



REPUBLIC OF TURKEY
ADANA ALPARSLAN TÜRKESİ SCIENCE AND TECHNOLOGY
UNIVERSITY
THE INSTITUTE OF GRADUATE SCHOOL
DEPARTMENT OF INTERNATIONAL TRADE AND FINANCE
INTERNATIONAL BUSINESS PROGRAM

THE EFFECT OF EXCHANGE RATE ON FIRM PERFORMANCE:
EVIDENCE FROM TURKISH LISTED FIRMS

Berkay CANATAR
MASTER'S THESIS



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Advisor: Assoc. Prof. Dr. Bahadır ERGUN
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ADANA 2021

THESIS APPROVAL PAGE

DECLARATION

I hereby declare that this master's thesis titled as "THE EFFECT OF EXCHANGE RATE ON FIRM PERFORMANCE: EVINDENCE FROM TURKISH LISTED FIRMS" has been written by myself in accordance with the academic rules and ethical conduct. I also declare that all materials benefited in this thesis consist of the mentioned resources in the reference list. I verify all these with my honor.

June 2021

Berkay CANATAR

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ABSTRACT**THE EFFECT OF EXCHANGE RATE ON FIRM PERFORMANCE:
EVIDENCE FROM TURKISH LISTED FIRMS****Berkay CANATAR****Master Thesis, Department of International Trade and Finance****Advisor: Assoc. Prof. Dr. Bahadır ERGUN****June 2021, 60 pages**

Firm performance is a subject that researchers have been working on for many years. The factors which determine the firm performance have been one of the issues emphasized in the studies. The exchange rate is a price. In other words, the exchange rate is the price of one currency in terms of another currency. A country's unstable currency leads to negative economic activities in that country. While the exchange rate is determined on the basis of international trade in goods and services, money markets became more effective in determining exchange rates as a result of the rapid development of technology. In this context, one of the most critical indicators in economy is the foreign exchange rate. This study aims to explain the effect of exchange rate on the financial performance of textile firms. In this context, 22 Turkish textile firms were selected for the period between 2005 and 2019. The Least Squares Dummy Variable Model was employed for analyses. In the study, Return on Asset (*roa*) was used as the dependent variable and the Real Effective Exchange Rate (*reer*) as the main independent variable. In addition, *age*, *size*, and *lev* were added as control variables in the study. Return on equity variable was also used to test the robustness of the main model. In conclusion, it was found that the change in the real exchange rate affected the *roa* and *roe* negatively and this effect was statistically significant.

Keywords: Exchange rates, Financial Performance, Listed Turkish textile firms

ÖZET**THE EFFECT OF EXCHANGE RATE ON FIRM PERFORMANCE:
EVIDENCE FROM TURKISH LISTED FIRMS****Berkay CANATAR****Yüksek Lisans Tezi, Uluslararası Ticaret ve Finans Anabilim Dalı****Danışman: Doç. Dr. Bahadır ERGUN****Haziran 2021, 60 sayfa**

Firma performansı uzun yıllardır araştırmacıların çalıştığı bir konu olmuştur. Firma performansını belirleyen faktörlerin neler olduğu çalışmalarda üzerinde durulan konulardan olmuştur. Döviz kuru bir fiyattır. Başka bir deyişle, döviz kuru, bir para biriminin başka bir para birimi cinsinden fiyatıdır. Bir ülkenin para biriminin istikrarsız olması, o ülkede olumsuz ekonomik faaliyetlere yol açar. Döviz kuru uluslararası mal ve hizmet ticareti esas alınarak belirlenirken, teknolojinin hızla gelişmesi ile para piyasaları döviz kurlarının belirlenmesinde daha etkili hale gelmiştir. Bu bağlamda ekonomideki en kritik göstergelerden biri döviz kurudur. Bu çalışma, döviz kurunun tekstil firmalarının finansal performansı üzerindeki etkisini açıklamayı amaçlamaktadır. Bu kapsamda 2005-2019 dönemi için 22 Türk tekstil firması seçilmiştir. Tahmin yöntemi olarak Gölge Değişkenli En Küçük Kareler Yöntemi kullanılmıştır. Çalışmada bağımlı değişken olarak aktif karlılığı (*roa*), ana bağımsız değişken olarak reel efektif döviz kuru kullanılmıştır. Ayrıca çalışmada yaş, büyüklük ve kaldıraç değişkenleri kontrol değişkenleri olarak eklenmiştir. Ana modelin sağlamlığının test edilmesi amacıyla özkaynak karlılığı (*roe*) değişkeninden de faydalanılmıştır. Sonuç olarak, reel döviz kurundaki değişimin *roa* ve *roe*'yi olumsuz etkilediği ve bu etkinin istatistiksel olarak anlamlı olduğu bulunmuştur.

Anahtar Kelimeler: Döviz kurları, Finansal Performans, Borsaya kote Türk firmaları

FOREWORD

During the preparation of the master study entitled “The Effect of Exchange Rate in Firm Performance Evidence from Turkish Listed Firms”, I would like to thank to my supervisor Assoc. Prof. Dr. Bahadır ERGÜN. I am also grateful to my dear family, who always stood behind me, supported all my decisions, and prayed for me constantly; to my mother Songül Canatar; to my father Ahmet Canatar; to my brother Burkay Canatar; my fiancée Gizem Döngel. I am also grateful to my dear managers SMMM Yusuf Güven, SMMM Ahmet Bayraktar, and YMM Secattin Maraşlıoğlu.

LIST OF CONTENTS

THESIS APPROVAL PAGE	iii
DECLARATION	iv
ABSTRACT	v
ÖZET.....	vi
FOREWORD	vii
LIST OF CONTENSTS	viii
LIST OF ABBREVIATIONS.....	xii
LIST OF TABLES	xiii
LIST OF FIGURES	xiv
INTRODUCTION	1



CHAPTER 1

EXCHANGE RATES

1.1. Types of Exchange Rates	3
1.1.1. Reel and Nominal Exchange Rate	3
1.1.2. Spot Rate	4
1.1.3. Cross Rate	4
1.1.4. Forward Rate	4
1.2. Exchange Rate Systems	5
1.2.1. Historical Development of The Exchange Rate System..	5
1.2.1.1. The Dual Metal System.....	6
1.2.1.2. Gold Standart System	6
1.2.1.3. Bretton Woods System (IMF System).....	8
1.2.2. The Exchange Rate Systems Classification	9

1.2.2.1. Fixed Exchange Rate System	9
1.2.2.1.1. Advantage of Fixed Exchange Rate.....	9
1.2.2.1.2. Disadvantage of Fixed Exchange Rate	10
1.2.2.2. Floating Exchange Rate System.....	10
1.2.2.2.1. Advantage of Floating Exchange Rate.....	11
1.2.2.2.2. Disadvantage of Floating Exchange Rate	11
1.2.2.2.3. Hybrid Exchange Rate System.....	12
1.2.2.3.1. Managed Floating.....	13
1.2.2.3.2. Wide Margin Parities.....	13
1.2.2.3.3. Crawling Peg.....	13
1.2.2.3.4. Currency Areas.....	13
1.2.2.3.5. Money Basket.....	13
1.3. Exchange Rate System In Turkey	14
1.3.1. Period Before 1980	14
1.3.2. Period Between 1980-1988	14
1.3.3. Period Between 1989-1993	15
1.3.4. Period After 1994	15
1.4. Currency Markets	17
1.4.1. The Transactins Types in Currency Markets.....	17
1.4.1.1. Spot Transactions	17
1.4.1.2. Forward Transactions	18
1.4.1.3. Swap Transactions	18
1.5. The Factors That Effect Exchange Rates	18
1.5.1. Interest Rate	19
1.5.2. Inflation Rate	19
1.5.3. Income Level	20

1.5.4. Balance of Payments	20
1.5.5. Economic Growth	21
1.5.6. Market Expectation	22
1.5.7. Other Factors.....	22
1.6. Effect of Exchange Rates On Turkish Firms	23
1.6.1. Economic Exposure	23
1.6.2. Accounting Exposure.....	23
1.6.3. Transaction Exposure	26

CHAPTER 2

FIRM PERFORMANCE

2.1. Definition of Firm Performance	27
2.2. Firm Performance Indicators.....	27
2.2.1. Share of Earning	27
2.2.2 Return On Assets (<i>roa</i>)	28
2.2.3. Return On Capital Employed (ROCE)	29
2.2.4. Gross Real Operating Profit (GROP)	29
2.2.5. Price/Earning Ratio.....	29
2.2.6. Market To Book Value Ratio	30
2.2.7. Return on Equity (<i>roe</i>)	30

CHAPTER 3

LITARATURE REVIEW

3.1.Literature Review on The Effect of Exchange Rate in Firm Performance.....	31
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CHAPTER 4
THE EFFECT OF EXCHANGE RATE ON FIRM PERFORMANCE: EVINDENCE
FROM TURKISH LISTED FIRMS

3.1. Research Objective	42
3.2. Research Data Set.....	42
3.3. Research Method	45
3.4. Research Finding	46
 CONCLUSION	 49
REFERENCES	51

LIST OF ABBREVIATIONS

BW	:	Bretton Woods
WED	:	World Economic Depression
USA	:	United States
IMF	:	International Monetary Fund
MNC	:	Multinational Companies
ECU	:	European Currency
SDR	:	Special Drawing
ISE	:	Istanbul Stock Exchange
EU	:	European Union
CRSP	:	Center for Research in Security Prices
ROCE	:	Return on Net Capital Employed
<i>reer</i>	:	Real Effective Exchange Rate
BSE	:	Bombay Stock Exchange
<i>roa</i>	:	Return on Assets
SY	:	Stock Yield
GROP	:	Gross Real Operating Profit
<i>roe</i>	:	Return on Equity

LIST OF TABLES

Table 1.1. Comparison of Accounting and Economic Exposure.....	26
Table 3.1. Literature Review	39
Table 4.1. The Textile Firms Listed on BIST	44
Table 4.2. Variables	44
Table 4.3. Descriptive Statistics	45
Table 4.4. Correlation Test Results.....	45
Table 4.5. Result of the Main Models	48
Table 4.6. Robustness Check.....	50

LIST OF FIGURES

Figure 1. Factors Affecting The Accurrence of The Economic Exposure.....	24
Figure 2. The Advantages of Accounting Exposure	25
Figure 3. The Disadvantages of Accounting Exposure.....	26



INTRODUCTION

Exchange rates are one of the most important indicators that affect economic activities in all markets. An unstable currency of a country leads to negative economic activities in that country. Exchange rates depended on the fixed exchange rate system from 1945 until the collapse of the Bretton Woods system in 1973. In 1973, with the collapse of the Bretton Woods system, a floating exchange rate system was introduced. This change in exchange rates affected all companies.

The currency markets played an important role in the development of world trade. Currency markets have important functions such as obtaining credit and preventing exchange rate risk. Exchange management is an important factor for firms. because the change in the exchange rate affects the performance of the firm as well as the macro economies. In this context, firms have the potential to lose or profit as a result of their international business activities. Losses arising from currency risk increase the costs of firms. Hence, increasing costs can negatively affect the prices of products. Firms that manage currency risk well are more successful. This situation affects the competitiveness of firms.

Depreciation in the local currency is expected to have a positive effect on the exporter firm's performance and a negative effect on the importing firm. because, in the floating exchange rate regime, the competitiveness of the exporting firm decreases as the currency depreciates. In the case of appreciation, it increases.

The textile sector has a very important place in our country's economy. The stable growth of the textile industry will contribute to the successful progress of our country in the economy. It makes significant contributions to the national economy in terms of employment and exports. And it is considered as the starting sector for countries that adopt an export-led growth. Accordingly, the textile sector, which is an important export sector of Turkey, was chosen. Besides, this sector has been preferred due to many features such as employment volume, share in total exports, and contribution to national income.

How firms are affected by changes in exchange rates is an important issue. The purpose of the study is to measure the effect of change in the exchange rate in firm performance. In this study, in section one, the definition and types of exchange rate, the exchange rate system and historical development, and the theoretical structure of foreign exchange rate are given. Followed by the factors affecting the change of the exchange rate and their reasons.

In the second section of the study, firm performance is examined. Factors affecting firm performance are discussed in detail.

In the third section, the data of 22 companies traded in Borsa Istanbul between 2005-2019, analyzed using the Least Squares Dummy Variables Model analysis method and findings are evaluated.

CHAPTER 1

EXCHANGE RATES

The exchange rate is a price (Copeland, 2000, p.3). In other words, the exchange rate is the price of one currency in terms of another currency. Every country has its own currency for international trade. Countries direct their international commercial activities with the exchange rate. Therefore, some problems appear in the conversion of these currencies to each other. In this context, exchange rates are the most important indicator that effect economic activities in all markets. The foreign currency of all countries in the form of banknotes is called effective; whereas. all kinds of account documents that enable payment through foreign currency, including effective, is called foreign currency (Karluk, 2002, p.338).

In this section, types of exchange rates, exchange rate systems that have been used around the world, exchange rate systems used in Turkey, currency markets, and the factors that may affect the exchange rate are explained.

1.1. Types of Exchange Rate

Exchange rates can be classified as nominal, real, spot, cross, and forward. To comprehend the concept of exchange rates, it is vital to understand the differences between the types of exchange rates.

1.1.1. Real and Nominal Exchange Rate

Exchange rates can be classified as real or nominal. The price of foreign currency in terms of the national currency is the nominal exchange rate. The nominal exchange rate is the rate at which an individual can trade one country's currency for another's. Since nominal exchange rates are not regulated according to inflation rates, it does not show the real exchange rates. The nominal exchange rate is not always an appropriate indicator of the country's international competitiveness. Therefore, it is necessary to know the real exchange rates. The nominal exchange rate cleared from the inflation rate is called the real exchange rate (Seyidoğlu, 1994, p.222).

According to the International Monetary Fund (IMF), the real exchange rate is an important indicator of international price competition (Aktaş, 2010, p.115).

1.1.2. Spot Exchange Rates

The spot rate is usually a price within one day and does not exceed two days (Ordu, 2013, p.7-8). In spot transactions, the entry of foreign currency into the accounts of both parties is two workdays after the date of this agreement. The reason for the effective date being two business days later is to provide ease of payment to the parties. This period provides convenience to enable the readying of the foreign currency to be transferred (Ordu, 2013, p.7-8). Likewise, there is no indication of the change in the capacity of the domestic currency and the costs incurred to obtain foreign goods and services (Çufadar, 2010, p.10).

1.1.3. Cross Exchange Rates

The US dollar carries out the duty as the “standard of value” in the currency markets. Therefore, the exchange rates in international markets are usually quoted in US dollars. Banks and other financial institutions dealing with foreign exchange trading in almost every country are subject to the exchange rate between the US dollar and their national currency in determining the exchange rates. The expression of exchange rates in US dollars in different countries in this way provides great convenience in currency calculations. Exchange rates in each country's currency market are expressed in the form of the exchange rate between the US dollar and the national currency. For this reason, the exchange rate among two national currencies other than the dollar can be easily calculated, and this process is called cross currency (Seyidoğlu, 1997, p.85).

1.1.4. Forward Exchange Rates

The foreign exchange price, which is the subject of purchase and sale to pay at a definite price at a future date, is called the forward rate (Seyidoğlu, 1997, p.77). There are usually 30, 60, or 90 days between processing and delivery (Çürük, 2015, p.14).

The forward rate is usually given in comparison with the current rates. Sometimes the value of the currency in the forward market can be higher than the current market to the domestic currency. In this case the forward rate has made a foreign currency premium and, therefore, the domestic currency depreciates.

But, if the forward value of the currency is less than the spot market, it means that the currency has been degressive and this is called forward degression. To sum up, the domestic currency gains value (Muratov, 2008, p.25).

To sum up, the forward rate is the purchase and sale of foreign currency, provided it is delivered within a certain term.

1.2. Exchange Rate Systems

Systems used in determining exchange rates are called exchange rate systems. Generally, currency systems cover a wide range from the floating exchange rate system dictated entirely by market conditions to the fixed exchange rate system where central banks are the determining actors (Ordu, 2013, p. 18). Exchange rate systems are divided into two as a fixed exchange rate system and a free variable exchange system. Then, between these two is a mixed system (Muratov, 2008, p.25).

1.2.1. Historical Development of the Exchange Rate System

Due to the increasing intensity of international trade relations, international monetary crises have reached important dimensions from time to time and each crisis has caused a new monetary system to emerge (Dinler, 1995, p.51). In the older forms of payment, the first system was the payment system based on the dual metal system. As a result of the shortening of the gold production period, the dual metal system was abandoned. After the dual metal system, the gold standard system was applied. The gold standard system continued until the middle of the First World War (Duran, 2019, p.30). This system, which was applied for 44 years, was destroyed during the First World War and the establishment of a new system, after the Second World War, brought the search for a new system between these two periods (Doğukanlı, 2012, p.23).

At an international meeting held in the town of Bretton Woods (BW), USA, the gold standard system was abandoned and the BW system was implemented (Duran, 2019, p.30). This system was implemented between the years of 1944 and 1973 (Seyidoğlu, 1994, p.642). The purpose of establishing the BW system was the need for a specific national monetary system after 1944 due to the war (Karayazı, 2004, p.8).

1.2.1.1. The Dual Metal System

In the dual metal system, the countries that wanted to buy and sell goods and services attached the value of the national currency to gold and silver. France, which had the strongest economy in the first half of the 19th century, ensured the stability of the dual metal system until 1870 together with the USA. Besides these two countries, it has been implemented in many countries including China, India, Germany, and the Netherlands (Çağlar, 2003, p.25). The dual metal system promotes international trade as it provides stability at the price level. Changing the value of gold and silver over time caused instability. One of the laws explaining the operation of the dual metal system is called the Gresham law. This law showed that the system causes instability. The Gresham law can be explained as the withdrawal of good money from the market and so, bad money dominates the market. The increase in silver production in the world also created an increase in stocks. For, as silver was used in payments, gold was withdrawn from the market over time. Due to instability in the dual metal system, the gold production process was abandoned in the dual metal system. The presence of gold in California (1857), Australia (1851), and South Africa (1885) and the formulation of the cyanide process in 1887 were factors that accelerated the gold production process (Çiçek, 2006, p.35).

1.2.1.2. Gold Standard System

The gold standard formed the basis of the international monetary system in the period from the 1880s until the First World War. In the years when the economy grew rapidly, world trade developed. Consequently, the use of gold as an international payment instrument increased in all major commercial countries. Exchange rates were determined according to gold (Seyidoğlu, 1994, p.642).

According to the gold standard system, the value of each country's currency was defined in terms of a certain weight of pure gold, and the gold trade was released (Doğukanlı, 2012, p.25). In the 19th century, the gold standard lived “its golden age”. However, with the First World War, which started in 1914 and lasted until 1918, the application of the gold standard lost its importance. The main reason was the increase of war expenses pushed the countries away from this system and encouraged them to let their national currency fluctuate (Dinler, 1995, p.492-493).

Then, The United States returned to the gold standard system through the old exchange rate in 1919. England tied its money to gold in 1925. In the end, almost all countries returned to the gold standard system by 1928 (Seyidoğlu, 1995, p.493).

After the First World War, governments assigned new missions to themselves. These were a set of tasks, such as reducing the unemployment and inflation caused by the war, creating fair income distribution, and contributing to the economic development of countries that have been heavily damaged by the war. But the second gold standard system attempt was not successful (Dinler, 1995, p.493).

In 1928, the French government informed the world that it would no longer accept foreign currency and would only accept gold. This decision of the French government meant the gold standard had come to an end (Doğukanlı, 2012, p.25-26). In 1929 an economic crisis called the great depression, or the world economic crisis, occurred. This crisis started with panic in the capital market (Dinler, 1995, p.494). Although the world economic crisis was particularly central to North America and Europe, developed countries in the industry sector also had devastating effects (Parker, 2017, p.20-22). With the decrease in total demand, production decreased and unemployment increased. With the crisis, demand for gold increased and gold prices increased in parallel, while the gold standard system experienced a collapse. While restrictions on foreign trade had become widespread, governments started to take measures to reduce imports and increase exports with a beggar-thy-neighbor policy (Dinler, 1995, p.494). The emergence of the 1929 World Economic Depression (WED) accelerated the collapse of the gold standard (Çağlar, 2003, p.24). The governments of the USA, Britain, Germany, and France entered into different practices with the collapse of the gold standard. Different blocks of money were created (Dinler, 1995, p.494-495). There was complete chaos in the relations and economies between the countries in the period between the first and second world wars. The gold standard system was destroyed and no system was created in its place (Çağlar, 2003: p.24). Countries needed a system of exchange rates that would provide a trade advantage and restrict inflationary policies. These needs played an essential role in the creation of the BW system (Doğukanlı, 2012, p.26). Countries gathered in BW, USA to create a new monetary system (Ersöz, 2006, p.8).

1.2.1.3. Bretton Woods System (IMF System)

After the Second World War, representatives of 44 countries convened in the USA state of New Hampshire in July 1944 (Çağlar, 2003, p.24). When this meeting was held, memories of the economic crisis that deeply affected the world were still being felt (Isaac, 2018, p.111-112). The USA economy was better off than other countries. The BW system, which had made the USA the Central Banker of the World, was accepted in line with the demands of the USA (Doğukanlı, 2012, p.27). In this meeting, it was decided to apply an adjustable fixed exchange rate system in 1946. Besides this, it was also decided to establish an International Monetary Fund (IMF) and a World Bank (Çiçek, 2016, p.36-37). The money system that emerged from this meeting was put into practice between 1944 and 1973, and was called the “BW system”, as well as the IMF system. The official value of the money of the member countries participating in the agreement against the US dollar was determined and recorded in the IMF with the BW system. The countries participating in the agreement would be able to change the exchange rates of their national currency in dollar terms, up and down, provided that they did not exceed 1%. This system was accepted and allowed countries to devalue its currency. If a country has a balance of payments deficit, it will be able to get a loan from the IMF after using its foreign exchange reserve. The BW system contributed to world trade by achieving success until the 1950s (Dinler, 1995, p.495). In the mid-1950s, the ratio of the dollar supply outside the USA to the total USA gold reserves increased steadily. In 1959, while the gold reserves of the USA equaled the total dollar liabilities, the total gold reserves of other countries exceeded those of America. In 1964, the USA’s official dollar liabilities held by the monetary institutions of foreign countries exceeded the US dollar stock (Bordo, 1963, p.25).

International relations, which are one of the main objectives of the BW system, had gradually decreased. Some countries had even begun to turn their dollar reserves into gold and had taken steps directly against the BW system. For example, since 1965, the French President, Charles de Gaulle, had turned their US dollar reserves into gold reserves, leaving the USA in a difficult situation (Eichengreen, 1998, p.35). Also, the capacity of the USA to lead had gradually eroded due to reasons such as the Vietnam War (Cömert, H. 2016, p.124).

The convertibility, under the US dollar, was abandoned and the system collapsed on 15 August 1973, (Hacıeviyegil, 2015, p.31).

1.2.2. The Exchange Rate Systems Classification

The exchange rate systems can be classed as the fixed, floating, and hybrid exchange rate systems. In this section, the advantages, disadvantages, and the exchange rate systems will be discussed.

1.2.2.1. Fixed Exchange Rate System

The fixed exchange rate system is defined as the exchange rate system where a central bank will operate in order to protect the value of its money (Parasız, 1993, p.410).

Exchange rates are kept steady and fluctuated within very regional limits in the fixed exchange rate system (Ordu, 2013, p.18). The stability of exchange rates is ensured by the intervention of the Central Bank in the foreign exchange market as a buyer and seller (Özdemir and Şahinbeyoğlu, 2000, p.3). A fixed exchange rate system requires more central bank intervention to keep the value of the currency within these rigid limits. Mostly, the central bank has to overcome the imbalance between supply and demand terms to maintain the foreign currency's exchange value. As an activity of the central bank, the decrease of the value of the currency in the fixed exchange rate system is expressed as devaluation, and the increase is expressed as revaluation (Doğukanlı, 2012, p.171).

1.2.2.1.1. Advantages of Fixed Exchange Rate System

The fixed exchange rate system reduces the exchange rate risk. because it supplies knowledge with regard to the expected exchange rate. This is the biggest advantage of the fixed exchange rate system. Therefore, foreign investments and international transactions may rise. Due to the decrease in uncertainties, it facilitates not only the arrival of foreign investments in the country. but also, the entry of domestic economic units into international markets. Also, it decreases both the interest rates for the country and the risk premium of external borrowing.

The main reason for the higher discipline in the fixed exchange rate system is that an undisciplined fiscal policy leads to the decreasing of reserves. Also, the fixed

exchange rate system, which takes an active role in ensuring stability, is more suitable for keeping domestic inflation rates at a certain degree (Ordu, 2013, p. 20).

1.2.2.1.2. Disadvantages of Fixed Exchange Rate System

One of the disadvantages of the fixed exchange rate is that there is a risk of the value of a particular currency being changed by the government. A fixed exchange rate system can cause more fragile economic provisions in countries where multinational companies (MNC) operate than in others (Doğukanlı, 2012, p.172). This is the second disadvantage (Parasız, 1993, p.412). because, since the fixed exchange rate facilitates borrowing from overseas, it may delay some public and tax reforms. Thus, speculative attacks can be caused by the fixed exchange rate system. The basis symptoms of speculative attacks can be classified as debt expansion, decline in growth rate, and high inflation (Ordu, 2013, p. 21). Also, the fixed exchange rate system can lead to imbalances in international trade. It has a preventive effect on the more efficient use of resources. For example, if the exchange rate is high, the country will export more. Because the Turkish lira decreased against the currencies of other countries, the products of Turkish firms become cheaper (Parasız, 1993, p.413).

Finally, if the exchange rates are fixed at one-point, a shortage or surplus will occur in the balance of payments. If inflation constantly increases, real money becomes overvalued. Export's decrease, imports increase. This situation has a negative effect on the external balance (Ordu, 2013, p. 25).

1.2.2.2. Floating Exchange Rate System

Chicago School economists advocate the floating exchange rate system. especially M. Friedman, E. Sohmen, and L. Yeager (Güran; 1987, p.83).

There is no government intervention in the floating exchange rate system. Therefore, foreign exchange values are determined by free market rules. While the fixed exchange rate system does not allow freedom for exchange rate movements, the floating exchange rate system supplies that flexibility.

The floating exchange rate system is arranged with regard to the demand and supply conditions of the currency. The floating exchange rate system is also known as a free-float (Doğukanlı, 2012, p.173).

1.2.2.2.1. Advantage of the Floating Exchange Rate System

One of the advantages for a country using the free-floating exchange rate system is that it is much more protected than the inflation of other countries (Doğukanlı, 2012, p.173.) The most important advantage is that it is resistant to shocks from the real and external sectors. Exchange rates quickly and precisely adapt to new situations and, especially, unexpected shocks in an effectively functioning foreign exchange market. Some other advantages of the floating exchange rate system are that there is no problem in terms of the balance of payments, and the lack of competition due to the appreciation of the exchange rate in foreign trade. In addition, exchange rate stability is not targeted in the exchange rate system. Therefore, the central bank has the chance to implement a more effective monetary policy (Gök, 2006, p.133).

Monetary policies are considered to be more effective in the floating exchange rate system. because, anti-inflation policy is followed in order to improve foreign trade. This will cause the local currency to appreciate. This will reduce the domestic inflationary pressure by causing an increase in imports and a decrease in exports (Ordu, 2013, p. 26). Also, a substantial property of the floating exchange rate system is that it minimizes the need for foreign reserves. Therefore, countries avoid the necessity of tying scarce resources to foreign reserves (İyibozkurt, 1995, p.302).

1.2.2.2.2. Disadvantages of the Floating Exchange Rate System

Inflation in other countries is imported entirely from exchange rates in the floating exchange rate system. Also, depending on the floating exchange rate, the risk perception of both the risk and economic units increases. Thus, risk premiums increase and there may be a decrease in both financial transactions and commercial (Gök, 2006, p.134).

The disadvantages of the floating exchange rate system can be classified as elasticity pessimism, out of order exchange market, and careless fiscal policy as follows:

- **Elasticity Pessimism:** The traditional approach is one which accepts that devaluation can make a country's exports cheaper by changing prices. Also, the traditional approach thinks that it can make the export supply even more profitable. As a result, it is the approach that accepts that the domestic supply will expand. But this thinking may not apply to developing countries (İyibozkurt, 1995, p. 303).
- **Out of Order Exchange Market:** The floating exchange rate system does not promote foreign investment and trade. This aspect is one of its major disadvantages. The Floating exchange rate causes price and income uncertainties. Therefore, The Floating exchange rate brings additional risk to financial risks. The occurrence of economic recession can cause hot money movements and a flight of capital. These reasons lower the exchange rates below normal levels (Şahbaz, 2009, p.303).
- **Careless Fiscal Policy:** There is no fiscal discipline required by a fixed exchange rate system in monetary authorities. Therefore, it is stated that floating exchange rates make the economy eager for inflation (Şahbaz, 2009, p.303).

1.2.2.3. Hybrid Exchange Rate System

These systems are hybrid exchange rate systems consisting of a mixture of the fixed and floating exchange systems (Seyidoğlu, 1994, p.642). The types of hybrid exchange rate systems can be listed as managed floating systems, wide margin parities, crawling pegs, currency areas, and money baskets.

1.2.2.3.1. Managed Floating

The central bank governs exchange rate fluctuations. If an overdone fluctuation occurs in the exchange rates, the central bank tries to eliminate this imbalance by engaging.

The purpose of managed fluctuation is to eliminate excessive fluctuations in the short-term. In some cases, excess demand occurs in the foreign exchange market. The central bank softens the depreciation of the national currency by selling foreign currency in excessive of demand in order to control the excess demand in the market (Seyidoğlu, 1994, p.643).

1.2.2.3.2. Wide Margin Parities

This system is also called the parity system whose fluctuation demarcations are extended. because the dependence of the national currency on fixed parities is protected. Only the limits of the fluctuation around the parity are increased. Therefore, market effects are given more places in the fixed exchange rate system (Seyidoğlu, 1994, p.643).

1.2.2.3.3. Crawling Peg

Exchange rates are allowed to fluctuate around the parity, but within predetermined limits. The main feature of this system is that the center rate is regularly changed according to the average of the last few weeks.

For this reason, these applications are sometimes called exchange rate systems applied according to the indicator (Seyidoğlu, 1994, p.644).

1.2.2.3.4. Currency Areas

Another compromise model between the floating and fixed exchange systems is the common currency area or monetary union. In this application, the foreign exchange rates of the countries are linked to each other from fixed values. It is the system where a group of countries, mostly located in the same geographical region, connect their money with fixed exchange rates and leave other countries to fluctuate against their money (Oksay, 2001, p.33).

1.2.2.3.5. Money Basket

This is an official monetary system that is based on a 'basket of money' of two or more countries and is accepted by these countries as a "payment instrument" and "account unit".

The monetary system is in the status of "reserve money". This monetary system is issued as a standard account unit in all activities in the union. The best example of this is the European currency (ECU) (Oksay, 2001, p.33).

1.3. Exchange Rate System in Turkey

Turkey's foreign trade performance over the past 50 years can be examined in two periods. The first period is that before 1980. The second is the period after 1980, which can also be divided into further, various, smaller, periods (Ergür, 2011, p.29).

1.3.1. Period Before 1980

After the foundation of the Republic of Turkey, the British pound was used as the reference exchange rate until 1946. After 1946, the use of the fixed exchange rate system was officially included in the BW system. As a result, the British pound was replaced by the US dollar. To limit the increase in imports and to increase exports, the first devaluation of the Republic period was made on September 7, 1946. The Turkish lira was devalued by 116% (Özdemir, 2010, p.96).

Until 1980 the fixed exchange rate system was implemented in Turkey. As a result, the Turkish lira was overvalued. Turkey had experienced a crisis in the balance of payments. Thus, Turkey had to make devaluation on August 4, 1958 (Ergür, 2011, p.31). The introduction of a new application in the exchange rate system in 1974 was the main reason for the devaluations. Measures were taken under the rules set by the IMF in 1974. Between 1970 and 1977, devaluations at different rates were made 13 times in line with the decisions of the IMF. Turkey signed a stand-by agreement with the IMF in 1979. This agreement provided 250 million Special Drawing Rights (SDR) to Turkey (Ongun, 2020, p.41-43).

1.3.2. Period between 1980-1988

The main policy choice of the post-1980 period was liberalization in foreign trade and the financial sector. One of the most important steps was the complete liberalization of capital movements in 1989 and making the Turkish lira convertible. First, the limit on deposit interest was lifted in 1981. The foreign exchange market was liberalized in 1984.

The interbank market was set up. Then, the central bank started to open market operations in 1986. The creeping parity regime was adopted with a value of 1 US dollar to 70 Turkish liras in 1980. The exchange rate changed 16 times in 1980 (Atiyas and Ersel, 1992, p.30-33).

The Central Bank of the Republic of Turkey, on May 1, 1981, began to announce the exchange rate on a daily basis. This decision was the most important step taken for passing into the free exchange rate system. As part of the liberalization program, the Capital Markets Board was established in 1983. Additionally, the Istanbul Stock Exchange (ISE) was opened in 1986. To determine the exchange rates in the market, the Foreign Exchange and Banknotes Market was established within the Central Bank in 1988. This same year, the ratio of exports to imports reached its highest level (Ongun, 2002, p.49).

New decisions were taken in 1988 due to the increasing inflation and rapid increases in the exchange rate. Deposit interest was increased to 75%. Tax refund rates were changed for exporters to bring their foreign currency into the country. Payment and collection in Turkish currency from Turkey to abroad were allowed, and the convertibility of the Turkish lira increased (Ay, 1995, p. 72-75).

1.3.3. Period between 1989-1993

Numerous legal regulations were adopted in 1989. The exchange rate system in Turkey had become more flexible. After 1989, economic growth was based on capital movements. Positive growth was observed when foreign capital entered the country, and negative growth was observed when there was an outflow (Hepaktan and Çınar, 2003, p.65-66).

During this period, capital inflow was increased as the central bank could not intervene in the markets. As a result, the Turkish lira had overvalued. As a result of the Gulf crisis, the Turkish lira depreciated in 1991. The fluctuation in the exchange rate was balanced to a great extent in 1992 (Ergür, 2011, p.38-40).

1.3.4. Period after 1994

Turkey entered a period of crisis in April 1994, which significantly affected the real sector (Ergür, 2011, p. 40). The government announced a stabilization program in 1994. The main purpose of this program was to increase exports by decreasing the real value of the Turkish lira. Exports increased significantly in the same year. This plan was implemented by the end of 1994. Expansion policies started to be implemented in 1995. Based on a certain currency basket, the central bank started to keep the real value of the

Turkish lira constant. As a result, imports increased (Hepaktan and Çınar, 2003, p.68-74). A stand-by agreement including structural reform was signed with the IMF. The country has been funded. The Customs Union Protocol was signed between the European Union (EU) countries and Turkey in 1995. This agreement had increased Turkey's imports, while exports had only a weak increase. No fundamental changes were made in the monetary and exchange rate policy in 1996, 1997, and 1998 (Arat, 2003, p.42).

The financial crisis in Russia in 1998 caused instability to spread to international financial markets, especially in Latin American financial markets. Foreign investors were attracted from Turkey. This event negatively affected the economy, investments and consumption decreased. The slowdown that started in 1998 turned into a recession in 1999 (Müslümov, 2003, p.110).

Turkey had applied for financial support from the IMF in December 1999. A 3-year stabilization program was agreed upon with the IMF. The program aims were to reduce inflation to single digits by 2002 and to ensure development (Özdemir, 2010, p. 118-119).

The IMF demanded that the fixed exchange rate system be abandoned. because they thought the reserves were over. However, the government's willingness to continue the program it had implemented decisively increased the foreign currency debt of banks and companies, and many institutions increased their open positions in foreign currency. Increasing interest rates increased short-term capital inflow to the country and the national currency gained value. The increasing exchange rate and the appreciation of the Turkish lira increased the debts of banks and companies. Additionally, the tension between the prime minister and the president caused a second crisis in February 2001. A large amount of capital went abroad in a very short time (Yentürk, 2005, p.85-86). After these crises were experienced, the exchange rate system and program applied were abandoned. The crisis had begun to affect the economy of Turkey more deeply. Therefore, a new economic stability program was needed (Aklan, 2003, p.164-165).

A new program, called the Transition to a Strong Economy Program, was announced to the public and approved by the IMF on April 14, 2001. The main purpose of the new program was to eliminate the crisis of confidence and instability arising from

the abandonment of the exchange rate regime and to create the infrastructure for the restructuring of the economy (Erçel, 1999, p.56). The most important feature that distinguishes the Transition Program to a Strong Economy from the 2000 stabilization program was that it was founded on the free exchange rate regime and inflation targeting policy. Accordingly, it was decided to follow flexible monetary policies in line with inflation targeting.

Turkey's economy between 2001 and 2005 was at an exceptional conjuncture with global markets, thanks to high real interest rates and abundant foreign exchange earned through a rapid growth based on the input balance. Turkey's economy from 2001 to 2005 showed balance growth due to cheap and stable foreign exchange inflow. However, since May 2006, its economic growth had slowed down due to the contraction of global markets (Özdemir, 2010, p. 126-129).

1.4. Currency Markets

Currency Markets are markets where currency buyers and sellers meet. The participants of Currency Markets are physically distant from each other. Participants communicate with telephone, telex, and computer. Currency Markets are markets that provide a physical environment for currency trading.

The Expected benefits from the currency market as follows;

- It provides transfer of purchasing power
- It provides loan to international trade
- It minimizes exchange rate risk (Doğukanlı, 2008, p.50).

1.4.1. The Transactions types in Currency Markets

The process types in currency markets can be divided into three. listed as: spot, forward, and swap markets.

1.4.1.1. Spot Transactions

The spot transactions are the most used in the foreign exchange market. In the foreign exchange markets, spot trading consists of purchase and sale transactions, provided that the foreign currency is delivered within two business days. In this

transaction, the national money, which is sold for two days, is recognized to obtain funds from domestic and abroad (Doğukanlı, 2008, p.52).

1.4.1.2. Forward Transactions

The forward transactions are a rate that is understood today, that a certain currency will be traded at on a certain date in the future. Delivery time in the exchange rate forward contracts is 30 days and multiples thereof. Usually, maturity varies between 30 and 180 days (Doğukanlı, 2008, p.52).

1.4.1.3. Swap Transactions

Swap transaction type, on the other hand, is traded in spot and forward markets for the same amount at the same time, or by purchase and sale transactions in two forward contracts with different terms (Doğukanlı, 2008, p.53).

1.5. The Factors that Effect Exchange Rates

The factors affecting the exchange rate increase are due to the increase in economic activities. These changes affect the other economies and increase the firms that operate internationally and their cross-border production. Marketing and sales affect the participants in the foreign exchange markets, the exchange rate and demand change and the exchange rates are formed in a new balance. Interest rates, inflation rates, income, government control, the balance of payments, economic growth, market expectations, and race problem are among the factors affecting foreign exchange demand (Obstfeld, Cooper and Krugman, 1985, p.429; Devereux, 1997, p.772).

The structural factors between exchange rates need to be understood. If not understood, it can be impossible to predict exchange rates and manage risks. In addition to political factors, economic factors and people's behavior have an important effect on the exchange rate, so that exchange rates can be predicted in the future (Arslan, 2005, p.53).

Unexpected and sudden changes in the exchange rate that reflect the price of internationally traded goods adversely affect open economies. Therefore, determining the exchange rate and the factors that cause volatility is very important in terms of measures to

be taken against shocks and monetary and fiscal policies to be followed (Obstfeld, Cooper and Krugman, 1985, p.429; Devereux, 1997, p.774-775).

In the light of the information above, the most important factors affecting the exchange rate change are interest rate, inflation rate, income level, the balance of payments, economic growth, and market expectations. In line with that, in the following sections these variables will be explained.

1.5.1. Interest Rate

Interest rates affect securities investments that affect money supply-demand and exchange rates (Doğukanlı, 2012, p.101). An increase in interest rates may indicate there will be a strengthening in the domestic currency, as well as the idea that it will weaken. In countries where there is no inflation, an increase in interest rates increases the demand for money and expresses the increase in the value of the national currency. In countries with inflation, the increase in interest rates creates expectations that the national currency will lose value (Çürük, 2015, p.39).

1.5.2. Inflation Rate

Inflation expresses to the periodic increase in the general level of prices (Aggorual, Soenen, 1989, p.59).

If the inflation rate in one country is higher than the inflation rates of other countries, the goods produced within the borders of that country will become expensive against the goods produced abroad and the demand for imported goods will increase. Therefore, foreign exchange demand and the national money supply will increase. The currency of the country will lose value against foreign currencies, and when the inflation rate in foreign countries exceeds the inflation rate in the country, the country's goods are relatively cheap. Thus, the importing companies of a foreign country buy more goods from the domestic country. It increases the foreign currency supply to the country. If the foreign currency supply increases, the country's currency will gain value against foreign currencies (Çiçek, 2006, p.26).

As a result, there is an inverse relationship between the inflation rate and the value of the country's money.

The use of different currencies, which each country owns, causes the prices of goods and services to differ from country to country.

The purchasing power parity defines the situation of determining the price levels of goods and services in a single basket, equalizing the ratios of national currencies to each other so that we can purchase this good and that service (Gedik, 2014, p.33). Thus, the price difference between countries will disappear. At the same time, the purchasing power parity allows a comparison of the exchange costs of goods and services between countries (Atilgan, 2011, p.10). The price level must be the same as the goods in the country will be the same according to the purchasing power parity. The single-price law shows that the value of one country's goods will be converted to the national currency of another country (Albayrak, 2012: 24). Purchasing power parity is one of the most accepted theories in determining the exchange rate. Purchasing power parity is divided into absolute purchasing power and relative purchasing power parity (Demirag and Goddard, 1994, p.70). According to the absolute purchasing power parity, although there is a difference between the costs of goods between countries, the sales of goods all over the world are realized at a single price (Breoley and others, 1995, p.600). According to the relative purchasing power parity, in a certain period, the difference in inflation rates between the two countries is equal to the change in the exchange rate (Aggorual, Soenen, 1989, p.60).

1.5.3. Income Level

When a country's national income rises, the demand for foreign exchange and the country's imports will also increase.

Because of the foreign exchange provided is constant, the increase in foreign exchange demand increases the exchange rate. As a result, the country's currency loses value. If the income level in other countries increases, the supply of foreign currency rises as exports will increase (Duran, 2019, p.24).

1.5.4. Balance of Payments

The balance of payments exhibits the result of the external economic and fiscal relations of the countries inside a settled session. The balance or imbalance in the balance of the foreign payment of any country reveals the recovery or disruption in that

country's international solvency. For this reason, the balance of payments is appreciated as an indicator of the country's international economic and fiscal space financial reputation. The balance of international payments is an important indicator not only for policy makers but also for foreign trade companies and organizations. Income and outlay accounts of importers and exporters in terms of national currencies are directly affected by exchange rate transactions. There is a strong relationship between the external value of a country's national currency and the balance of payments. The national monetary unit value surplus of countries increases in the foreign exchange market. The national monetary unit values of deficit countries depreciate in the foreign exchange market (Seyidoğlu, 1994, p.132,133). Economic transactions are the result of the trade of goods and services that countries carry out with each other within the given period. It is observed that the balance of payments gains importance in determining the exchange rate. It may affect the balance between the cost of products that countries buy and sell. The welfare level of the public increases as a result of countries earning from their commercial transactions. It is seen that economic development is aimed at the increase of the welfare level.

Revealed problems in foreign trade have effects economy-wide. The current deficit, capital inflow, and foreign debt increase may negatively affect the national currency (Duran, 2019, p.23). Countries with trade deficits aim to increase imports by reducing the value of money with a devaluation practice and at the same time provide a competitive advantage.

When the balance of payments has a surplus, the value of the national currency increases (Kenen, 1996, p.280,281).

1.5.5. Economic Growth

Economic growth is the rise in the capacity of goods and services produced in a country (Eğilmez, 2014, p.45).

Namely, the growth of a country's real gross domestic product compared year-on-year is called growth (Eğilmez, 2014, p.54,55). Knowing the source of growth expedites the determination of the effect of economic growth on the exchange rate.

If domestic consumption and budget deficits are the sources of growth, the country's imports and demand for foreign currency will increase. Accordingly, the value of the country's national currency decreases. If the source of growth consists of exports and foreign investors, the country's money will gain value under these conditions. Accurate knowledge of the source of economic growth will be effective in determining the impact of economic growth on exchange rates (Çürük, 2015, p.40).

1.5.6. Market Expectation

Among the factors affecting exchange rates, market expectations are the most powerful factor for determining. The psychology of the market affects foreign exchange markets in many ways. For example, it can assume that there will be high inflation in the USA. If this high inflation is not expected, it may cause foreign currency investors to suddenly sell their dollars. Or if high inflation is expected, the investor takes a position accordingly, as the value of the dollar will decrease in the future. There will be greater demand for the currency, which is perceived as stronger, and the value of the demanded money will increase (Madura, 2014, p.123).

1.5.7. Other Factors

Apart from the factors described above affecting the changes in the exchange rate, it is seen that other factors also affect the exchange rate. These can be listed as;

- Changes in consumer tastes and preferences (Duran, 2019, p.29).
- Extraneous unexpected development: Battle, increase in oil price due to civil war (Duygulu, 2000, p.16).
- Fiscal policy and monetary policy: Regulations such as monetary expansion, to change the tax rate, indirect tax and direct tax, and repayment of internal taxation are effective on exchange rates (Duran, 2019, p.29).
- Political factors: Political developments cause capital movements and effect on the exchange rate. The emergence of negative political expectations causes a decrease in the value of money. In an economic system where political stability is achieved, the value of money increases (Arslan, 2005, p.61).

1.6. Effect of Exchange Rate Change on Firms

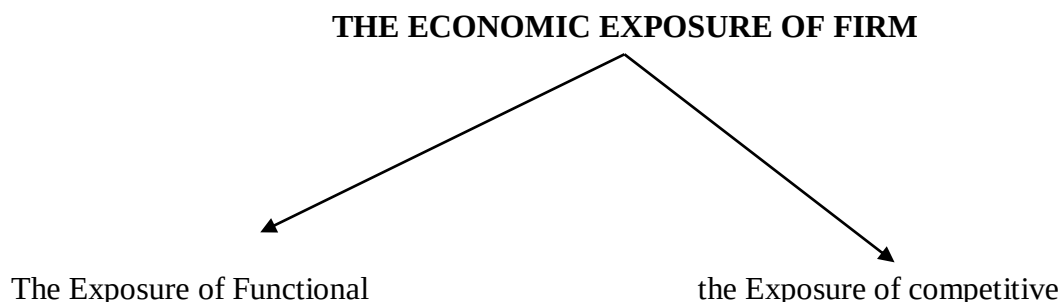
Exchange rate risk is the changes in the national currency values of the assets, liabilities, and operating revenue of the business due to the unexpected changes in the exchange rates (Holland, 1993, p.139).

The effects of foreign exchange risk on firms can be analyzed under three subtitles. These can be listed as;

- Economic exposure,
- Accounting exposure,
- Transaction exposure

1.6.1. Economic Exposure

The economic exposure can be explained as the changes that may occur in the cash flows of the enterprises in future periods as a result of unpredictable exchange rate fluctuations (Yücel, 1996, p.27). In addition, it is related to the effect of changes in the exchange rate on the trading profits of the firms (Noreiko, 1999, p.394). The effects of unexpected changes in the exchange rate are felt on the balance sheets of domestic firms. At the same time, due to the effect of changes in the exchange rate on the domestic inflation rate, interest rates and domestic markets, it is significantly affected by companies operating entirely for the domestic market. To sum up, all firms are faced with economic exposure (Aggarwal, Soenen, 1983, p.61). For example, it can be analyzed with a company selling and producing in the local market. An unexpected loss of value in the firm's exchange rates reduces the service and commodity prices of foreign competitor firms that produce the same service or goods in the local market, and consumers prefer the low-price commodity or service. Therefore, the local firms may be terrifically affected by a possible exchange rate change (Belkaoui, 1991, p.55).



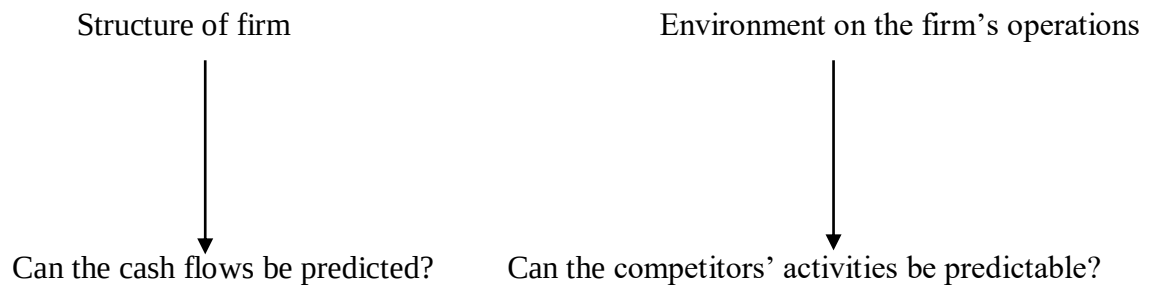


Figure 1. Factors affecting the occurrence of the economic exposure

Source: Moffett and Karslen, (1994), p.163

Figure 1 shows that the elements of economic exposure consist of the competitive environment and the functional structure of a firm. The exposure of firm economics is called the exposure of competitive. The main reason for this stems from the competitive environment. The competitive environment is caused by the behavior of competitors in the face of exchange rate movements (Çürük, 2015, p.61). Also, economic exposure covers the long-term effects of exchange rate changes on the business. Economically, it is not possible to see the degree of this exposure in the short term (Doğan, 2000, p.305).

1.6.2. Accounting Exposure

The accounting effect is also called accounting exposure (Jones, 1992, p.667). Accounting Exposure arises from the need for firms to report their financial status and results (Doğan, 2000, p.305). It is the changes in the financial statements of businesses because of exchange rate changes. The assets and liabilities in the financial statements of the subsidiaries of MNC are regulated in the currencies of the countries in which they operate. At the stage of consolidating the financial statements of all subsidiaries and main countries of the multinational enterprises, the values in the financial statements of the subsidiaries need to be converted into the currency of the main country. At this stage, due to the changes in the exchange rate, changes in the currency of the main country can be seen in the profit and loss figures in the financial statements of the multinational corporation. The exchange rate effect seen in the financial statements is due to the conversion of this currency is called the accounting exposure (Jones, 1992, p.667).

Figures 2 and 3 show the positive and negative effects of the accounting exposure.

Exposure of assets > Exposure of liability = Positive influence

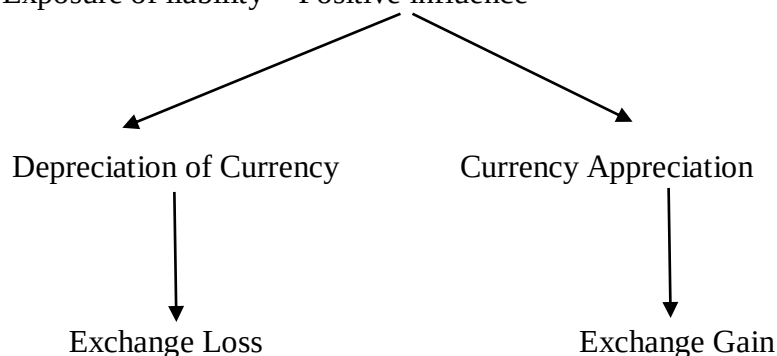


Figure 2. The Advantages of Accounting Exposure

Exposure of assets < Exposure of liability = Negative influence

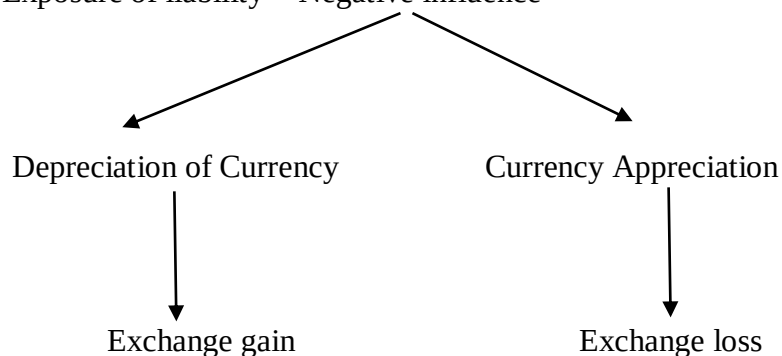


Figure 3. The Disadvantages of Accounting Exposure

Source: Moffett and Karslen, (1994), p.164

Losses and gains are reported in the financial statements. It is also included in the economic impact, as it affects future cash flows. In order to determine the difference between accounting exposure and economic exposure, it is shown in the table below.

Table 1.1. Comparison of Accounting and Economic Exposure

ACCOUNTING EXPOSURE	ECONOMIC EXPOSURE
1-Retroactive.	1-Forward.
2-Statics.	2-Dynamics.
3-It focuses on the income reported in the current period.	3-It focuses on future cash flows.

4-Assets and liabilities are based on book value.	4-Assets and liabilities are based on market value.
5-The concept of accounting exposure relates to the applied accounting standards.	5-The concept of economic exposure is related to the nature of firm activities.

Source: Moffett ve Karslen, a.g.m., p.165

1.6.3. Transaction Exposure

The transaction exposure arises when a business transacts in foreign currency such as an import or export agreement. because, changes in exchange rates affect the amount to be paid or received (Rosenfield and Gill, 1990, p.105; Erdoğan, 1993, p.118). To sum up, transaction exposure results from trading in one or more currencies. In general, firms face the transaction exposure of exchange rate changes if they perform transactions such as import or export, entering futures in foreign exchange markets, and borrowing or lending out to foreign markets (Bozkurt, 1983, p.9).



CHAPTER 2

FIRM PERFORMANCE

2.1. Definition of Firm Performance

Financial performance is called a subjective elaborate measure of how much revenue the firm will generate using its assets. It is also a measure of the firm's overall financial health. Financial performance is often used by investors and analysts. The reason for this is that firms in similar industries want to compare their performances (Çürük, 2015, p.115-116).

2.2. Firm Performance Indicators

Firm performance is a very broad concept and different indicators of this are encountered in both the literature and business life. For firm performance, variables such as Stock yield, *roa*, return on capital employed, Gross real operating profit, price/earnings ratio, market to book value ratio, and *roe* are used. In the third section, these variables will be explained.

2.2.1. Share of Earning

Increasing the present value of the firm is the main goal of firms. Maximizing the stock value of firms is the most important way to achieve this goal (Çürük, 2015, p.117). In other words, calculating the stock yield of soft firms is a very important variable in determining the market value of these firms (Korkmaz, 2013, p.169). But what should be taken into consideration during the decision making by using this variable is that stock yields are heavily influenced by speculative movements (Bayraktaroğlu, 2009, p.2). The formula is additionally shown below (Çürük, 2015, p.117);

$$SOE = \frac{\text{Annual Dividens per Share}}{\text{Price per Share}}$$

2.2.2. Return on Assets (*roa*)

The *roa*, which is widely used to measure the performance of a firm, shows how efficiently it uses its total assets to generate income (Çetenak, 2012, p.65). In other words, this rate is the return obtained from the current and fixed assets of the firm or from short- or long-term investments. It expresses how much the firm earns for each unit of money they invest in their current and fixed assets (Korkmaz, 2013, p.25). *roa*, which measures the firm's ability to use the assets (Lasher, 1997, p.76), is a frequently used variable in the literature (Hassan, 2019, p.47). If the return on assets of the firm is positive, it means the firm has used its assets positively and its profitability is high. However, an asset returning a negative value means that the policies it applies are wrong (Çürük, 2015, p.117). The higher the return on assets of a firm, the more profitable the assets generating income (Dansby, Burton, Kaliski and Michail, 2000, p.833). The *roa* ratio is found by dividing the operating income by the total assets in the balance sheet after the data in the income statement is deducted (Demirci, 2017, p.5). The income statement shows which factors the entity's net profit for the period consists of and provides information about the performance of a period. The balance sheet shows the financial situation at a certain moment (Karagül and Diğerleri, 2013, p.4), the formula is additionally shown below (Nuhu, 2014, p.7).

$$roa = \frac{\text{Operating Income}}{\text{Total Assets}}$$

roa can be divided in to two, namely; return on total assets and return on operating assets. Rarely, in general terms and for the purpose of this study, *roa* refers to return on total assets (Dansby, Burton, Kaliski and Michail, 2000, p.833-834). Firms are required to have a maximum *roa* value. because it shows that the company can use existing assets to create added value (Hassan, 2019, p.48). In the analysis, operating profit is more commonly used since income and expenses related to the main activities of the business are taken into account. Because net profit shows the amount after interest and taxes are deducted, in cases where net profit after tax is used, the relevant ratio changes according to the capital structure of the enterprise. A firm that finances its assets mostly with foreign resources pays more interest than another firm that finances most of its assets with equity. A firm financed by foreign resources may appear less

profitable despite the more efficient use of resources. It would be more meaningful to use operating profit instead of net profit (Akgüç, 1998, p.67,68).

2.2.3. Return on Capital Employed (ROCE)

ROCE is a long-term profitability ratio that shows how well a firm can create profits from its employed capital. The ROCE formula uses operating profit (Singh & Yadav, 2013, p.15).

Capital employed is usually expounded as total assets minus all current liabilities (Singh & Yadav, 2013, p.15). ROCE, which is the return of the net resource, is a frequently used rate in investment analysis for firm performance. The formula is additionally shown below (Mutluay, 2013, p.65).

$$ROCE = \frac{\text{Earning before interest and tax (EBIT)}}{\text{Capital Employed}}$$

ROCE is a useful rate for firms with high debt. A high ROCE means the firm is efficiently using its employed capital (Vasilescu, 2011, p.18).

2.2.4. Gross Real Operating Profit (GROP)

GROP is a performance ratio that shows the gross profitability obtained from the assets other than the financial assets of the companies (Sökmen, 2013, p.55). It is calculated as follows (Deloof, 2003, p.579);

$$GROP = \frac{\text{Sales} - \text{Cost of Goods Sold}}{\text{Total assets} - \text{Financial Assets}}$$

2.2.5. Price/Earning Ratio (P/E)

The Price/Earnings ratio gives information about the firm's stock price (Çetenak, 2012, p.22). It shows the relationship of one share with its profit and price (Shen, 2000, p.23). It is frequently preferred by investors. because this ratio measures the current share price relative to its per-share earnings. The P/E ratio can be computed using the following formula (Shen, 2000, p.23):

$$P/E = \frac{\text{Market Price Per Share}}{\text{Earning Per Share}}$$

The growth rate of a firm's earnings and its risk are the main determinants of the P/E ratio. Besides, the P/E ratio is correct with the firm's risk and is inversely proportional to the growth in profit (Çetenak, 2012, p.65).

2.2.6. Market to Book Value Ratio

The market-to-book ratio's main purpose is to determine the value of a firm through comparing the market value of a firm to its book value (Sarwendhi, Samekto, 2014, p.50). It is one of the most basic tools companies use to measure market performance (Bolat, 2010, p.15). It is calculated by the ratio of the market value determined according to the current prices of the shares to the book value found according to the company accounting records (Çürük, 2015, p.118).

$$\text{Market to Book Value Ratio} = \frac{\text{Market Value}}{\text{Book Value}} \times 100$$

Where;

Market Value = (The total number of shares outstanding x Share Price)

Book Value = (Assets – Liabilities)

In particular, this value is a rate frequently used by investors in the purchase and sale of shares (Çetenak, 2012, p.65).

2.2.7. Return on Equity (roe)

Return on Equity (*roe*) is an accounting quantify (Nuhu, 2014, p.19). It shows how much income is obtained for a certain amount of equity. A positive and higher *roe* value means that those who provide capital to the business get a high return (Çürük, 2015, p.117). This ratio is calculated by dividing the operating income by total assets (Taşkın, 2011, p.5).

$$roe = \frac{\text{Operating Income}}{\text{Shareholder's equity}}$$

As a result, *roe* provides information on whether investors are getting a good return on their investments. A high *roe* value indicates that the company has a competitive advantage over other companies (Ceylan and Korkmaz, 2009, p.69).

CHAPTER 3

LITERATURE REVIEW

3.1. Literature Review on the Effect of Exchange Rate in Firm Performance

There are many studies in the literature to explain the effects of changes in foreign exchange rates on the income and balance sheet tables of firms. Studies mostly focusing on the impact of exchange rate changes on firms operating countries are not new in finance (Mutluay & Turaboğlu, 2013, p.1). In recent years, the increasing movements in exchange rates and the relationship of the exchange rate to different variables are gaining more and more importance (Chaudhary, Khan, Hashmi, 2016, p.2). In this section some examples of the studies which explore this relationship between exchange rates and firm performance will be given.

Jorion (1990) used data from 287 firms in the USA between 1971 and 1987. Jorion aimed to measure the exchange rate effect on the firm's performance. The dependent variable was the rate of return on the company's common stock. The independent variables were the rate of change in a trade-weighted exchange rate, the rate of return on the Center for Research in Security Prices (CRSP) value-weighted market index, and overseas sales. Consequently, 5.2% of firms were negatively affected by exchange rate changes. It was concluded that as the foreign sales of the firms increase, more affect by the exchange rate changes are felt.

Jorion (1991) completed her second study using a multiple regression model. Jorion aimed to measure the exchange rates' effect on the firm's performance. The dependent variables were stock yield, industrial growth rate, expected and unexpected change in the inflation rate, risk premium, term structure, and external economic developments. The independent variables were the rate of change in a trade-weighted exchange rate, the rate of return on the CRSP value-weighted market index, and overseas sales. Consequently, only the maturity structure and the change in expected inflation gave significant coefficients in the face of changes in the exchange rate and revealed the signs of the coefficients as negative.

Bodnar and Gentry (1993) used data from firms located in Japan, Canada, and the USA between 1979 and 1988 in their work. They aimed to measure the effect of changes in exchange rates on importing and exporting firms. The dependent variable was the return on the industry portfolio in a month. The independent variables were return to the national stock market in the month and the percentage change in the trade-weighted nominal exchange rate in the month. Consequently, Bodnar and Gentry (1993) found that in the USA, Canada and, Japan were sensitive to changes in the exchange rate at 28%, 21% and 35% respectively. Also, export sectors were negatively affected by the changes in the exchange rate, while the import sectors were positively affected.

Bartov and Bodnar (1994) used 208 firm's data for the years 1978-1989 in their studies. By examining the changes in the dollar both simultaneously and with delay, they aimed to investigate the relationship between their abnormal returns. The dependent variable was the abnormal stock performance for security. The independent variable was the percentage change in a trade-weighted US dollar exchange rate index for the period. As a result of their work, they did not find a significant relationship between the firm's performances and changes in the dollar in the same period, but they found that changes in exchange rates had delayed effects on firms' performances and returns.

Choi and Prasad (1995) used data from 409 firms operating in the manufacturing and trade sectors for the period 1978-1989. They aimed to measure the effects of the change in the exchange rate on the firm's stocks. A model similar to the Jorion (1990) model was created. The dependent variable was the return of the stock. The independent variables were the market return factor, exchange rate index, foreign profits, sales, and assets. They found that nominal and real exchange rates significantly affect firm values. These effects may differ from company to company. Firms that are exposed to significant exchange rate risk increase their profitability with the depreciation of the dollar more so than other firms.

Abdalla and Murinde (1997) used firm data from 1985-1994 in their studies. They aimed to measure the effects of the change in the exchange rate on the firm's stocks. The dependent variable was the stock return. The independent variables were the market return and change in the real effective exchange rate. As a result, they claimed that there was a one-way causality from exchange rates to stock prices.

Nydhal (1999) used data from 47 firms located in Sweden between 1990 and 1997. It aimed to measure the degree to which firms are affected by changes in the exchange rate. The dependent variable was a surface change in the exchange rate. The independent variable was the weekly return of the stock. The result was reached that 12 firms were open to exchange rate risk between these periods.

Solano (2000) used data from 71 industrial firms between 1992 and 1997. It aimed to measure the degree to which firms are affected by changes in the exchange rate. The dependent variable was the monthly market return. The independent variable was the nominal effective exchange-rate change of the Spanish currency. Consequently, 20% of firms were affected by changes in the exchange rate. While export firms were positively affected, import firms were negatively affected. Also, as firms grow their degree of exposure decreases.

Dominguez and Tesar (2001) used data from 2,387 firms located in Chili, France, Germany, Italy, Japan, Holland, Thailand, and England between 1980 and 1999. They discussed the firm returns and exchange rates of the eight countries. They aimed to test the presence of exchange rate risk for firms and markets. The dependent variable was the firm-level dollar exposure. Independent variables were firm size, firm, and industry level information. As a result of their work, they found that small-scale and non-commercial firms were less exposed to exchange rate risk.

Koutmos and Martin (2003) used firm data from Germany, Japan, England, and the USA between 1992-1998. They aimed to measure the effects of the change in the exchange rate on the firm's stocks. The dependent variable was the stock return. The independent variables were the market portfolio return and the unanticipated exchange rate change. As a result, they argued that the increases and decreases in exchange rates affected stock returns asymmetrically, approximately 40% of the sector was exposed to exchange rates, but more than 40% was affected by exchange rates asymmetrically.

Erol, Algüner, and Küçükkocaoğlu (2003) examined the data from 1998 to 2001 for 52 Turkish firms operating in 3 different sectors, textile, manufacturing and food. They aimed to measure the effects of changes in the exchange rate on firm profitability and costs. The dependent variable was the real return on an individual stock. The independent variables were the real return on the market portfolio and the real exchange

rate. According to the research results, they reached, the sector with the highest foreign debt ratio is textile, followed by the food and manufacturing sectors.

Bodnar and Wong (2003) used data from firms from between 1977-1997 in their study. By examining the US firms, they aimed to research the rates of the firms' income, profits and spending being affected by the exchange rate. The dependent variable was the stock return for the firm. The independent variables were the percentage change in an exchange rate variable and the return on the domestic market portfolio. As a result, they claimed that the rate of exposure of export and import firms to exchange rates was higher than that of other firms.

Kıymaz (2003) used data from 109 firms that traded on the ISE between 1991-1998. They aimed to measure the effects of exchange rate changes on firms with the help of Adler and Dumas's (1984) regression analysis and Jorion's (1990) second model. The dependent variable was the rate of return on the firm's stock. The independent variable was the change in the foreign exchange basket value measured as the value of Turkish Lira per unit of foreign currency. As a result of the study, it was revealed that firms engaged in foreign trade and the textile sectors in Turkey were affected by variations in the exchange rate. At the same time, it reached the conclusion that the pre-crisis levels of firms were higher than after the crisis.

Yücel and Kurt (2003) used month data of 152 firms that traded on ISE between 2000-2002. In their studies, they aimed to estimate the effect of exchange rate changes on firms with the help of regression analysis of Adler and Dumas (1984) and the second model proposed by Jorion (1990). The dependent variable was The ISE 100 index. The independent variable was the real exchange rate. As a result of the study, they concluded that firms with high exports are more affected by changes in exchange rates than firms that do not export.

Pritamani, Shome, and Singal (2004) used data from 186 cosmopolitan firms to trade the USA between 1975 and 1997 in their study. In their study, they aimed to measure the effect of exchange rate changes on firms with multiline regression analysis. The dependent variable was the return of a stock. The independent variable was the change in the exchange rate. As a result, the changes in the exchange rate reached a

meaningful opposite direction for the exporter firms and a significant and right direction for the importer firms.

Doidge, Griffin, and Williamson (2006) used data from 17,929 firms from 18 countries in their study. Turkey was one such included country. They aimed to measure the effect of the exchange rate changes on the firm's performance. The dependent variable was the monthly stock return. The independent variables were the country-specific value-weighted market return and the percentage change in the monthly foreign currency per home currency exchange rate. As a result, they found 8.2% of firms (1,471 form 17,929) sensitive to exchange rate changes. They suggested that small firms are more sensitive to exchange rate changes.

Emirhan (2006) aimed to examine the relationship between exchange rate changes and stock returns with the aid of a similar model to that proposed by Jorion (1990) using data from 54 Turkish firms between 1997 and 2005. The dependent variable was change in monthly return (TRY based) of stock. The independent variables were the change in the real effective trade-weighted index of TRY and the change in market return (ISE-100 index). As a result, it found that 17 percent of firms have remarkable exposure. Most of this exposure is negative.

Mutluay and Turaboğlu (2009) aimed to measure the effect of the exchange rate on firms with the regression models developed by Adler and Dumas (1984) and Jorion (1990) in the study of the data from 55 firms between 1997-2007. Instead of measuring the effects of changes in exchange rates directly on stock returns of firms, they examined the effects on their performance. ROCE (Return on Net Capital Employed) was used as a performance criterion. The dependent variable was the return on net capital employed. The independent variable was REDK (Real Effective Exchange Rate). As a result of their studies, it was determined that the performance of 3 firms was statistically sensitive to the change in the REDK index. However, considering that the changes in the exchange rate will affect the performance of the company is delayed, the changes in the REDK index have been added for another period of time, and as a result, it has been concluded that 22 companies were affected by the change in the REDK index.

Dhasmana and Anubha (2013) aimed to measure the effects of the real effective exchange rate on the performance of 250 manufacturing firms listed on the Bombay stock exchange (BSE) covering the period 2000-2012 in India. The dependent variable was the growth rate of the output of a firm, defined as the difference. The independent variables were the growth rate of labor, the growth rate of capital i.e., investment, the growth rate of unit labor cost used as a proxy for productivity growth, the product of the log difference in 36 countries trade-weighted REDK index of rupee, and the lagged share of imports in intermediate inputs. As a result of their research, they claimed that the changes in the exchange rate in the market power were the most determinant in the firm's performance. Changes in the exchange rate affected their earnings and cost performance. As a result of changes in the exchange rate, if the currency is overvalued, firm performance is negatively affected. The depreciation of the currency affects firm performance positively. Mostly small firms were highly influenced. because small-scale firms don't have sufficient opportunities in financing.

Çürük (2015) used data from 42 firms operating in the manufacturing and trade sectors for the period 2006-2014. It aimed to measure the effects of exchange rate changes on firm performance. The dependent variable was return on assets (*roa*). The independent variables were REDK, firm age, and the firm's overseas sales. As a result of the study, it was found that the change in the real exchange rate index did not have a statistically significant effect on asset profitability, equity profitability, and return on the net resource used. However, it was observed that the change in the real exchange rate had a positively significant effect on stock return at the level of 1% significance. In addition, it was observed that firm age and overseas sales control variables have no significant effect on firm performance in all models. The third model, which was established only, revealed that the age of the firm had a negative, significant effect on the return of the net resource used at the level of 5%.

Akalin and Uzgören (2016) used data from 60 firms between 1993-2009 years in their study. They aimed to measure the effect of exchange rate changes on firm performance. The dependent variables were real export, domestic real sales, total real sales, real profit, and loss. The independent variables were REDK, real added value created by the firm, and the capital/labor ratio. As a result, according to the long-term coefficient estimates, an increase in the exchange rate negatively affects exports and

total sales. They argued that the increase in the capital/labor ratio positively affected profitability.

Çürük and Boyacıoğlu (2016), used data from 42 firms between 2006 and 2014 in their study. They aimed to measure the effect of exchange rate changes on the stock field. The dependent variable was the stock field. The independent variable was REDK. From the results, it was seen that the change in the real exchange rate had a positive, significant effect on stock return at the level of 1% significance. As a result of their study, into the share of increases and decreases in exchange rates, they concluded that it affected their stock returns.

Çiftçi (2019) aimed to investigate, the real exchange rate volatility on Turkey's EU-27 countries and its effect on exports. He used data between the years 2003-2013 in the study. The dependent variable was real export. The independent variables were real extraneous income, relative prices, and real exchange rate volatility. Consequently, to increase the export volume of Turkey volatility of policymakers in the real exchange rate, it is understood that they should follow policies that will minimize it.

Rati and Candraewi (2020) aimed to determine the effect of exchange rates, Return on Assets (*roa*), Gros Domestic Product, inflation, and Debt to Equity Ratio on stock returns. He used data between the years 2015-2018 in the study. The dependent variable was stock return. The independent variables were GDP, DER, inflation and exchange rate. Consequently, they found a significant effect of exchange rate on the stock and a nonsignificant effect of return on assets.

Detailed information about the studies is also available in the following table.

Table 3.1. Literature Review

Literature Review on the Effect of Exchange Rates on Firm Performance Developed Countries			
Authors (Year)	Country/ Time Period	Variables (Dependent)	Results
Jorion (1990)	USA (1971- 1987)	The rate of return on the company's common stock.	Consequently, 5.2% of firms were negatively affected by exchange rate changes.

Jorion (1991)	USA (1971-1987)	Stock yield, industrial growth rate, expected and unexpected change in the inflation rate, risk premium, term structure, and external economic developments.	Consequently, only the maturity structure and the change in expected inflation gave significant coefficients in the face of changes in the exchange rate and revealed the signs of the coefficients as negative.
Bodnar and Gentry (1993)	USA (1979-1988)	The return on industry portfolio in the month.	Consequently, Bodnar and Gentry (1993) found that in the USA, Canada and, Japan were sensitive to changes in the exchange rate at 28%, 21% and 35% respectively.
Bartov and Bodnar (1994)	USA (1978-1989)	The abnormal stock performance for security.	As a result of their work, they did not find a significant relationship between the firm's performances and changes in the dollar in the same period, but they found that changes in exchange rates had delayed effects on firms' performances and returns.
Choi and Prasad (1995)	USA (1978-1989)	The return of the stock.	They found that nominal and real exchange rates significantly affect firm values.
Abdalla and Murinde (1997)	United Kingdom (1985-1994)	The stock returns.	As a result, they claimed that there was a one-way causality from exchange rates to stock prices.
Nydhal (1999)	Sweden (1990-1997)	The stock returns.	The result was reached that 12 firms were open to exchange rate risk between these periods.
Solano (2000)	Spain (1992-1997)	The monthly market returns.	Consequently, 20% of firms were affected by changes in the exchange rate. While export firms were positively affected, import firms were negatively affected. Also, as firms grow their degree of exposure decreases.

Dominguez And Tesar (2001)	United Kingdom (1980-1999)	The abnormal stock performance for security.	As a result of their work, they found that small-scale and non-commercial firms were less exposed to exchange rate risk.
Koutmos and Martin (2003)	Germany (1992-1998)	The stock returns.	As a result, they argued that the increases and decreases in exchange rates affected stock returns asymmetrically, approximately 40% of the sector was exposed to exchange rates, but more than 40% was affected by exchange rates asymmetrically.
Bodnar and Wong (2003)	USA (1977-1997)	The stock returns.	As a result, they claimed that the rate of exposure of export and import firms to exchange rates was higher than that of other firms.
Pritamani, Shome, and Singal (2004)	USA (1975-1997)	The real exchange rates.	As a result, the changes in the exchange rate reached a meaningful opposite direction for the exporter firms and a significant and right direction for the importer firms.
Doidge, Griffin, and Williamson (2006)	USA (1975-1999)	The monthly stock returns.	As a result, they found 8.2% of firms (1,471 form 17,929) sensitive to exchange rate changes. They suggested that small firms are more sensitive to exchange rate changes.
Dhasmana and Anubha (2013)	USA (2000-2012)	The real effective exchange rate.	As a result of their research, they claimed that the changes in the exchange rate in the market power were the most determinant in the firm's performance.

Literature Eview On the Effect of Exchange Rates on Firm Performance Developing Countries			
Çiftçi (2019)	Turkey (2003- 2013)	The reel exports.	Consequently, to increase the export volume of Turkey volatility of policymakers in the real exchange rate, it is understood that they should follow policies that will minimize it.
Çürük (2015)	Turkey (2006- 2014)	Return on assets (<i>roa</i>).	As a result of the study, it was found that the change in the real exchange rate index did not have a statistically significant effect on asset profitability, equity profitability, and return on the net resource used.
Akalin and Uzgören (2016)	Turkey (1993- 2009)	The real effective exchange rate.	As a result, according to the long-term coefficient estimates, an increase in the exchange rate negatively affects exports and total sales.
Çürük and Boyacıoğlu (2016)	Turkey (2006- 2014)	The stock returns.	As a result of their study, into the share of increases and decreases in exchange rates, they concluded that it affected their stock returns.
Emirhan (2006)	Turkey (1997- 2005)	The real effective exchange rate.	As a result, it found that 17 percent of firms have remarkable exposure. Most of this exposure is negative.
Mutluay and Turaboğlu (2009)	Turkey (1997- 2007)	The return on net capital employed.	As a result of their studies, it was determined that the performance of 3 firms was statistically sensitive to the change in the REDK index.
Kıymaz (2003)	Turkey (1991- 1998)	The rate of return on the firm's stock.	As a result of the study, it was revealed that firms engaged in foreign trade and the textile sectors in Turkey were affected by variations in the exchange rate.

Yücel and Kurt (2003)	Turkey (2000- 2002)	The real exchange rate	As a result of the study, they concluded that firms with high exports are more affected by changes in exchange rates than firms that do not export.
Erol, Algüner, and Küçükkoçaoğlu (2003)	Turkey (1998- 2001)	The real return on an individual stock.	According to the research results, they reached, the sector with the highest foreign debt ratio is textile, followed by the food and manufacturing sectors.
Rati and Candraewi (2020)	Indonesia (2015- 2018)	Stock return	They found a significant effect of exchange rate on the stock and a nonsignificant effect of return on assets.

CHAPTER 4

THE EFFECT OF EXCHANGE RATE ON FIRM PERFORMANCE:

EVINDENCE FROM TURKISH LISTED FIRMS

In this part of the study, the purpose and importance of study, data and variables employed, methodology of the study, and the results obtained from the analysis are given.

4.1. Research Objective

The objective of this thesis study is to reveal the effects of exchange rates on the financial performance of firms. In line with this, the textile industry, one of the major export industries of Turkey, was chosen.

4.2. Research Data Set

The data of 22 textile firms listed in İstanbul Stock Exchange (BIST) was employed for the analysis. The research period was between 2005 and 2019. In Turkey, inflation accounting has been introduced in the balance sheets since 2005. Therefore, the dataset was started from this year at the earliest. In the study, Return on Asset (*roa*) were used as the dependent variable and the Real Effective Exchange Rate (*reer*) as the main independent variable. In addition, age, size, and leverage variables were added as control variables to the study. In order to test the robustness of the estimation results of the model, Return on Equity (*roe*) were additionally used. The data of the companies were obtained from the Finnet database. The REER data is obtained from the Central Bank of the Republic of Turkey Electronic Data Delivery System.

Table 4.1. shows the list of the companies included in the study.

Table 4.1. The Textile Firms Listed on BIST

SERIAL NO	BIST CODE	COMPANY NAME
1	ATEKS	Akın Tekstil
2	ARSAN	Arsan Tekstil
3	BLCYT	Bilici Yatirim
4	BRKO	Bırko Mensucat
5	BRMEN	Bırlık Mensucat
6	BOSSA	Bossa
7	DAGI	Dagi Giyim
8	DIRIT	Diriteks Diriliş Tekstil
9	HATEK	Hatay Tekstil
10	KRTEK	Karsu Tekstil
11	KORDS	Kordsa Teknik Tekstil
12	LUKSK	Lüks Kadife
13	MAVI	Mavi Giyim
14	MNDRS	Menderes Tekstil
15	MEMSA	Mensa
16	RODRG	Rodrigo Tekstil
17	ROYAL	Royal Halı
18	SKTAS	Söktaş
19	SNPAM	Sönmez Pamuklu
20	VAKKO	Vakko Tekstil
21	YATAS	Yataş
22	YUNSA	Yünsa

The explanations of the variables used in the study are given in table 4.2.

Table 4.2. Variables

Notation	Variable	Description and Calculation
<i>roa</i>	Return on Asset	Main dependent variable. I. $\frac{\text{Operating Income}}{\text{Total Assets}}$
<i>roe</i>	Return on Capital Employed	Main dependent variable. II. $\frac{\text{Operating Income}}{\text{Shareholder's equity}}$
<i>reer</i>	Real Effective Exchange Rate	Main independent variable.
<i>age</i>	Age	Firm age.
<i>size</i>	Size	The logarithm of total assets.
<i>lev</i>	Leverage (Debt Ratio)	It is calculated by dividing the long-term liabilities by total assets.

Before the econometric analysis, extreme values of the *reer*, *roa*, *roe*, *age*, *size*, and *lev*, variables were removed from the data used in the study. In other words, values below 1% and above 99% were eliminated with the trimming method. Then, the descriptive statistics of the variables were calculated.

Descriptive statistics for variables are shown in Table 4.3.

Table 4.3. Descriptive Statistics

Variable	Observations	Mean	Standard Deviation	Minimum	Maximum
<i>reer</i>	294	102.3266	14.79955	76.23	127.72
<i>roa</i>	294	.0365986	.0775521	-.2	.25
<i>roe</i>	294	.1187415	.3140565	-.77	1.98
<i>age</i>	294	35.46599	12.49152	8	68
<i>size</i>	294	8.297039	.5019883	6.68448	9.85556
<i>lev</i>	294	.1528378	.1201227	.002761	.527488

After calculating the descriptive statistics of the variables, the correlation of the variables were calculated.

Table 4.4. shows the correlation test results.

Table 4.4. Correlation Test Results

	<i>reer</i>	<i>roa</i>	<i>roe</i>	<i>age</i>	<i>size</i>	<i>lev</i>
<i>reer</i>	1.000					
<i>roa</i>	-0.2775	1.000				
<i>roe</i>	-0.3901	0.6106	1.000			
<i>age</i>	-0.1744	0.0344	0.0434	1.000		
<i>size</i>	-0.2629	0.3384	0.2480	0.3652	1.000	
<i>lev</i>	-0.2166	-0.0443	0.2389	0.2594	0.1360	1.000

Finding high levels of correlation among the dependent variables is undesirable in econometric analysis. According to the results, there was a high positive correlation between *roa* and *roe*, as expected.

4.3. Research Method

The Least Squares Dummy Variables Model (LSDVM) was performed to analyze the relationship between exchange rates and financial performance of the firms.

Three types of data are used in econometric analyses. These are, panel data, time-series data, and cross-sectional data. Cross-sectional data are data that contain data of different variables at a given time series data include the changes of a variable over days, months, quarters, or years. Whereas panel data, are the data in which both cross-section data and time series data are combined. In panel data, the number of units is expressed as 'N' and the number of observations is expressed with 'T'. Panel data include more than one observation and more than one time. Econometric analysis using panel data is called panel data analysis (Tatoğlu, 2018; p. 2-3).

The LSDVM method is based on Kiviet (1995) and, as used in the study, and revised by Bruno (2005) for unbalanced panel data sets, is used.

LSDVC method is defined as included in equation 1;

$$Y_{i,t} = \alpha y_{i,t-1} + \sum_i \beta_i x_{i,t} + u_{i,t} + \varepsilon_{i,t} \quad (1)$$

In Equation 1, y is the dependent variable and x is the independent variables. u stands for the disturbance term. ε denotes firm level fixed effects

The Least Squares Dummy Variables was used as the analysis method in the study. For the estimation of the model, the econometric code adapted for the unbalanced panel data sets developed by Bruno (2005) was used. The Least Squares Dummy Variables was chosen due to the low number of firms in the data set. This method is used in cases where there is an endogeneity problem and the cross sections of the instrument variables are narrow enough to allow the Generalized Moments Method (GMM).

In this study, Least Squares Dummy Variable regression model based on GMM management, developed by Blundell-Bond (2000), was used.

The main model is as follows:

$$roa_{i,t} = \beta_0 + \beta_1 roa_{i,t-1} + \beta_2 reer_{i,t} + \beta_3 age_{i,t} + \beta_4 size_{i,t} + \beta_5 lev_{i,t} + \varepsilon_{i,t}$$

Here *roa* denotes the profitability and it is the dependent variable. The main independent variable is the real effective exchange rate and it is expressed with *reer*. Other variables are *age*, *size*, *lev*, and these are the control variables. Here *lev* denotes the leverage. According to some a number of studies in the literature, *reer* effect the *roa* positively (Chalmers, et al., 2020; Silva, 2017). However, there are also studies that found *reer* effects *roa* negatively (Zeitun et al., 2007; Pacini et al., 2017; Çürük, 2015; Sharipo, 1975; Agiomirgianakis et al., 2013; Coşkun-Topaloğlu, 2016; Mutluay-Turaboğlu, 2013; Akalin-Uzgören, 2016; Bayar-Ceylan, 2017). In these studies, it was revealed that companies have more profitability as *reer* increase.

4.5. Research Findings

The results of the main models were given in the Table 4.5:

Table 4.5. Results of the main models

	(1)
	<i>roa_{i,t}</i>
<i>roa_{i,t-1}</i>	0.759*** (5.95)
<i>reer_{i,t}</i>	-0.000821 ⁺ (-1.86)
<i>age_{i,t}</i>	-0.00226 (-0.94)
<i>size_{i,t}</i>	0.0399 (1.41)
<i>lev_{i,t}</i>	-0.0646 (-1.37)
<i>N</i>	272

t statistics in parentheses

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$, ⁺ $p < 0.1$

A statistically significant negative correlation was found between *reer* and *roa* at 10% significance level. This revealed that if the real exchange rates increase, the profitability of the textile firms decreased as well. But this relationship was statistically significant. This finding is parallel with the studies that found a negative relationship between the real exchange rate and return on assets (Çürük, 2015; Yelghi, 2020; Ünal,

2019; Göker and Uysal, 2020; Aydeniz, 2009; Coşkun and Topaloğlu, 2016). This finding is not unexpected for the importing firms. This may indicate that depreciated Turkish Lira depreciated the competitiveness of the importing textile firms in the international markets and this resulted in a decrease in the financial performance of the firms.

For the control variables, it was revealed that *roa* was negatively affected by *age* (Mutluay and Turaboğlu, 2013). There is also a positive relationship between *age* and *roa* in the literature (Çevik and Boran, 2020). In addition, it was not statistically significant. There is also a positive relationship between *size* and *roa* (Aygün, İç and Sayın, 2011; Aydın, 2019). However, there are also negative relationship in the literature (Tekin and Demirel, 2017). The relationship between *lev* and *roa* was insignificantly negative (Aygün, İç and Sayın 2011).

In addition to the main models robustness checks were also performed. In this stage, as a dependent variable *roe* variable were added to the main models. Table 8 shows the robustness checks results.

Table 4.6. Robustness check

	(2)
	<i>roe_{i,t}</i>
<i>roe_{i,t-1}</i>	0.412*** (6.37)
<i>reer_{i,t}</i>	-0.00494 (-2.04)
<i>age_{i,t}</i>	0.00274 (0.29)
<i>size_{i,t}</i>	-0.149 (-1.34)
<i>lev_{i,t}</i>	0.664*** (3.40)
<i>N</i>	272
<i>t</i> statistics in parentheses	
* <i>p</i> < 0.05, ** <i>p</i> < 0.01, *** <i>p</i> < 0.001	

The Robustness check model is as follows:

$$roe_{i,t} = \beta_0 + \beta_1 roe_{i,t-1} + \beta_2 reer_{i,t} + \beta_3 age_{i,t} + \beta_4 size_{i,t} + \beta_5 lev_{i,t} + \varepsilon_{i,t}$$

Here *roe* denotes the return on equity as another proxy of the financial performance. The main independent variable is the real effective exchange rate and it is expressed with *reer*. Other variables are *age*, *size*, *lev*, and these are the control variables. Here *lev* denotes the leverage.

Analysis results showed that a statistically significant negative relationships was found between *reer* and *roe* at 5% significance level (Çürük, 2015; Yelghi, 2020; Ünal, 2019; Göker and Uysal, 2020; Aydeniz, 2009; Coşkun and Topaloğlu, 2016). A positive relationship was found between *age* and *roe*. However, the relationships were statistically insignificant. There are studies that found negative (Çevik and Boran, 2020). A negative relationship was found between *size* and *roe*. In addition, the relationships were statistically insignificant (Tekin and Demirel, 2017). A positive relationship was found between *lev* and *roe*. In addition, the relationships were statistically significant. There is also a negative relationship between *lev* and *roe* in the literature (Aygün, İç and Sayın, 2011).

The model established for robustness check also gave the same result for the main independent variable. This is an indication of the robustness of the established main model.

CONCLUSION

The financial performance of firms has a vital importance in terms of maximizing the wealth of the shareholders. In line with this, the owners and managers of the firms, and even other stakeholders should understand the factors that affect the financial performance. First, internal factors and which firms may have a great deal or only a small level of control over. Secondly, the industrial variables, and the level of the firms' control over these factors can dramatically diminish. and finally, the macroeconomic variables. These factors affect the firms externally and they have no control over the macroeconomic factors.

On the one hand changes in exchange rates may affect companies in three ways; economic, accounting, and transaction exposure. On the other hand, appreciating exchange rates may have a positive effect on the financial performance of the firms with the competitiveness in the international markets channel. This effect may be more apparent in the exporting industries, such as the textile industry.

The textile sector has a very important place in Turkish economy. The stable growth of the textile industry will contribute to the successful progress of in the economy. It makes significant contributions to the national economy in terms of employment and exports. And it may considered as the starting sector for countries that adopt an export-led growth. Accordingly, the textile sector, which is an important export sector of Turkey, was chosen.

Uncertainty in exchange rates and cost factors seriously affect the competitiveness of the sector in international markets. It has become more competitive especially after 2005. In this sense, necessary policies should be implemented in order to increase the competitiveness of the sector.

In this thesis study, the effect of real exchange rates on the financial performance of the textile firms was investigated. Thus, the main independent variable of the study is a macroeconomic variable. Additionally, a set of firm-level variables were used as control variables.

In this context, 22 Turkish textile firms were selected for the period of 2005 to 2019. The Least Squares Dummy Variable Model was employed for analyses. In the study, Return on Asset (*roa*) were used as the dependent variables and the Real Effective Exchange Rate (*reer*) as the main independent variable. In addition, *age*, *size*, and *lev* variables were added as control variables to the study. Return on equity variable was also used to test the robustness of the main model. In conclusion, it was found that the change in the real exchange rate affected the *roa* and *roe* negatively and this effect was statistically 10% and 5% significant.

In order to avoid this risk of decrease in the financial performance, firm should implement hedging strategies. The results of this research are expected to be useful not only for the owners, managers and other decision makers in the industry, but also for the policy makers on the macroeconomic basis.

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