons for this result may be the inefficiency of monetary policy and the low level of confidence of economic agents in the market. In the study conducted by Bucacos (2015), the ineffectiveness of the monetary policy implemented in Uruguay in fostering economic growth was elucidated. In this context, the corresponding empirical findings on Uruguay in this thesis are in line with the existing empirical literature. However, the finding that increased exchange rate volatility has a negative effect on dollarization will be more meaningful when evaluated together with the negative effect of the ratio of exports to imports on dollarization. Many previous studies have investigated the effects of exchange rate on exports in developing countries (Genc & Artar, 2014; Mehtiyev, Magda, & Vasa, 2021). In this framework, the decrease in the level of dollarization in the short run with the increase in export revenues may become meaningful for the Uruguayan economy. However, Kristjanpoller R and Olson (2014) found that an increase in exports has a negative impact on GDP growth for Uruguay. Therefore, the findings of this thesis need to be further investigated in terms of the transition effects and dynamics of the variables.

3.1.14. Türkiye

In the short-run coefficient estimates for Türkiye, statistically significant results were obtained for all indicators. The coefficient of the error correction term was calculated as approximately -0.04. According to this result, it can be said that after any shock in the short run, the coefficients converge to the long-run equilibrium after approximately 25 periods.

In the short-run coefficient estimates, it is observed that the effects of interest rate, inflation rate and economic growth rate variables on dollarization are in line with the long-run dynamics. However, while the increase in the exchange rate volatility variable in the current period has a negative effect on the level of dollarization, the volatility in the previous period has a positive effect on dollarization. In addition, it is concluded that the effect of the ratio of exports to imports and the economic freedom index on dollarization in the short run is negative and in the opposite direction to its long run effect.

The fact that the variables that are in the same direction with the long-run coefficients are among the most basic macroeconomic variables and indicate the general health of the economy gives extremely important clues about the policies to be implemented. Based on the effects of these variables, the policies to be implemented in the fight against dollarization should be consistent with the general economic theory and the findings of dollarization studies. Considering its economic size, geopolitical location, natural resources, labour force potential and foreign trade opportunities, Türkiye has more advantages than most other developing countries.

According to the results of the analysis, an increase in exchange rate volatility in the current period has a negative effect on dollarization, while an increase in the previous period has a positive effect. Among the previous studies on dollarization in Türkiye, the research of Yılmaz (2022) has shown that there may be varying causal relations between exchange rate movements and dollarization depending on cyclical fluctuations. In this context, the findings of this thesis contribute to the inferences that both political developments and economic developments have an impact on dollarization. Unlike the long-run coefficients, the ratio of exports to imports, which has a negative effect on dollarization in the short run, can be evaluated together with the short-run effect of exchange rate volatility. Although exports are expected to increase and imports are expected to decrease with a rising exchange rate, the economic growth process may be damaged as revealed in the study of Karahan (2020). In the case of the dollarization phenomenon, this effect points to the difficulty in acquiring foreign assets. The negative short-term

effect of the growth rate also confirms this inference. The effect of increased economic freedom on dollarization can also be evaluated with the inferences of Yılmaz (2022)'s study. Because, periodic and cyclical changes in the subcomponents of the index may cause different effects. In order to understand which changes are responsible for these effects, the institutional factors affecting dollarization need to be examined in more detail for Türkiye.

In this section, the results of the analyses are analysed both in the long-run for the whole dataset and in the short-run for each country, and some policy implications are presented. The focus of the policy implications is on the long-run economic growth, overcoming the vulnerabilities of developing countries and ultimately achieving economic development. The policy recommendations presented may be instructive for policy makers as they evaluate countries with different structures separately.

CONCLUSION

In this thesis, macroeconomic variables determining the dollarization phenomenon, which is one of the important indicators of economic fragility in developing countries, are investigated. The aim of the thesis is to determine the policies that will help developing countries to overcome their dollarization-induced vulnerabilities in economic growth and development processes. In this context, the research started by evaluating the studies in the literature on the dollarization phenomenon. After the section on the formation and development of the theoretical framework in the field, common and different aspects in empirical applications were identified. In this way, the areas in the theory of dollarization that are considered to be in need of research have been identified and the thesis has proceeded with the aim of filling the gap in those areas.

The findings obtained as a result of the literature review have provided inferences on the areas in which this thesis can contribute to dollarization studies. In this context, this thesis has contributed to the literature from different perspectives. The first finding of the literature review is that the variables used as dollarization indicators, especially in asset dollarization, do not adequately reflect the asset acquisition opportunities of economic agents. Although previous studies have used different variables as dollarization indicators, the share of foreign currency deposits in total deposits or the share of foreign currency deposits in total money supply have been frequently used as dollarization indicators. The basis of dollarization studies is to examine the tendency towards foreign assets due to the loss of confidence in the domestic economy. In this context, it is thought that including all foreign assets in the evaluation will provide a better understanding of the dollarization issue. Based on this idea, in this thesis, all financial assets acquired by residents abroad are used as the dollarization indicator. In this way, it is aimed to increase the representativeness of the dollarization indicator.

In the relevant prior literature, the effects of different variables have been investigated in dollarization studies. These variables can be classified as macroeconomic, financial and institutional variables according to their

characteristics. However, there are no studies in the literature that prefer a holistic approach to the use of macroeconomic variables. Therefore, the explanatory variables used in this thesis are intended to reflect both financial and institutional dynamics as in the literature and basic macroeconomic dynamics. For this purpose, explanatory variables representing different aspects of the economic structure have been used. The variables used reflect monetary policy, economic stability, the foreign exchange market, international trade balances and the economic activity environment. In this way, while investigating the impact of basic macroeconomic variables on dollarization, it is also aimed to observe the effects of financial and institutional variables on dollarization.

Moreover, while most of the studies investigate the factors affecting dollarization in the long run, some studies have also analysed the short run. However, in this thesis, it is aimed to investigate both the long-run and short-run dynamics of the dollarization phenomenon.

For the empirical analysis, data for the years 2000-2021 of 23 different countries, mostly selected from developing countries, are used. The most important constraint in the formation of the data set was the availability of the suitable data for the empirical analysis. After the preliminary diagnostic analyses performed on the data, it was found that the Panel ARDL method was appropriate for econometric analysis.

As a result of the analysis, it was found that all variables have statistically significant effects on the level of dollarization in the long run. However, in the short run, according to the results of the analysis over the entire data set, the effect of none of the variables was found to be statistically significant. Since only the error correction mechanism is statistically significant and its sign is negative, it is concluded that convergence to the long-run equilibrium system will be realised after a shock in the short run. Again, based on the results of the analysis conducted for each country in the short run, it is seen that the dollarization level of countries can be affected by the same variables in different directions and/or magnitude.

As a result of the analysis, it was found that the error correction mechanism worked for 14 countries. In this respect, the analysis has enabled important conclusions to be drawn. The first of these is that the explanatory variables have different effects on the level of dollarization in countries with different levels of development. This conclusion was evaluated together with the studies revealing the economic dynamics of the countries. As a result, the validity of the conclusions drawn in this thesis for the relevant country has also been tried to be verified. Based on the results of the short-term analyses, the second contribution of this thesis to the literature is that the explanatory variables used point out the points that need to be investigated in more detail for the relevant countries. This is because the findings of the above-mentioned literature and the findings of this thesis do not support each other for all countries. Although there are some studies in the literature that support the findings of found in the thesis for some countries, it should be stated that economic dynamics should be investigated in more detail for some variables. The aim of the thesis is to point the possible reasons of the vulnerabilities arising from dollarization in the long run and short run in the economic growth and development processes of countries.

In future studies, investigating the macroeconomic variables determining foreign liabilities as well as foreign assets will help to better understand the dollarization phenomenon.

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APPENDIX 1. ETHICS COMMISSION FORM

	HACETTEPE ÜNİVERSİTESİ SOSYAL BİLİMLER ENSTİTÜSÜ	Doküman Kodu *Form No.*	FRM-DR-12
		Yayım Tarihi *Date of Pub.*	22.11.2023
	FRM-DR-12 **Doktora Tezi Etik Kurul Muafiyeti Formu** *Ethics Board Form for PhD Thesis*	Revizyon No *Rev. No.*	02
		Revizyon Tarihi *Rev.Date*	25.01.2024

HACETTEPE ÜNİVERSİTESİ
SOSYAL BİLİMLER ENSTİTÜSÜ
İKTİSAT ANABİLİM DALI BAŞKANLIĞINA

Tarih: 08/07/2024

Tez Başlığı DOLARİZASYONUN MAKROEKONOMİK BELİRLEYENLERİ

Yukarıda başlığı verilen tez çalışmam:

1. İnsan ve hayvan üzerinde deney niteliği taşımamaktadır.
2. Biyolojik materyal (kan, idrar vb. biyolojik sıvılar ve numuneler) kullanılmasını gerektirmemektedir.
3. Beden bütünlüğüne veya ruh sağlığına müdahale içermemektedir.
4. Anket, ölçek (test), mülakat, odak grup çalışması, gözlem, deney, görüşme gibi teknikler kullanılarak katılımcılardan veri toplanmasını gerektiren nitel ya da nicel yaklaşımlarla yürütülen araştırma niteliğinde değildir.
5. Diğer kişi ve kurumlardan temin edilen veri kullanımını (kitap, belge vs.) gerektirmektedir. Ancak bu kullanım, diğer kişi ve kurumların izin verdiği ölçüde Kişisel Bilgilerin Korunması Kanuna riayet edilerek gerçekleştirilecektir.

Hacettepe Üniversitesi Etik Kurullarının Yönergelerini inceledim ve bunlara göre çalışmamın yürütülebilmesi için herhangi bir Etik Kuruldan izin alınmasına gerek olmadığını; aksi durumda doğabilecek her türlü hukuki sorumluluğu kabul ettiğimi ve yukarıda vermiş olduğum bilgilerin doğru olduğunu beyan ederim.

Gereğini saygılarımla arz ederim.

Muhammed Emin KARAARSLAN

Öğrenci Bilgileri			
	Ad-Soyad	Muhammed Emin Karaarslan	
	Öğrenci No	N19142061	
	Enstitü Anabilim Dalı	İktisat	
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	Statüsü	**Doktora** ☒	**Lisans Derecesi ile (Bütünleşik) Dr** ☐

DANIŞMAN ONAYI

UYGUNDUR.
Prof. Dr. Özge KANDEMİR KOCAASLAN

	HACETTEPE ÜNİVERSİTESİ **SOSYAL BİLİMLER ENSTİTÜSÜ**	Doküman Kodu *Form No.*	FRM-DR-12
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	FRM-DR-12 **Doktora Tezi Etik Kurul Muafiyeti Formu** *Ethics Board Form for PhD Thesis*	Revizyon No *Rev. No.*	02
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HACETTEPE UNIVERSITY
GRADUATE SCHOOL OF SOCIAL SCIENCES
DEPARTMENT OF ECONOMICS

Date: 08/07/2024

ThesisTitle (In English): MACROECONOMIC DETERMINANTS OF DOLLARIZATION

My thesis work with the title given above:

1. Does not perform experimentation on people or animals.
2. Does not necessitate the use of biological material (blood, urine, biological fluids and samples, etc.).
3. Does not involve any interference of the body's integrity.
4. Is not a research conducted with qualitative or quantitative approaches that require data collection from the participants by using techniques such as survey, scale (test), interview, focus group work, observation, experiment, interview.
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I respectfully submit this for approval.

Muhammed Emin KARAARSLAN

Student Information				
	Name-Surname	Muhammed Emin Karaarslan		
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	Programme	Economics PhD		
	Status	**PhD**	☒	**Combined MA/MSc-PhD** ☐

SUPERVISOR'S APPROVAL

APPROVED
Prof. Dr. Özge KANDEMİR KOCAASLAN

APPENDIX 2. ORIGINALITY REPORT

	HACETTEPE ÜNİVERSİTESİ **SOSYAL BİLİMLER ENSTİTÜSÜ**	Doküman Kodu *Form No.*	FRM-DR-21
		Yayım Tarihi *Date of Pub.*	04.01.2023
	FRM-DR-21 **Doktora Tezi Orijinallik Raporu** *PhD Thesis Dissertation Originality Report*	Revizyon No *Rev. No.*	02
		Revizyon Tarihi *Rev.Date*	25.01.2024

HACETTEPE ÜNİVERSİTESİ
SOSYAL BİLİMLER ENSTİTÜSÜ
İKTİSAT ANABİLİM DALI BAŞKANLIĞINA

Tarih: 08/07/2024

Tez Başlığı: DOLARİZASYONUN MAKROEKONOMİK BELİRLEYENLERİ

Yukarıda başlığı verilen tezimin a) Kapak sayfası, b) Giriş, c) Ana bölümler ve d) Sonuç kısımlarından oluşan toplam 104 sayfalık kısmına ilişkin, 03/07/2024 tarihinde şahsım tarafından Turnitin adlı intihal tespit programından aşağıda işaretlenmiş filtrelemeler uygulanarak alınmış olan orijinallik raporuna göre, tezimin benzerlik oranı % 23 'tür.

Uygulanan filtrelemeler**:

1. ☒ Kabul/Onay ve Bildirim sayfaları hariç
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5. ☒ 5 kelimeden daha az örtüşme içeren metin kısımları hariç

Hacettepe Üniversitesi Sosyal Bilimler Enstitüsü Tez Çalışması Orijinallik Raporu Alınması ve Kullanılması Uygulama Esasları'nı inceledim ve bu Uygulama Esasları'nda belirtilen azami benzerlik oranlarına göre tezimin herhangi bir intihal içermediğini; aksinin tespit edileceği muhtemel durumlarda doğabilecek her türlü hukuki sorumluluğu kabul ettiğimi ve yukarıda vermiş olduğum bilgilerin doğru olduğunu beyan ederim.

Gereğini saygılarımla arz ederim.

Muhammed Emin KARAARSLAN

Öğrenci Bilgileri			
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	Öğrenci No	N19142061	
	Enstitü Anabilim Dalı	İktisat	
	Programı	İktisat (İng.) Doktora	
	Statüsü	**Doktora** ☒	**Lisans Derecesi ile (Bütünleşik) Dr** ☐

DANIŞMAN ONAYI

UYGUNDUR.
Prof. Dr. Özge KANDEMİR KOCAASLAN

*Tez **Almanca** veya **Fransızca** yazılıyor ise bu kısımda tez başlığı **Tez Yazım Dilinde** yazılmalıdır.
**Hacettepe Üniversitesi Sosyal Bilimler Enstitüsü Tez Çalışması Orjinallik Raporu Alınması ve Kullanılması Uygulama Esasları İkinci bölüm madde (4)/3'te de belirtildiği üzere: Kaynakça hariç, Alıntılar hariç/dahil, 5 kelimeden daha az örtüşme içeren metin kısımları hariç (Limit match size to 5 words) filtreleme yapılmalıdır.

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		Yayım Tarihi *Date of Pub.*	04.01.2023
	FRM-DR-21 **Doktora Tezi Orijinallik Raporu** *PhD Thesis Dissertation Originality Report*	Revizyon No *Rev. No.*	02
		Revizyon Tarihi *Rev.Date*	25.01.2024

TO HACETTEPE UNIVERSITY
GRADUATE SCHOOL OF SOCIAL SCIENCES
DEPARTMENT OF ECONOMICS

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Thesis Title (In English): MACROECONOMIC DETERMINANTS OF DOLLARIZATION

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I respectfully submit this for approval.

Muhammed Emin KARAARSLAN

Student Information					
	Name-Surname	Muhammed Emin Karaarslan			
	Student Number	N19142061			
	Department	Economics			
	Programme	Economics PhD			
	Status	**PhD**	☒	**Combined MA/MSc-PhD**	☐

SUPERVISOR'S APPROVAL

APPROVED
Prof. Dr. Özge KANDEMİR KOCAASLAN

**As mentioned in the second part [article (4)/3]of the Thesis Dissertation Originality Report's Codes of Practice of Hacettepe University Graduate School of Social Sciences, filtering should be done as following: excluding refence, quotation excluded/included, Match size up to 5 words excluded.