The Monetary Transmission Mechanism Operation And Empirical Findings: İn Turkey (2001-2017)

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ABSTRACT

There are certain economic objectives that a country wants to achieve and different economic policy instruments that it will use to achieve these goals. Within these tools, monetary policy practices have an important place. Therefore, it is possible to understand the ways in which monetary policy affects the economy and in what way, monetary policy implementations and reflections are possible within the framework of monetary transmission mechanism. December 2017 period, with January 2001 in Turkey in this study between CPI (%) change, the industrial production index, Central Bank dollar buying rate, the banking sector's total loan volume, the CBRT overnight borrowing rate, BIST 100 Index was analyzed functioning of monetary transmission mechanism with closing prices . VAR analysis was used for this. Thus, the presence of variable monetary transmission mechanism in Turkey in the time range examined was observed in part.

Keywords: Monetary Transmission Mechanism, VAR analysis, TCMB, Turkey

1. INTRODUCTION

We have to know the monetary transmission mechanism to explain how you can influence the monetary variables of a monetary policy process through the central bank. This important monetary transfer function plays a major role. The country is experiencing an expansion process in the country's economy, the central bank wants to be affected by the inflation. For this purpose, open market risk reduction reduces the money supply in the economy by reducing reserves in banks. While the demand for money has not changed, this decrease in money supply causes the interest rates to rise and the credit conditions become more difficult. Instead of increasing interest rates, it leads to a fall in the value of the characteristics of its goals and direction. These conditions that will occur in the economy can be explained and evaluated through monetary transmission. For this reason, the importance of this study due to the removal of an economy in today's conditions was important for this reason. In the study, it was examined in the VAR model which regularly regulates the period of January 2001 - December 2017. In the analysis, CBRT's daily borrowing interest rate (%), BIST 100 closing prices, domestic credit volume operating in the center, CBRT dollar buying rate, CPI and industrial production index series are used.

2.Teoric Framework

Monetary transmission mechanism is of great importance in understanding the effectiveness of monetary policies implemented by central banks to ensure price stability. The monetary transmission mechanism can be expressed in two general stages. The first one affects the policy interest rate changes, market interest rates, asset prices, exchange rates, general liquidity and credit conditions in the economy and financial markets. Secondly, changes in financial market conditions lead to changes in spending on goods and services of households and producers (European Central Bank, 2000: 43). The monetary transmission mechanism explains the total demand, the level of output and the impact of inflation on the five monetary channels. These; interest channel, asset prices channel, credit channel, expectations channel and finally exchange rate channel. These channels are related to the transfer of monetary policies (Kaya and Belke, 2017: 29).

- **Interest Channel**

The interest channel introduced by the Keynesian economists reveals the relationship between the changes in monetary policy and the total demand (Solid, 2014: 47). Interest channel is the most traditional channel among monetary channels. This is due to a change in interest rates, which in turn affects the cost of money and affects the supply and demand in capital. The Central Bank, together with the interest channel, affects both the decisions of the households and the decisions of the producers. For this reason, the changes in the expenditure or savings of households and the

producers will change their understanding of production (Kızıldere, 2018: 161). *Households and producers make their decisions based on the real interest rate rather than the nominal interest rate. Therefore, the effect of the real interest rate on long-term decisions is quite large (Mishkin, 1995: 5; Örnek, 2009: 106).*

- **Asset Prices Channel**

The asset prices channel can be expressed as the effect of a change in the monetary policies on the asset prices and the effect on the aggregate demand (Erdoğan, 2011: 50). In this respect, as there is no clear distinction between the channels of monetary transmission mechanism, the asset prices channel and the interest channel are in interaction. A change in interest rates also causes changes in asset prices. From a different point of view, a reduction in interest rates will reduce the costs on real estate, so the home prices will also decrease accordingly and consequently the housing market will come alive. Thus, the study of monetary transmission mechanism is observed. We can give another example through stocks. Here, there is a reverse effect between stocks and interest rates. Thus, the demand for stocks increases as interest rates drop. As a result, the expectation of an increase in the price of securities is observed. In another perspective, volatility in the market may also cause an increase in the earnings of individuals (Kızıldere, 2018: 162).

- **Credit Channel**

An expansionary effect on monetary policies will increase banks' deposits and also deposits, which will increase the amount of loans that banks can provide. This increase in loans also

means increased investment expenditures for small and medium sized firms. Since small and medium-sized enterprises do not have enough power to finance themselves, bank loans are of great importance for such enterprises. Therefore, such enterprises are more affected by the credit channel. Large firms can meet their needs directly from the stock and fund markets they are involved in. Therefore, any change in the monetary policy affects the small and medium size small firms through the credit channel (Örnek, 2009: 106). Expansionary monetary policy may also be expected to lead to an increase in the value of firms and an increase in the cash flow resulting from a reduction in the observed debt risk and a relative easing of the debt burden. In this way, the moral hazard and adverse selection effect caused by asymmetric information may be reduced. As a result of these, it may lead to an increase in the loans granted by the banks (CBRT, 2013: 6).

- **Channel of Expectations**

Many economic units such as households determine the investment and consumption decisions to be made on many variables. The decisions of the Central Banks with their monetary policies are the highest for investors (Erdoğan, 2011: 76). Therefore, it can be said that it is one of the channels of monetary transmission mechanism working for expectations channel, especially in terms of inflation, about the situations expected to be experienced in the future economy. In order to ensure price stability, the credibility of the Central Bank should be high. The reason for this will be the confidence in the economic environment, economic units, future inflation

rates and the ideas that will be about the possible developments in prices. It is important for the Central Bank to gain the trust of economic agents. Thus, it will be possible to create the desired effect in the markets with the policies planned by the future with the trust established (CBRT, 2013: 6-7). As a result, the central banks need to be both trustworthy and predictable.

- **Exchange Rate Channel**

As a result of changes in the monetary policy of the exchange rate channel, the prices of final goods and services produced in Turkey and abroad can be expressed as the process of influencing net exports (Erdoğan, 2011: 64). It is the channel exchange rate channel that affects total demand and total supply. The capital outflows from the country will be experienced as the profits of the investments to be made to the country will be less with the decrease in real interest rates in an environment implemented by the expansionary monetary policies of central banks. This process, which will continue with the depreciation of the money in the country, will cause the prices of domestically produced goods to be cheaper compared to imported goods. This situation will be realized on the nominal values in the exchange rates, the increase in the total demand and net exports will be as the ratio of the nominal exchange rate to the real exchange rate. Inflation rates will increase due to the increase in the prices of imported goods. The increase in the prices of imported goods will also lead to a fall in total supply and an increase in prices at the general level. With the increase in trade between countries, the adoption of flexible

exchange rate regime in those countries has taken place. With the phenomenon called globalization, the exchange rate channel is very important because of its effect on exports, output gap and inflation as a channel of monetary transmission mechanism. In addition, the change in the exchange rate with the changes occurring in monetary policy, domestic and overseas with the interest rate can not be determined with certainty because it is linked to inflation (Central Bank of the Republic of Turkey (CBRT, 2013: 7). Exchange rate channel with the country of openness are directly related. Conclusion the higher the level of openness in an economy, the more effective the monetary exchange mechanisms are on the economy.

3. Literature Review

One of the most basic elements of structural change in the entry of Turkey's economy after the 2001 crisis is the main objective of the Central Bank to maintain price stability. As a matter of fact, while monetary policy is trying to achieve price stability, it provides a great deal of influence on the total demand in the economy. In this context, the most important economic argument showing the relationship between price stability and total demand is the monetary transmission mechanism. In this context, when we look at the studies in the literature, there are several studies examining the functioning of monetary transmission mechanism in terms of theory and application. When we look at these studies, they have tried to explain the operation of the monetary transmission mechanism by taking a single channel, several channels or all of the monetary transmission mechanism. These studies examine the functioning of the monetary transmission mechanism in Turkey are using the table below.

Table 1: Turkey Reviewed by Academic Studies

S.N	AUTHOR	PERIOD	METHOD	INVESTIGATED TRANSFER CHANNEL	RESULT
1	Çakmaklı (2005)	April 1986 June 2004 (With Monthly Data)	Var Model Johansen Co-integration Test Vector Error Correction Model Impact Response Analysis Variance Decomposition	Bank Loans Channel	According to the findings, it is concluded that the bank's credit channel does not play an active role in the monetary transmission mechanism.
2	Akkılıç (2007)	1995-2006 (With Monthly Data)	Var Model Impact Response Analysis Variance Decomposition	Exchange Rate Channel	According to the findings ekononomik breakage occurred in Turkey in 2001 and worked as an understanding of the exchange rate channel is more efficient than interest rates.

3	Büyükakın, Cengiz and Turk (2008)	January 1997 September 2007 (With Monthly Data)	Var Model Impact Response Analysis Variance Decomposition	Exchange Rate Channel	According to the findings, it is concluded that the exchange rate has an effective role in the monetary transmission mechanism.
4	Bicil (2009)	2002-2008 (With Monthly Data)	Var Model Impact Response Analysis Variance Decomposition	Loan Channel	According to the findings, it is concluded that the bank's credit channel does not play an active role in the monetary transmission mechanism.
5	Erdogan and Erdogan Lightning (2009)	1995: 01-2007: 09 (With Monthly Data)	Var Model Impact Response Analysis Variance Decomposition	Interest Rate Channel	According to the findings, it is concluded that the interest rate has an effective role in the monetary transmission mechanism.
6	Cambazoğlu (2010)	January 1990 November 2008 (With Monthly Data)	Variance Model Autocorrelation Test LM Test Impact Response Analysis Variance Decomposition	Loan Channel	According to the findings, it is concluded that the bank's credit channel has an active role in the monetary transmission mechanism.
7	Karaca (2010)	January 2002 September 2009 (With Monthly Data)	Johansen Co-integration Test Var Model Impact Response Analysis Variance Decomposition	Interest Rate Channel Exchange Rate Channel Asset Prices Channel Bank Loans Channel	According to the findings of the exchange rate channel and the credit channel is working channel of asset prices and interest rate channel in Turkey has reached the conclusion that work.
8	Leafy (2011)	May 2006 May 2011 (With Monthly Data)	Johansen Co-integration Test Granger Causality Test Error Correction Model	Exchange Rate Channel	According to the findings, it is concluded that the exchange rate has an effective role in the monetary transmission mechanism.
9	Cambazoğlu and Karaalp (2012)	January 2003 August 2010 (With Monthly Data)	Var Model Impact Response Analysis Variance Decomposition	Exchange Rate Channel	According to the findings, it is concluded that the exchange rate has an effective role in the monetary transmission mechanism.
10	Doğan (2012)	2000-2011 (With 3 Month Data)	Var Model Impact Response Analysis	Interest Rate Channel	According to the findings of the traditional monetary transmission mechanism is working efficiently in Turkey.

11	Filiz (2012)	2001: 12-2008: 05 (With Monthly Data)	Variance Model Autocorrelation Test LM Test Impact Response Analysis Variance Decomposition	Interest Rate Channel Exchange Rate Channel Asset Prices Channel Bank Loans Channel	According to the findings obtained in some periods of the monetary transmission mechanism in Turkey it has reached the conclusion that partial work effectively.
12	Akbaş, Zeren and Özekicioğlu (2013)	2005: 01-2013: 07 (With Monthly Data)	Var Model Impact Response Analysis	Interest Rate Channel Exchange Rate Channel Asset Prices Channel Bank Loans Channel	According to the findings obtained in the short term monetary transmission mechanism is working efficiently in Turkey.
13	Mirasedoglu (2017)	January 2006 February 2017 (With Monthly Data)	Var Model Impact Response Analysis	Bank Loan Channel	According to the findings, it is concluded that the bank's credit channel has an effective role in the monetary transmission mechanism.
14	Iskin (2017)	January 2002 October 2016 (With Monthly Data)	Johansen Co-integration Test Vector Error Correction Model	Asset Prices Channel	According to the findings asset prices have reached the conclusion that effective channels of Economics in Turkey.

Functioning of the monetary transmission mechanism or channels in Turkey in the literature when we look at the table above was evaluated according to general VAR model. In the light of these evaluations, our study will be analyzed by using VAR method. The most important contribution of our study to the literature; As a result of the economic developments in the aftermath of the 2001 crisis, it is to provide more sound information in the operation of the monetary transmission mechanism. For this purpose (application) between 2001-2017 will be examined taking into account monthly data.

4. Data Set and Method

How does it work that in Turkey, the monetary transmission mechanism, which channels are active, the six variables used in the analysis established to investigate VAR. These variables, information about the sources and the symbols for the variables to be used in the analysis are explained with the help of the following table.

Table 2 : Variables Used in VAR Model

VARIABLE	SYMBOL	SOURCE	EXPLANATION
CPI (% Change)	CPI	TSI	For the 2001-2004 Period 1994 = 100 and After 2004, 2003 = 100 Based Index is used.

Industrial Production Index	SUE	TSI	2015 = 100 Based Raw Index Used.
CBRT Dollar Buying Rate	EXCHANGE RATE	CBT-EDDS	
Banking Sector Total Loan Volume	CREDIT	CBT-EDDS	
CBRT Overdue Borrowing Interest (%)	INTEREST	CBT	
BIST 100 Index Closing Prices	BIST	CBT-EDDS	1986 = 100 Based Index Used.

According to the table above, these variables consist of 204 months of observation for January 2001-December 2017 period. The 2001 crisis, the 2008 crisis and the recent economic events caused the election of the period. Variables used in the model of the monetary transmission mechanism; CBRT's overnight borrowing interest rate (%), BIST 100 closing prices as indicator of asset prices, total domestic loan volume as indicator of credit channel, CBRT buying rate as indicator of exchange rate channel and CPI as an indicator of interest rate were used as indicators of interest rate. Lastly, since the GDP, which is the indicator of the real economy, was not produced on a monthly basis, the industrial production index was used to represent it in monthly studies. Eviews 9 package program was used in the analysis.

5.Analysis Results

The results of the unit root test, VAR analysis, effect response function and variance decomposition of the variables used to reach the aim of the research are given below.

Table 3: Unit Root Test Results (Industrial Production Index)

LEVEL		t-statistic
ADF test statistic		-1.042233
Test Critical Values	1%	-3.464643
	5%	-2.876515
	10%	-2.574831

ADF unit root test, t statistics values, 1%, 5% and 10% of the critical value of the absolute value as the absolute value of the small output was found to be non-stationary series of industrial production index. Therefore, the primary difference value was taken in the ADF unit root test of the industrial production index series.

Table 4: Unit Root Test Primary Difference Results (Industrial Production Index)

I. DIFFERENCE		t-statistic
ADF test statistic		-3.720181
Test Critical Values	1%	-3.464827
	5%	-2.876595
	10%	-2.574874

When the result of the primary difference value in the ADF unit root test for the industrial production index in Table 4 is observed, it is observed that the t statistical value is 1%, 5% and 10% is the absolute value of the critical values at the level of absolute value and it is understood that the problem of stasis has been eliminated. When we look at the ADF unit root test of the BİST 100 index closing prices series, which is another variable;

Table 5: Unit Root Test Results (BIST 100 Index Closing Prices)

LEVEL		t-statistic
ADF test statistic		-1.291927
Test Critical Values	1%	-3.462574
	5%	-2.875608
	10%	-2.574346

The ADF unit root test for the closing prices of the BIST 100 index showed that the series were not stationary when the t statistical values were considered as the absolute value from the critical value of 1%, 5% and 10%. Therefore, the primary difference value of the series is taken in Table 6.

Table 6: Unit Root Test Primary Difference Results (BIST 100 Index Closing Prices)

I. DIFFERENCE		t-statistic
ADF test statistic		-15.44804
Test Critical Values	1%	-3.462737
	5%	-2.875680
	10%	-2.574385

When the result of the primary difference value in the ADF unit root test for the closing prices of the BIST 100 index in Table 6, it was observed that the t statistical value was 1%, 5% and 10% of the critical value was the absolute value as the absolute value and the problem of stasis was resolved. When we look at the ADF unit root test of the CBRT dollar buying rate series, which is another variable;

Table 7: Unit Root Test Results (CBRT Dollar Buying Rate)

LEVEL		t-statistic
ADF test statistic		-0.183438
Test Critical Values	1%	-3.463235
	5%	-2.875898
	10%	-2.574501

The ADF unit root test of the CBRT dollar exchange rate showed that the series were not stationary when the t statistic value was considered as the absolute value from the

critical value of 1%, 5% and 10%. Therefore, the primary difference value of the series is taken in table 8.

Table 8: Unit Root Test Primary Difference Results (CBRT Dollar Buying Rate)

I. DIFFERENCE		t-statistic
ADF test statistic		-6.655375
Test Critical Values	1%	-3.463235
	5%	-2.875898
	10%	-2.574501

When we look at the result of the primary difference value in the ADF unit root test of the CBRT dollar buying rate in Table 8, it was observed that t statistic value was 1%, 5% and 10% of the critical value was higher than the absolute value of absolute value and it was understood that the stasis problem was eliminated. Another aspect of the banking sector's total credit volume series is the ADF unit root test.

Table 9: Unit Root Test Results (Banking Sector Total Credit Volume)

LEVEL		t-statistic
ADF test statistic		-0.899553
Test Critical Values	1%	-3.463576
	5%	-2.876047
	10%	-2.574581

The ADF unit root test for the total loan volume series in the banking sector showed that the series were not stationary since the t-statistic value was 1%, 5% and 10%, as the absolute value was smaller than the critical value. Therefore, the primary difference value of the series is taken in table 10.

Table 10: Unit Root Test Primary Difference Results (Banking Sector Total Credit Volume)

I. DIFFERENCE		t-statistic
ADF test statistic		-3.155846
Test Critical Values	1%	-3.463576
	5%	-2.876047
	10%	-2.574581

In Table 10, when the primary difference value in the ADF unit root test for the total credit volume of the banking sector is analyzed, it is observed that the t statistical value is 1%, 5% and 10% is the absolute value of the critical value at the level of absolute value, and it is understood that the problem of stasis has been eliminated. When we look at the ADF unit root test of the CBRT overnight borrowing rate (%) series, which is another variable;

Table 11: Unit Root Test Results (CBRT Overdue Borrowing Interest)

LEVEL		t-statistic
ADF test statistic		-2.126232
Test Critical Values	1%	-3.464101
	5%	-2.876277
	10%	-2.574704

The ADF unit root test for the overnight borrowing rate of the CBRT showed that the series were not stationary since the t statistical value was 1%, 5% and 10% as the absolute value of the critical value. Therefore, the primary difference value of the series is taken in table 12.

Table 12: Unit Root Test Primary Difference Results (CBRT Overnight Borrowing Interest)

I. DIFFERENCE		t-statistic
ADF test statistic		-6.510596
Test Critical Values	1%	-3.464101
	5%	-2.876277
	10%	-2.574704

When the result of the primary difference value in the ADF unit root test of the CBRT overnight borrowing rate in Table 12 is taken into consideration, it is observed that the t statistical value is 1%, 5% and 10% is the absolute value from the critical value at the level of significance and it is understood that the problem of stasis has been eliminated. When we look at the ADF unit root test of CPI series which is another variable;

Table 13: Unit Root Test Results (CPI)

LEVEL		t-statistic
ADF test statistic		-1.103617
Test Critical Values	1%	-3.463576
	5%	-2.876047
	10%	-2.574581

The ADF unit root test, which is included in Table 13, was found to be non-stationary since the t-statistic value was 1%, 5% and 10%. Therefore, the primary difference value of the series is taken in Table 14

Table 14: Unit Root Test Primary Difference Results (CPI)

I. DIFFERENCE		t-statistic
ADF test statistic		-4.733311
Test Critical Values	1%	-3.465202

	5%	-2.876759
	10%	-2.574962

When the results of the primary difference value in the ADF unit root test of the CPI in Table 14 are examined, it is observed that the t statistic value is 1%, 5% and 10% is the absolute value of the critical values at the level of significance and it is understood that the problem of stasis has been eliminated. In order to estimate the VAR model in the second stage after the stasis analysis, the appropriate delay length will be determined with the help of information criteria. In the literature, selection criteria such as Probability Ratio (LR), Final Estimation Error (FPE), Akaike Information Criterion (AIC), Schwarz Information Criterion (SC) and Hannan-Quinn Information Criteria (HQ) are used to determine the appropriate delay length in the literature. In this context, the longest delay period for the whole period is 8 months.

Table 15: Delay Length Test Results

Lag	LogL	LR	FPE	AIC	SC	HQ
0	2110.010	NA	1.71e-17	-21.57959	-21.47888	-21.53881
1	2287.959	343.1226	3.99e-18	-23.03547	-22.33052*	-22.75005*
2	2335.777	89.26047	3.54e-18	-23.15669	-21.84749	-22.62661
3	2380.869	81.39627	3.23e-18*	-23.24993*	-21.33649	-22.47520
4	2405.860	43.57524	3.64e-18	-23.13703	-20.61934	-22.11764
5	2428.777	38.54767	4.19e-18	-23.00284	-19.88091	-21.73881
6	2460.980	52.18477*	4.41e-18	-22.96390	-19.23771	-21.45521
7	2481.466	31.93726	5.25e-18	-22.80478	-18.47435	-21.05144
8	2508.907	41.09125	5.86e-18	-22.71700	-17.78232	-20.71900

According to the test results, the results with an asterisk are the most suitable result for the optimal lag length and the month with the most asterisks is determined as the most appropriate delay. Accordingly, the most appropriate delay was accepted as 2. The position of the inverse roots of the AR characteristic polynomial in the unit circle was examined to determine whether the model predicted according to the appropriate delay length had a stationary problem.

Graph 1: Position of Reverse Roots of AR Characteristic Polynomial in Unit Circle

Inverse Roots of AR Characteristic Polynomial
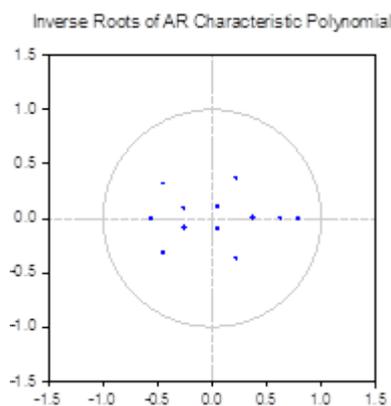
As seen in Figure 1, the fact that the points are located within the unit circle reflects that the model is not a structural problem. In the third stage, 1 standard error shock was applied to the variables and effect-response analysis was used to measure the response of the other variable. The graph of the effect-response analysis shows the reaction of the other variable against the 1 standard error shock given to the related variable in the vertical axis and the situation in the horizontal axis over a 10-month period. The dashed lines in the graphs will show whether the results of VAR model with ± 2 standard confidence interval are statistically significant. It is understood that both of these dashed lines are above or below the zero axis are statistically significant, one is above zero axis and one is not significant if it is below the other. In this context, the results of the impact response analysis are as follows;

Graph 2: Response - Response Functions
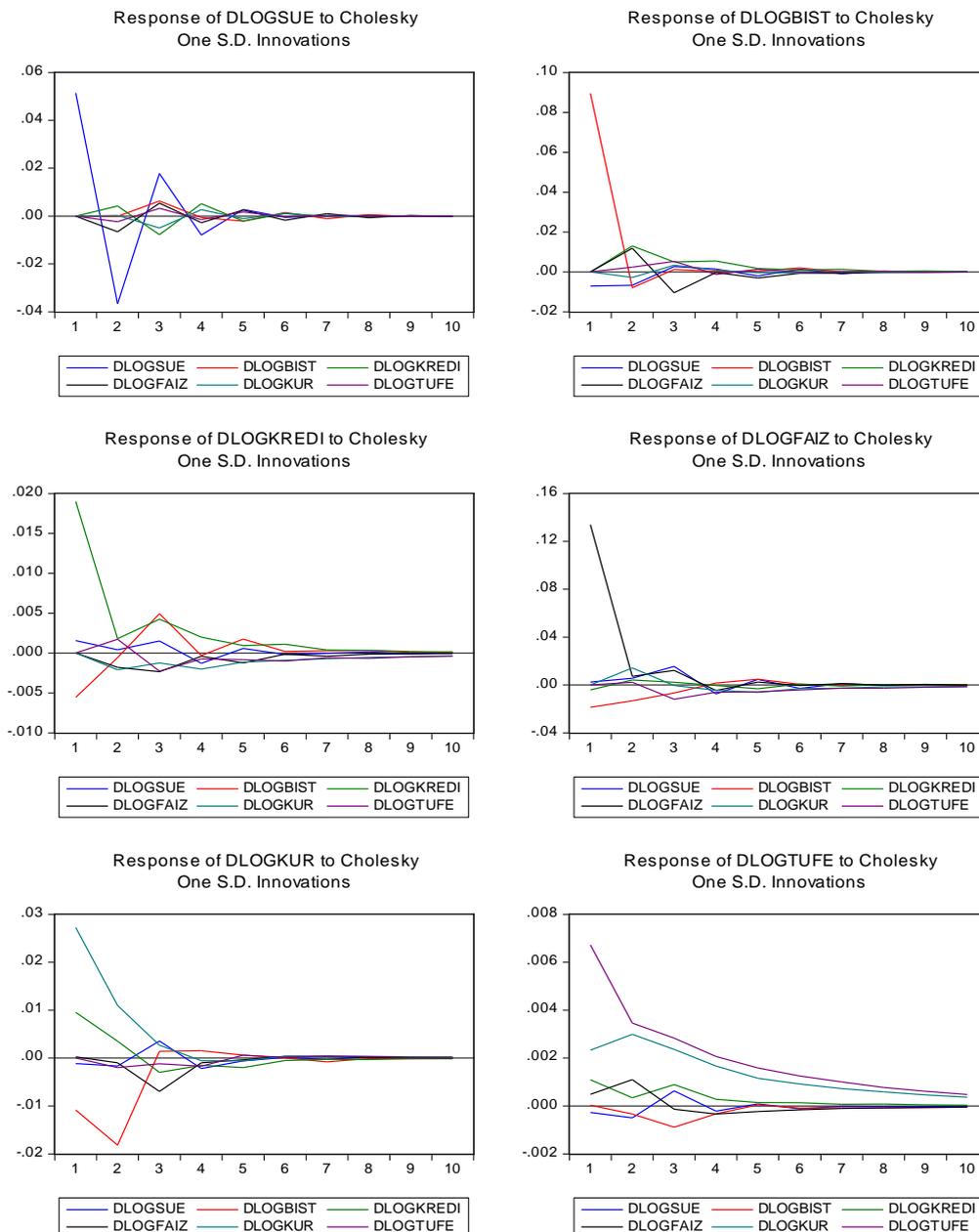
It is necessary to look at the variance decomposition to reveal what percentage of the change in the variable is caused by the other variable. Variance decomposition results of the variables are as follows;

Table 16: Variance Decomposition of Industrial Production Index (DLOGSUE)

Period	S.E.	DLOGSUE	DLOGBIST	DLOGKREDI	DLOGFAIZ	DLOGKURE	DLOGTUF
1	0.052147	100.0000	0.000000	0.000000	0.000000	0.000000	0.000000
2	0.064888	98.74728	0.006838	0.222169	0.909926	0.001552	0.112241
3	0.068316	95.92093	1.060123	1.374475	1.341875	0.064679	0.237921
4	0.069270	94.78489	1.202590	2.116731	1.600998	0.062926	0.231860
5	0.069532	94.32536	1.370002	2.238334	1.704012	0.115790	0.246497
6	0.069594	94.22193	1.428942	2.237791	1.725250	0.138794	0.247292
7	0.069657	94.15420	1.475484	2.239498	1.736575	0.139785	0.254453
8	0.069698	94.13497	1.484852	2.237622	1.738939	0.139980	0.263638
9	0.069720	94.13037	1.484170	2.240826	1.739316	0.140042	0.265279
10	0.069729	94.11896	1.483819	2.252069	1.739544	0.140053	0.265552

Table 17: BIST 100 Index Closing Prices (DLOGBIST) Variable Variation Decomposition

Period	S.E.	DLOGSUE	DLOGBIST	DLOGKREDI	DLOGFAIZ	DLOGKUR	DLOGTUFE
1	0.087744	0.435844	99.56416	0.000000	0.000000	0.000000	0.000000
2	0.089245	0.428192	96.48047	2.419027	0.169935	0.502137	0.000241
3	0.090202	0.822292	94.61615	2.384817	0.251643	0.589286	1.335816
4	0.091001	1.353878	93.47336	2.349344	0.247440	0.634006	1.941972
5	0.091151	1.359385	93.16743	2.656731	0.248360	0.631928	1.936170
6	0.091227	1.361978	93.11662	2.666224	0.261100	0.657547	1.936531
7	0.091288	1.374712	93.07067	2.685553	0.263041	0.657527	1.948493
8	0.091307	1.376339	93.03383	2.711577	0.262963	0.662343	1.952944
9	0.091312	1.378147	93.02852	2.711315	0.265483	0.663812	1.952727
10	0.091324	1.394300	93.00573	2.715202	0.265419	0.663904	1.955443

Table 18: Banking Sector Total Loan Volume (DLOGKREDI) Variable Variance Decomposition

Period	S.E.	DLOGSUE	DLOGBIST	DLOGKREDI	DLOGFAIZ	DLOGKUR	DLOGTUFE
1	0.018684	0.569818	8.931639	90.49854	0.000000	0.000000	0.000000
2	0.019017	1.112755	8.637664	87.38960	1.906963	0.933752	0.019266
3	0.020638	4.871804	12.12604	77.21662	2.261854	0.984522	2.539159
4	0.021423	5.015991	11.33549	77.61920	2.230884	1.341086	2.457353
5	0.021774	5.063085	12.85870	75.26747	2.690010	1.713953	2.406789
6	0.022166	6.820856	13.09550	73.20307	2.623704	1.697046	2.559822
7	0.022314	6.786044	12.98547	73.20720	2.672811	1.805681	2.542798
8	0.022368	6.822563	13.17558	72.88180	2.688629	1.897902	2.533532
9	0.022432	6.875232	13.25931	72.71024	2.692312	1.909427	2.553475
10	0.022456	6.861627	13.25501	72.68604	2.695294	1.953807	2.548221

Table 19: CBRT Overdue Borrowing Interest (%) (DLOGFAIZ) Variance Decomposition Variation

Period	S.E.	DLOGSUE	DLOGBIST	DLOGKREDI	DLOGFAIZ	DLOGKUR	DLOGTUFE
1	0.133301	0.076435	1.032173	0.313047	98.57835	0.000000	0.000000
2	0.136755	0.109537	2.448800	0.635095	94.93427	1.866577	0.005724
3	0.141459	2.141200	2.729844	0.875202	88.81397	1.746936	3.692850
4	0.142017	2.255736	3.043754	0.978485	88.24116	1.744842	3.736023
5	0.142157	2.306417	3.044341	1.027485	88.08031	1.810827	3.730624
6	0.142377	2.306676	3.035579	1.205489	87.80980	1.805246	3.837209
7	0.142400	2.305952	3.036718	1.205715	87.78177	1.813150	3.856690
8	0.142426	2.305119	3.054770	1.208371	87.75690	1.815192	3.859651
9	0.142449	2.313880	3.055565	1.226814	87.72843	1.815221	3.860089
10	0.142460	2.322148	3.056257	1.226875	87.71680	1.816686	3.861230

Table 20: Variance Decomposition Regarding CBRT Dollar Buying Rate (DLOGKUR) Variable

Period	S.E.	DLOGSUE	DLOGBIST	DLOGKREDI	DLOGFAIZ	DLOGKUR	DLOGTUFE
1	0.028499	0.062904	25.70181	9.180627	0.236576	64.81808	0.000000
2	0.035227	0.195124	42.98673	7.685618	1.364144	46.40197	1.366417
3	0.036233	2.988158	41.34602	7.724041	1.783554	43.98551	2.172714
4	0.036558	2.944366	40.63874	8.276796	1.929276	43.90642	2.304406
5	0.036678	3.394242	40.37406	8.264199	1.966069	43.68294	2.318491
6	0.036747	3.381727	40.22191	8.601759	1.960708	43.52386	2.310045
7	0.036805	3.395887	40.11441	8.804603	1.954903	43.41280	2.317402
8	0.036847	3.417996	40.11821	8.868441	1.958774	43.32446	2.312121
9	0.036875	3.459577	40.07854	8.934246	1.958088	43.26072	2.308831
10	0.036891	3.459097	40.05831	8.983760	1.961225	43.22803	2.309581

Table 21: Variance Decomposition of the CPI (Index) (DLOGTUFE) Variable

Period	S.E.	DLOGSUE	DLOGBIST	DLOGKREDI	DLOGFAIZ	DLOGKUR	DLOGTUFE
1	0.006361	0.152279	1.037670	0.839344	1.043392	1.254199	95.67312
2	0.006924	0.359664	1.551591	1.002363	1.077836	3.395144	92.61340
3	0.007324	3.599361	2.251347	2.006064	1.835921	4.785022	85.52229
4	0.007586	3.562185	2.168915	1.945015	1.755515	6.033350	84.53502
5	0.007707	3.896229	2.127356	1.912565	1.731866	6.926803	83.40518
6	0.007793	4.114186	2.138371	1.948957	1.725969	7.321302	82.75121
7	0.007844	4.115695	2.145675	1.938928	1.709114	7.627109	82.46348
8	0.007876	4.178955	2.158050	1.929214	1.706797	7.879351	82.14763
9	0.007896	4.173295	2.193140	1.923272	1.706166	8.005745	81.99838
10	0.007910	4.164166	2.207156	1.949982	1.705521	8.093680	81.87949

When we look at the results of the variance decomposition above, it is seen that 10 percent of the variables are explained by the other variables at the end of the 10th period. Besides, we can see

that 100% of the variance of industrial production index variable is explained by the variable itself. This ratio indicates that the industrial production index is the most extrinsic variable.

GENERAL EVALUATION AND CONCLUSION

Turkey has adopted a largely private sector due to the lack of fiscal policies, especially after the first years of the republic until the 1970s, the establishment of the republic in 1923. The CBRT was established in the 1930s and the CBRT was fully operational in 1932 and the stabilization policies implemented in the 1958,1970 and 1980s tried to understand the crises in the economy and steps were taken to control them. In particular, with the resolutions of 24 January 1980, foreign exchange and interest rate policies, liberalization in foreign trade and institutional innovations in money and capital markets were followed by steps to liberalize capital movements. In this period, the CBRT announced and implemented the first monetary program in 1990 for the first time. Prior to that, the monetary policy program was implemented in 1986, 1987 and 1988, but was not announced. The relationship between in 1990 after experiencing the need in our country crises and foreign countries in crisis and the liberalization of capital movements with the rise of interest rates as a result, interest rate fluctuations between relationships and short-term capital inflows are working to expand the banks' open positions due to Turkey in our country has led to a crisis. These situations reveal the importance of the operation of the monetary transmission mechanism in order for the crises to become tangent or live in our country. To investigate this important issue in the study of monetary transmission mechanism; CBRT's overnight borrowing interest rate (%), BIST 100 closing prices as indicator of asset prices, total domestic loan volume as indicator of credit channel, CBRT buying rate as indicator of exchange rate channel and CPI as an indicator of interest rate were used as indicators of interest rate. Lastly, since the GDP, which is the indicator of the real economy, was not produced on a monthly basis, the industrial production index was used to represent it in monthly studies.

In the framework of the period examined in the analysis of monetary transmission mechanism with variable reveals that specified for operation in Turkey were examined in the framework of VAR model. The healthy results of the established VAR model should be subjected to a number of preliminary tests. Firstly, due to the monthly analysis of the variables, the seasonality was eliminated and the logarithm was taken and the data were subjected to the ADF unit root test. In the unit root test, the variables became stationary. Thus, the VAR model continued with the variables that became static. In this context, firstly, effect response analysis was applied. As an indicator of the interest rate channel According to this analysis CBRT overnight across borrowing rate of the variable to 1 standard ~ error shock itself, CBT dollar buying rate, we have CPI is statistically give meaningless results if the other variables by making meaningful results concluded that worked partly for Turkey of the monetary

transmission mechanism in the interest rate channel. We have asset prices as an indicator of BIST 100 of the closing price indexes of other variables to 1 standard ~ error shocked himself and statistically's buying rate of the Central Bank dollar while the other is not meaningless results variable asset prices in the monetary transmission mechanism by making meaningful results duct partly the result that works for Turkey. Credit channel indicator of the banking sector itself against a 1 standard ~ error shocks and other variables of the total volume of loans, the Central Bank dollar buying rate, we have CPI is statistically give meaningless results if the other variables by making meaningful results concluded that worked partly for Turkey of the monetary transmission mechanism in the credit channel. We had the exchange rate channel as an indicator of total loan volume of the statistically insignificant results given that the other variables of the monetary transmission mechanism in the exchange rate channel by making meaningful results in the banking sector in the face of one standard ~ error shock to other variables, the buying rate of the Central Bank dollar to the conclusion that work partly for Turkey. When we look at the CPI as an indicator of price variables 1 standard ~ error index of industrial production in the face of shocks, the Central Bank dollar buying statistically dry and of itself while the other is not meaningless results variable prices in the monetary transmission mechanism by making meaningful results, we have partially the result that works for Turkey. When we look at the industrial production index as an indicator of the real economy, we see the

reaction of monetary transmission mechanism to the real economy with the other variables giving statistically meaningless results against 1 standard error shock and the other variables yielding meaningless results. Furthermore, in the variance decomposition we see that the variance of the industrial production index variable is explained by the variable itself. This ratio indicates that the industrial production index is the most extrinsic variable. This ratio then decreases the disclosure rate as the period increases. In the first period, it explained 100% of its variance and this rate decreased to 94% in the 10th period. In this recent period, the most significant explanatory variable was the total credit volume in the banking sector with 2.25%, except for the industrial production index. In addition, the CBRT's overnight interest rate of 1.74%, the BIST 100 index closing prices of 1.48%, the CPI with 0.27% and the CBRT dollar buying rate of 0.14%. When we look at the results of the literature, the results of the study which examined all channels of monetary transmission mechanism are overlapping with the results of Filiz (2012). Following the results of the analysis whether the economic difficulties experienced recently in Turkey, get the 2008 crisis, whether caused by the 2001 crisis, it is understood that all of them work part of the monetary transmission mechanism.

In the light of the findings of the study, it is important that the central bank should have an active role in the implementation of monetary policies and that the government's fiscal policies should be kept together in this direction. Because the monetary and fiscal

policies can be achieved together with healthy results. In addition, new developments in the financial field will cause the market to deepen. This situation will increase the importance of diversifying the variables affecting the monetary transmission mechanism. Thus, monetary policies will be easier to influence the real economy with monetary and fiscal policies, and both healthy and positive results will be obtained in terms of monetary policies and fiscal policies. Otherwise, as with the economic troubles experienced today, the monetary policy and fiscal policy is fully effective.

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