

**THE EFFECTS OF FINANCIAL CRISES ON FOREIGN TRADE: A LOGIT
TRIAL FOR TURKEY**

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ABSTRACT

Together with development of financial markets, the vulnerability level of economies increased much more and markets became more sensitive to the changes – especially unexpected changes- experienced. Crises experienced play key role, for after the process they appear, in the sense of being able to understand and predict the possible crises. Models and approaches, shaped in the axis of the features crises contain, shed an important light on crisis literature. The development of financial markets has made it more inevitable for risk factors to become more prominent in these markets.

An important indicator of the effects of financial crises on the real sector is the export rate. The level of exports, which may be extremely sensitive to changes in the wake of the financial crisis, may change in the negative direction during or after the financial crisis period. The main aim of this study is to set out the dynamics of the financial crisis and to set out the possibility of realizing the financial crisis with the help of a logit model by taking the lead indicators that are accepted in the literature related to the pre-crisis process.

As a result of the analysis, a unit increase in domestic credits and real exchange rate caused exports to decrease by 0.002 and 0.003 units respectively. On the other hand, the increase in M2 / reserves, interest rates and the probability of crisis is 0.023 for exports; 0.003 and 0.53 units, respectively.

JEL codes: F14, G01.

1. INTRODUCTION

One of the important areas where the effects of the financial crisis are felt is foreign trade. The interaction between financial crises and foreign trade is mainly shaped by the decline in foreign direct investment volume experienced in post-financial crisis periods. In studies on the dynamics of economic growth, direct foreign investment and foreign trade issues, which are the main actors of globalization, are of great importance.

Expansion in the foreign trade volume may increase the economic growth by increasing the employment and the labor productivity by creating quality product application, transition to the scale economy and technological innovation. Countries that see foreign trade as an important step of industrialization and

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who can bring the above mentioned positive effects to the fore are reaching success. An alternative practice can lead to a continual increase in the foreign trade deficit and the oppression of the country under the debt burden. In this respect, the decline in the foreign direct investment level during periods of financial crises may lead to a decrease in foreign trade volume.

The failure to produce high value-added products in developing countries is due to the inability to use capital-intensive techniques at competent levels. In this context, external dependence on energy and technology is an inevitable consequence of foreign trade deficits for these countries. Significant increases in foreign trade deficits can be experienced with the shrinking of export volume especially during crisis periods. It is accepted that there is a positive relationship between foreign direct investment and economic growth in the economic theory. According to the neo-classical growth model, foreign direct investment has a positive contribution to economic growth by increasing the amount and efficiency of total investments. In the internal growth models, it is argued that foreign direct investments have increased the economic growth by spreading the technology towards developed countries from developed countries (UNCTAD, 1999: 156).

International trade links play an important role in the so-called contagious effect, that is, a crisis in one country causes a new crisis in another country with relatively good fundamentals. Glick and Rose (1999) provided some analysis of the relationship between trade and contagion; while Forbes (2001) went further to construct some statistics measuring the importance of trade linkages in transmitting crises.

Eichengreen and Rose (1999) used a binary-probit model to test whether bilateral trade linkages transmitted crises between industrial countries between 1959 and 1993.

A devaluation of a national currency will increase the volume of exports and reduce the volume of imports. Classic international trade theory shows that a devaluation improves the trade balance if the Marshall-Lerner condition is satisfied. Because in a financial crisis a country usually experienced a devaluation of its national currency, the same analysis would apply, that is, the affected countries' imports will decrease, but their exports will increase after the crises. Furthermore, financial crises (including currency crises, banking crises, or both) could also affect trade through channels besides the exchange rate (Ma and Cheng, 2005: 255-256).

Ma and Cheng (2005) in their theoretical analysis predicts that imports will decrease during and after a banking crisis, whereas exports will rise during but fall after the crisis. Theoretical analysis predicts imports and exports will fall during currency crises, but the effect after the crisis depends on the source of external shocks. By estimating a model of bilateral trade between fifty countries over a period of nineteen years with real-world data.

2. THE RELATION BETWEEN FINANCIAL CRISES AND FOREIGN TRADE IN TURKEY

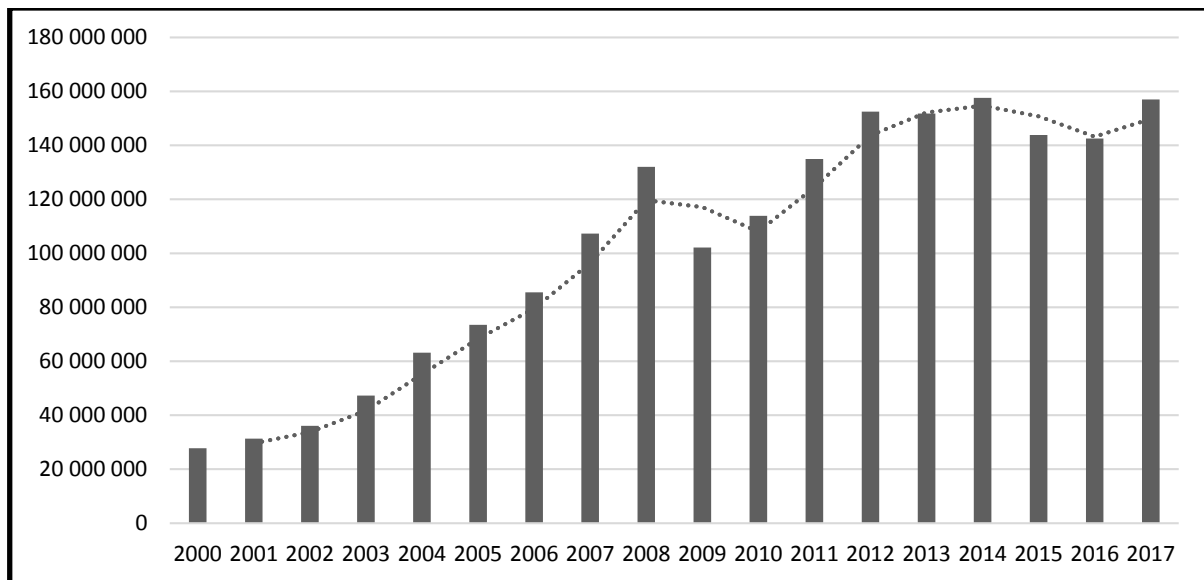
One of the most affected macroeconomic indicators in the crisis period is foreign trade indicators. World trade volume, which grew by 15.4 percent annually in 2008 during the global crisis, declined by 22.8 percent in 2009. This rate is the most severe contraction since World War II. Parallel to this development, Turkey's exports volume, which increased by 20.4 percent in 2008, contracted by 27.3 percent in 2009.

It is observed that there is a significant decrease in world trade volume with the global crisis. Along with this severe decline observed, there has also been a severe contraction in the subcontracting industry, trade and transportation sectors, which are closely related to these sectors, especially in the sectors that are producing for export. It is observed that the emerging countries which entered with the growth rates similar to the global crisis in the group made according to the share of the exports made to the developed countries in the total exports decouple significantly depending on the structure of the export markets during the crisis. In Turkey's total exports, developed countries, especially the European Union countries, have a significant share. Exports to these markets constitute about two-thirds of total exports,

and in this respect, Turkey ranks 49th out of 105 developing countries. Automotive, machinery, transportation parts and iron and steel products in Turkey's exports have high shares of 14 percent, 13 percent and 13 percent, respectively. Turkey is one of the top 10 countries with the highest share of total exports, especially in automotive and iron-steel products. Thus, countries such as Turkey, which exports mainly investment and consumer durables but have not a high share of exports within the economy, are also affected by negative external demand conditions (Central Bank of Turkey, 2011: 2-6).

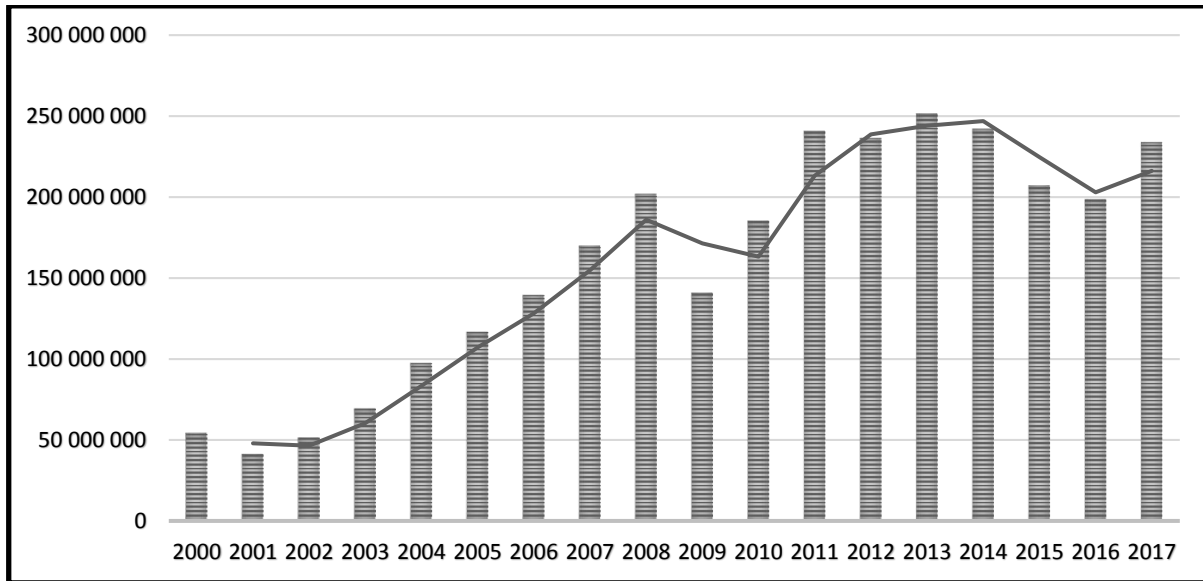
When evaluated in the last years, as seen in Figure 1, 2006 and 2008 Turkey's exports to the world have increased continuously over the years. When it comes to 2009 there was a decrease in exports. Continued increase in 2009 and 2012 exports to the world have followed a fluctuating course between 2012 and 2015. In 2014 Turkey's exports reached a peak of 157.6 million dollars. World total merchandise exports volume reached \$ 16.0 trillion in 2016 from \$ 6.5 trillion in 2000. It has grown approximately 2,5 times in the meantime. Turkey's exports were \$ 27.77 million in 2000, while exports of \$ 156.99 million in 2017 and approximately 5.7 times growth in this years. Thus Turkey have become the 31st largest exporter in the world (Turkish Statistical Institute, 2018; World Bank, 2018; International Trade Center, 2018).

Figure 1: Turkey's Exports to the World (ABD Dolari)



Source: Turkish Exporters Assembly, 2018.

As can be seen in Figure 2, between 2006 and 2008, has increased steadily. Our imports for 2009 were down. The imports of Turkey to the world which continues to increase during the years 2009 and 2011, fluctuates between 2012 and 2015. In 2013, imports of Turkey were top \$ 251.66 billion reached. While the world total merchandise import volume was 6,69 trillion US dollars in 2000, in year 2016 grew by 2.5 times in the meantime as US \$ 16.2 trillion. While Turkey's imports to the world were \$ 54.5 million in 2000, \$ 233.80 billion in 2017 imports and has grown 4.3 times in this years. Thus Turkey became 20th largest importer of the world (Turkish Statistical Institute, 2018; World Bank, 2018; International Trade Center, 2018).

Figure 2: Turkey's Imports to the World (ABD Doları)

Source: Turkish Exporters Assembly, 2018.

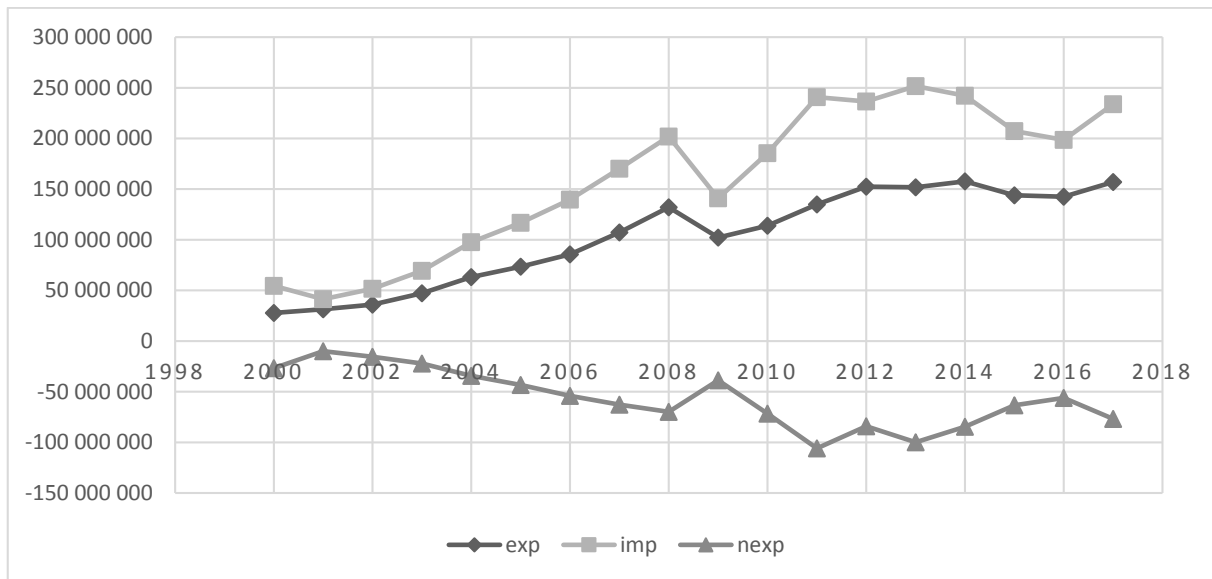
As seen in Table 1, the percentage share of EU total exports is 40-49% around. In 2017, 47.1 percent of total exports were made to 28 EU countries. Turkey's export to other countries outside the European Union (EU 28) its share in total exports is between 49 and 60 percent over the years.

Table 1: Regional Distribution of Turkey's Exports (% Share)

Country Group	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
A-EU 28	48,3	46,2	46,5	46,4	39,0	41,5	43,5	44,5	48,0	47,1
B-Turkish Free Trade Areas	2,3	1,9	1,8	1,9	1,5	1,6	1,4	1,3	1,3	1,3
C-Other Countries	49,5	51,8	51,7	51,7	59,5	56,9	55,1	54,2	50,8	51,7
1-Other European Countries (Except EU)	11,6	10,9	9,8	9,4	9,3	9,4	9,6	9,8	6,8	6,2
2- Near and Middle East Countries	19,3	18,8	20,5	20,7	27,8	23,4	22,5	21,6	22,0	22,5

Source: Turkish Statistical Institute, 2018.

Figure shows the long period of the structure of exports and imports. As it is seen in the figure exports declined after the crisis period.

Figure 3: Exports, Imports and Net Export (ABD Doları)

Source: Turkish Exporters Assembly, 2018.

3. METHODOLOGY

In this study, a logit model was used to analyze the effects of financial crises on Turkey's foreign trade structure. Analyses were made on the axis of a model in which foreign trade indicators are treated as dependent variables and the indicators described in the literature as financial crisis indicators are considered as independent variables.

Various models are used depending on the ability of the selected variables to explain the effects of crises and to signal whether the indicators are generating financial pressure. In the literature these models are known as two output models. In two output (end) models, the dependent variable can have two different values. The result that can be taken for the selected state, decision or other qualitative structure can be 0 or 1.

$$y = \begin{cases} 0 & no \\ 1 & yes \end{cases} \quad (1)$$

The two output models try to estimate the probability of $y = 1$ as a function of the dependent variable.

$$p = pr[y = 1|x] = F(x'\beta) \quad (2)$$

In order to be able to explain the behavior of a bipartite dependent variable, there are three different models for $F(x'\beta)$ form. These are linear probability models, logit and probit models.

The models which use logistic function from cumulative distribution function models are called logit models. Logit models are a member of a family of linear functions, and logit analysis provides an interpretable linear model for categorical dependent variables. The model assumptions of the Logit analysis are similar to those of the linear regression models, as well as the general linear model for unidirectional variance analysis, as well as the assumptions of the regression analysis or the discriminant analysis. The only difference is that the response variable is logit, that is, it is not a measurable variable. Logit models have at least two categorical response variables and at least one argument. In the logarithmic linear model, one of the variables can be logitized using the response variable (Demaris, 1992: 230).

Models developed to analyze the conditional relationship of two or more dummy variables are called log-linear models. With log-linear models, it is possible to test the compound distribution of variables, whether two or more variables are interdependent, and whether the relation between two or more variables is based on the cause-and-effect relationship (Özdamar, 1999: 449-450).

Logit Models are special cases of the generalized linear model created under certain conditions. In this case study, if some of the independent variables cannot be decomposed into continuous or appropriate (related) classes then logistic regression should be used instead of log-linear analysis. At the same time, if some of the variables are considered dependent, then the logit model is suitable. In such a case, it is recommended to apply the logit model in order to be able to maintain the condition between 0 and 1 (Gujarati, 1999: 555). The Logit model is a statistical method that analyzes tabulated or raw sets of data, which allows to estimate the dependent values of the dependent variable as probabilities and to classify them according to probability rules (Özdamar, 1999: 476).

The Logit model is a mathematical function whose dependent variable is asymptotically 1 when the argument value goes to infinity. Logistic regression analysis is a regression method in which the dependent variable is defined as a shadow variable and the expected value of the dependent variable is obtained as the probability of the dependent variable according to the explanatory variables.

The notation of the logit models, expressed as the cumulative distribution of the logistic function, is as follows:

$$F(x'\beta) = \Lambda(x'\beta) = \frac{e^{x'\beta}}{1 + e^{x'\beta}} = \frac{\exp(x'\beta)}{1 + \exp(x'\beta)} \quad (3)$$

If X takes any value, the exponential term of the function will always be positive, so the lower bound of the function is 0. As the Logit distribution function takes a value between the variables - and +, the function will take values between 0 and 1, and the relationship between the variables is not linear. Thus, the relationship between the variables is not linear. For determining the function in Logit model, the related parameters cannot be estimated directly by least squares method. The above model is expressed as the probability of selecting one of the two preferences (0 or 1) (the preference defined as 1), the expected value of Y for estimating the model solved according to the respective parameters (Kleinbaum vd., 1988: 657).

Another alternative model that can be used in related estimates is probit model. Although the logit and probit models yield qualitatively similar results, the predicted population coefficients of the two models are not directly comparable (Hanushek ve Jackson, 1977: 189). However, when the logit estimate of the population coefficient is multiplied by 0,625, the value of the same population coefficient is very close to the estimated result of probit (Amemiya, 1981: 481).

3.1. Definition of Model and Variables

In this study, the effects of financial crisis and financial crisis variables on foreign trade were analyzed with logit model. Years of decline in the level of exports are defined by the value (1). the indicator of financial crisis in the category of independent variable from the other side is defined as (1) for the years in which the crisis is experienced and (0) for the years not experienced.

The variables used in the analyzes are shown with the help of Table 2. Following the table are the reasons for inclusion of the relevant variables in the analysis.

Table 2: Variables Used in Analyses

Symbol of Variable	Definition
EXPORT	% change in exports
EXCRATE	% change in real exchange rates
DOM	% change in domestic credits
M2R	M2 (Money Supply)/Total Reserves
INTRATE	Deposit Interest Rates
CRS	Financial Crisis (Yes=1, No=0)

The model created in this frame is as follows:

$$\text{EXPORT} = \beta_0 + \beta_1 \text{M2R} + \beta_2 \text{DOM} + \beta_3 \text{INTRATE} + \beta_4 \text{EXCRATE} + \beta_5 \text{CRS} + ui \quad (4)$$

Export: From the experiences of the financial crises experienced, the effect of a change in the exchange rates is mostly felt on the foreign trade indicators. For example, it is likely that there will be a decrease in exports in the pre-crisis period due to the overvaluation of the national currency. For this reason, export values can be considered as an important variable in terms of financial crises. Export is another dependent variable of the model.

Excrate: It is observed that there has been a significant increase in the exchange rates during the crisis period and the value of the national currency has lost value. When monetary crises in terms of their origins are evaluated on the axis of extreme depreciation of the national currency, it is necessary to include this variant in the models if it is defined as a foreign currency crisis. In the model, the real effective exchange rate index based on CPI (Consumer Price Index) calculated by CBRT is used. This index is calculated by taking the weighted geometric average of the ratio of the price level in Turkey to the price levels of the countries where we trade. An increase in the real effective exchange rate indicates that TL appreciates in real terms.

Dom: It is one of the variables measuring the degree of financial liberalization. In the context of financial liberalization, fragility in the banking sector may increase as it contains excessive risk factors. This variable also indicates the extent of expansion in the banking sector. In the pre-crisis periods, it is necessary to include the relevant variable in order to see increases in the liquidity-originated lending, especially the central bank, which are forced to fall into the banks.

M2r: The ratio of M2 money reserves to total reserves indicates how much of the banking system liabilities are covered by international reserves and the ability of the central bank to meet these demands at the time of a speculative attack. In the case of panic, this variable is important in terms of crises as it is thought that the central bank will reduce the foreign exchange reserves of the depositors to convert their deposits into deposits and that this may trigger a speculative attack against the exchange rate.

Intrate: The interest rate is a display that represents financial liberalization. It is known that financial liberalization tends to lead to high real interest rates. If banks cannot raise credit interest rates quickly enough, high and short-term real interest rates can adversely affect bank balance. The rise in real interest rates negatively affects the private sector outside the financial sector, especially those with high debt. High real interest rates can be due to liquidity shortages, speculative remarks or expectation of crisis.

Crs: The financial crisis variable is defined as the period during which the crisis is experienced (1) for the period in question, and the value (0) for the years when the crisis has not occurred.

Another indicator that the effects of financial crises on the real sector is felt most quickly and lucidly is the level of exports. The level of exports, which may be extremely sensitive to changes in the wake of the financial crisis, may change in the negative direction during or after the financial crisis period. The summary information on the variables used in the analysis of the model in which the % change in export is considered as dependent variable is shown in Table 3.

Table 3: Summary of Statistics

Variable	Observation	Mean	Std. Dev.	Minimum	Maksimum
Export	32	0.125	0.3360108	0	1
M2R	32	4.86125	1.234388	3	7.25
Dom	32	55.58844	35.54547	8.78	133.71
Intrate	32	47.10188	22.92322	14.22	87.79
Excrate	32	1.05	10.76095	-23.87	24.85
Crs	32	0.15625	0.368902	0	1

3.2. Analysis Results

The annual data for the period 1985-2016 were used in the model used in the study. The reason for the start of the year 1985 as the start year is the rationale for the return after 1980, when it is accepted as a turning point for the Turkish economy, as well as the attainment of a healthy data set on some variables.

The variables used in the analysis were selected from the financial and real indicators which are considered to be indicators of crisis by staying true to the literature. STATA.14 package program was used in the analysis. Variables included in the data set are expressed as percent change rates, since variables such as quantity and price facilitate the comparison of different time periods in order to avoid the non-stationary problem, and the data that are likely to be exposed to seasonal effects are removed from this situation.

Table 4 shows the frequency distribution for the years of decline in the level of exports in the analyzed period.

Table 4: Frequency Table for Exports

EXPORT	Frequency	%	Total
0	28	87.50	87.50
1	4	12.50	100.00
Total	32	100.00	

When Table 4 is examined, it is found out that the decrease in exports occurred in 4 periods within the period covered by the Turkish economy. It is observed that every financial crisis that occurred is not in decline in the level of exports. The periods in which exchange rates for exporters have been experienced (such as the period of 1994) have been years of exacerbation even though it is a period of crisis. The year in which exports declined most deeply was in 2009.

Table 5 shows the results of the regression analysis of the model in which the export level is treated as a dependent variable.

Table 5: Regression Results

Source	SS	df	MS			
Model	1.46635635	5	.293271269	Number of obs =	32	
Residual	2.03364365	26	.078217064	F(5, 26) =	3.75	
Total	3.5	31	.112903226	Prob > F =	0.0109	
				R-squared =	0.4190	
				Adj R-squared =	0.3072	
				Root MSE =	.27967	

export	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]	
m2r	.0225127	.0508703	0.44	0.662	-.0820526	.1270781
dom	-.0020926	.0032762	-0.64	0.529	-.0088269	.0046418
intrate	.0027644	.0051039	0.54	0.593	-.0077268	.0132556
excrate	-.0032322	.0064358	-0.50	0.620	-.0164612	.0099968
crs	.5289461	.1653851	3.20	0.004	.1889921	.8689001
_cons	-.0775821	.2928033	-0.26	0.793	-.6794479	.5242837

The F statistic value for the model according to Table 5 is 3.75. The model in this frame is meaningful as a whole (Prob> F = 0.0109). The explanatory variability of the explanatory variables of the model was 42% (R² = 0.42). A unit increase in domestic credits and real exchange leads to a decrease in exports of 0.002 and 0.003 units, respectively. On the other hand, an increase in M2 / reserves, interest rates and the likelihood of crisis suggests that exports increase by 0.023, 0.003 and 0.53 units respectively. The issue that needs to be addressed here is that the crises may have a positive impact on exports. Although we had years of crisis between 1994 and 1999 in 1981-2012 period, we did not decrease the level of exports. This may be a consequence of the fact that the crises that are happening are at national scale and that the exchange rate of the exporters is transformed into flush. On the other hand, the contraction in exports experienced in 2009 was the deepest decrease in the period concerned. It can be said that the period in which the effect of 2008 crisis was felt most intensively for Turkey in the period of 2009 and the fact that the related crisis was a global crisis was effective. Table 6 gives the logit analysis results for the model.

Table 6: Logit Results

Logistic regression	Number of obs =	32
	LR chi2(5) =	11.12
	Prob > chi2 =	0.0491
Log likelihood = -6.4970973	Pseudo R2 =	0.4611

export	Coef.	Std. Err.	z	P> z	[95% Conf. Interval]	
m2r	.8815008	1.283746	0.69	0.492	-1.634595	3.397597
dom	-.0256068	.0529625	-0.48	0.629	-.1294114	.0781978
intrate	.0300557	.0770983	0.39	0.697	-.1210542	.1811656
excrate	-.0207575	.0910309	-0.23	0.820	-.1991748	.1576598
crs	4.731936	2.80432	1.69	0.092	-.7644297	10.2283
_cons	-8.461242	8.379041	-1.01	0.313	-24.88386	7.961377

According to the logit analysis results in Table 6, the model as a whole is significant (Logit; Prob> chi2 = 0.0491). Considering the analysis result in Table 6, it is seen that there is negative relation between

4. CONCLUSION

The increase in economic activity and inter-country economic relations has also brought about an increase in the need for new payment and financing instruments. In this context, the importance of financial markets, which combine the fund surplus with the fund openers, and which transfers the funds to the consumption, production and investment channels of the economy's basic welfare dynamics, tends to increase day by day. In the financial system, which contains about ten times the economic size of real economic activity, the accidents that have taken place have led to various crisis experiences on both the national / regional and global scale over time. Especially the post-1980 liberalization movements and the phenomenon of globalization that occurred in every area led to the experiencing different crises in terms of the way in which the dimensions of the living crises both moved to the global dimension and emerged. Various models have been developed to explain the related crises due to differences in the emergence dynamics. According to the analysis made, it is very important that the crises can be anticipated in the world economies where the crisis is experienced almost every 19 months and the economic results can be demonstrated. The theoretical and empirical models developed in this context initially focused on the causes of the financial crises, but they also focused on the prediction and mitigation of the negative results over time.

According to the results, where the export level is considered as a dependent variable, it is determined that the increase in the domestic lending and the real exchange rate has a positive relationship with the exports level, with M2 / Reserves, interest rate and crisis probability variables being effective in reducing exports. It has been observed that the effects of crises on the real sector, especially in the model-2 and model-3 crises, were more pronounced in the following periods, depending on the nature of the financial crisis. The periods in which the growth rates have negative values coincide with the periods in which the crises are experienced. Moreover, while there was no decrease in exports during 1994 and 2001, the sharpest decline in exports in the period 1981-2012 was realized in 2009, a period after the crisis, with a decrease of 22.6%.

The ratio of M2 to total reserves, which expresses how much of the banking system liabilities in this framework are covered by international reserves and the ability of the central bank to meet these demands at the time of a speculative attack, is the ratio of the short term debts within total reserves, which can be described as a factor increasing financial vulnerability, it is inevitable to reduce the volatility against the possible negatives despite the fact that especially the foreign trade indicators can be kept under control in terms of stable course.

REFERENCES

- Amemiya, T. (1981). "Qualitative Response Models: A Survey", *Journal of Economic Literature*, 1981, 1 (4): 1483-1536.
- Central Bank of Turkey (2011). *Financial Stability Report*, November, Volume 13, <http://www.tcmb.gov.tr/wps/wcm/connect/EN/TCMB+EN/Main+Menu/Publications/Reports/Financial+Stability+Report/2011/Sayi+13> (Access Date: 19.07.2018).
- Demaris, A. (1992). *Logit Modeling: Practical Applications*, Sage University Paper Series on Quantitative Applications in the Social Sciences, Series No. 07-086, Sage Publications, Newbury Park, CA.
- Eichengreen, B. & Rose, A. K. (1999). "Contagious Currency Crises: Channels of Conveyance". (Ed. Takatoshi Ito & Anne O. Krueger), *Changes in Exchange Rates in Rapidly Developing Countries: Theory, Practice, And Policy Issues*, pp. 29– 50, University of Chicago Press, Chicago.
- Forbes, K. (2001). "Are Trade Linkages Important Determinants of Country Vulnerability to Crises?", *NBER Working Paper Series*, Working Paper 8194.
- Glick, R. & Rose, A. K. (1999). "Contagion and Trade: Why Are Currency Crises Regional?", *Journal of International Money and Finance*, 18: 603–617.
- Gujarati, D. N. & Porter, D. C. (2012). *Basic Econometry*, Literatür Publishments, İstanbul.

- Hanushek E. A. & Jackson, J E. (1977). *Statistical Methods For Social Scientists*, Academic Press, New York.
- International Trade Center (2018). “Trade Map”, <http://www.trademap.org/Index.aspx> (Access Date: 19.07.2018).
- Kleinbaum, D. G.; Kupper, L. L. & Muller, K. E. (1988). *Applied Regression Analysis and Other Multivariable Methods*, Duxbury Press, Belmont.
- Ma, Z. & Cheng, L. (2005). “The Effects of Financial Crises on International Trade”. (Ed. Takatoshi Ito & Andrew K. Rose), *International Trade in East Asia*, NBER-East Asia Seminar on Economics, Volume 14, pp. 253-285.
- Özdamar, K. (2002). *Statistical Data Analysis with Package Programmes (Multivariable Analysis-2)* (4. Edition), Kağan Publish, Eskişehir.
- Turkish Exporters Assembly (2018). “İhracat Rakamları”, <http://www.tim.org.tr/tr/ihracat-rakamlari.html> (Access Date: 18.07.2018).
- Turkish Statistical Institute (2018). “Dış Ticaret İstatistikleri”, https://biruni.tuik.gov.tr/gosterge/?l_ocale=tr (Access Date: 18.07.2018).
- UNCTAD, United Nations Conference on Trade and Development. (1999). *World Investment Report 1999-Foreign Direct Investment and the Challenge of Development*, United Nations Publication, New York and Geneva.
- World Bank (2018). “Trade”, <https://data.worldbank.org/topic/trade?view=chart> (Access Date: 18.07.2018).