Economics and Statistics Research Journal (ESRJ)
Volume.14, Number 12; December-2023;
ISSN: 2836-8398 | Impact Factor: 7.54
https://zapjournals.com/Journals/index.php/esrj
Published By: Zendo Academic Publishing

TURKISH ECONOMIC PULSE: A COMPREHENSIVE STUDY OF MONETARY TRANSMISSION MECHANISMS

[1]Professor Aylin Sema Erdogdu,

Article Info

Keywords: Monetary Transmission Mechanism, monetary policy, interest rate channel, exchange rate channel, bank credit channel, balance sheet channel.

Abstract

The Monetary Transmission Mechanism (MTM) plays a pivotal role in shaping real economic activities, including production, consumption, and employment, by channeling the impact of monetary policy decisions. This dynamic process encompasses the total demand resulting from these policy decisions, as well as their effects on inflation expectations and rates. In the contemporary economic landscape, one of the most prominent repercussions of fluctuations in monetary policy is witnessed in the financial choices made by businesses. Such policy changes can significantly influence enterprises' sales, production expenditures, and balance sheets, spanning both durable and nondurable goods production and impacting households' overall expenditure. The MTM can be broadly categorized into two primary components. Firstly, it encompasses the analysis of market interest rate fluctuations, delving into how monetary policy decisions affect the asset landscape, including foreign exchange rates and financial market conditions. Secondly, it scrutinizes the production-related aspects affected by changes in financial market conditions and inflation rates. The MTM operates through a multifaceted network of channels, influencing households' purchasing decisions and altering firms' balance sheets.

This article underscores the diverse channels that constitute the MTM, including the exchange rate channel, interest rate channel, bank credit channel, and balance sheet channel. By exploring these channels, it seeks to unravel the intricate pathways through which monetary changes reverberate across total demand and production levels.

1. Introduction

Monetary Transmission Mechanism influences real economic activities such as production, consumption and employment through its own dynamics during the implementation of monetary policy decisions. More precisely, it can be defined as the total demand of the monetary policy decisions, and the process of inflation expectations and inflation rates. Nowadays, the most important effect of changes in monetary policy occurring due to macroeconomic fluctuations is observed in the financial decisions of companies. Changes in the monetary policy are transmitted both to the sales of enterprises which produce durable and non durable goods, through the changes in an enterprise's total expenditure of households, and to the balance sheets of these legal entities. This approach,

[1] Istanbul Arel University, Turkey

known as Monetary Transmission Mechanism, determines how and to the extent to which monetary changes influence total demand and production. Based on these descriptions that are explained above, it can be deduced in which way and to what extent monetary changes influence total demand and total production.

Monetary transmission mechanism can generally be analyzed under two main headings. The first analysis determines the examination of changes in market interest rates. Monetary policy determines the transfer of assets such as foreign exchange rates and financial market conditions. The second indicates the production level of the changes in financial market conditions and inflation rates. Monetary transmission mechanism functions through a number of channels and the tendency of households to purchase, and it also influences the balance sheets of firms. Channels affect the purchasing power decisions of households and the changes in companies' balance sheets through monetary transmission mechanism. Phases affecting manufacturing industry are the exchange rate channel, interest rate channel, the bank credit channel and the balance sheet channel.

2. Efficiency Analysis of Monetary Transmission Mechanism

2.1. Literature Review

When the literature is reviewed on the monetary transmission mechanism, it is observed that Bacchetti and Ballabriga (2000) have tested the data for the US and 13 European countries and have reached the conclusion that banking loans are affected by the monetary policies. Ferreira (2007), examined the bank performance of the credit channels for the European Monetary Union member countries, especially for Portugal. Kashyap and Stein (2000) revealed in their studies that small banks have less liquidity and play a greater role on credit volume than their larger counterparts. Kishan and Opiela (2000) analysed the effects on credit supply through bank assets and bank capital. Butz, Fuss and Vermeulen (2001) used all available industrial databases within the Belgian economy to study the effects of monetary policy on firm behaviors. Disyatat and Vongsinsirikul (2003) have tested the data for the Thailand -2001Q4 - 1993Q1 period. Chirink and Kalckreuth (2003) reviewed the interest rate for fixed capital investment firms in Germany to determine the importance of the interest rate channel and the credit channel. Yue and Zhou (2007) have tested the data for China 1996.1 - 2005.8 period.

2.2. Research Model

This section investigates which channels are active in the Monetary Transmission Mechanism in Turkey. In order to examine the effectiveness of the monetary transmission mechanism, as it is a widely used method in the literature and provides reliable results, VAR analysis method is utilized. This study aims to determine whether the monetary policies used in Turkey after 1990s have affected economic development. If they have done so, it will discuss how long these effects last. Monthly time series were used, covering the period January 1990 to July 2011.

The variables used in the model are selected for representing the operation of the monetary transmission mechanism. Our dependent variable is money supply (M1). M1 is represented as the cash in circulation and defined as the sum of deposits in demand deposits in commercial banks and central banks. As an indicators of monetary policy we used, inter-bank interest rate on the market (overnight (O / N)), the Istanbul Stock Exchange National 100 Index, the sum of domestic loans in the banking sector (in TL), USD buying exchange rate, Consumer Price Index as the inflation rate (CPI), and for the real sector; the Industrial Production Index (IPI) used. Detailed description of the variables and parameters used in the model and their symbols are shown in Table 1.

Table 1. Variables

M1	Money Supply TL
INTEREST	Interbank Overnight Simple Weighted Average Interest Rate Monthly (%)
BIST	National 100 Index (1986 = 100)
CREDIT	Total Domestic Banking Sector TL Loans
EXCHANGE RATE	Central Bank Buying Exchange Rate
CPI	Consumer Price Index Monthly Change (%) IPI Industrial Production Index

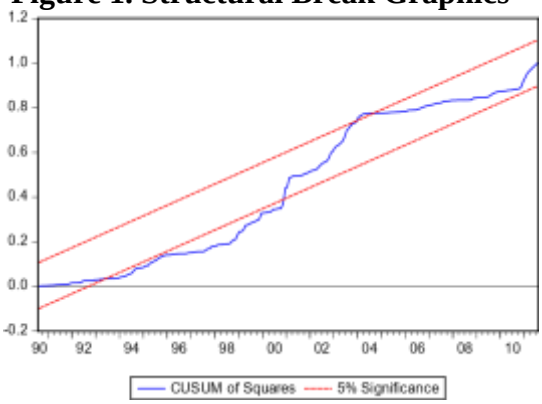
In this study, / E-Views econometrics software package was used to determine the time-series properties of the data related to the variables. To bring all variables to the same level, logarithm[2]was used and the first difference of the logarithmic time series were calculated. Therefore, these variables are set to the same level. All variables were seasonally adjusted by using the moving average method.

The seasonally adjusted time series received "SA" letters at the end of the each variable representation, the unstable variables and the variables that were adjusted to be stationary by taking their first differences labeled with "D" letter at the beginning of the each variable representation.

2.3. Working M1 Money Supply Model

Factors affecting economic variables sometimes create lasting variability in the trends of variables. These changes may be caused by the impact of technological developments and events, such as political changes. The following figure shows the structural break of our model.

Figure 1. Structural Break Graphics



Our model are trying to create a model by using the entire period data that is estimated from monetary policy applications from the internal crisis (1994, 2000 and 2001 crises) and external shocks (Asian crisis, the Russian crisis, the Brazilian crisis). The effects can be expressed as the structural breaks observed. Structural break was corrected using dummy variables. Models and graphics found using dummy variables are listed below. Dummy Variable (Dk) i, 1990 December 2001 January 0, 2002 January - May 2004 1, 2004 and June 0, 2004 July 2004 November 1, 2004 from December 2005 to January 0, 2005 February-July 2011, by putting the value of 1.

Table2. Dummy Variables Used Model

Dependent Variable: LOGM1SA
Sample (adjusted): 1990M01 2011M07
Included observations: 259 after adjustments

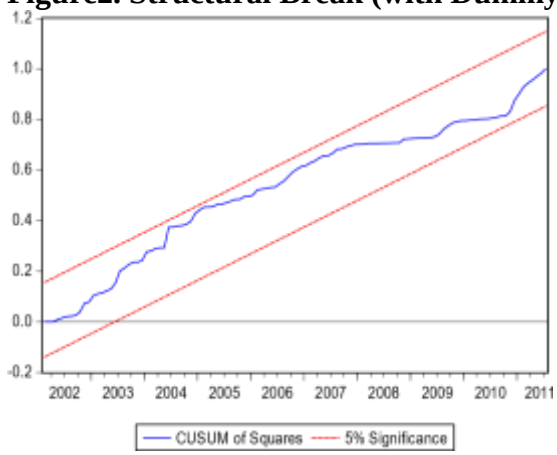
Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	6.372066	0.377371	16.88543	0.0000
LOGINTERESTSA	-0.118471	0.014437	-8.205939	0.0000
LOGBISTSA	0.161689	0.019874	8.135788	0.0000
LOGCREDITSA	0.493224	0.019567	25.20640	0.0000
LOGEXCHANGESA	0.314467	0.021346	14.73171	0.0000
LOGCPISA	-0.052087	0.005200	-10.01651	0.0000
LOGIPISA	0.085000	0.086834	0.978886	0.3286
DK	**0.194662**	**0.031952**	**6.092328**	**0.0000**
R-squared	0.998686	Mean dependent var		14.96179

[2] Log ( ) - log ( ) = log [/]» [(-) /]

Adjusted R-squared	0.998650	S.D. dependent var	2.696541
S.E. of regression	0.099084	Akaike info criterion	-1.755297
Sum squared resid	2.464226	Schwarz criterion	-1.645434
Log likelihood	235.3110	Hannan-Quinn criter	-1.711126
F-statistic	27262.02	Durbin-Watson stat	0.730440
Prob(F-statistic)	0.000000		

DK probe. = 0.000 <0.05 DK is significant. Structural break has been corrected as shown in the graphic.

Figure2. Structural Break (with Dummy Variable)



Our chart did not deviate outside the specified range. Structural break has been corrected.

2.4. Pre-Testing and Evaluation of Results. Whether or not the time series are stationary or not and the presence of a unit root were examined by the widely used Improved Dickey-Fuller (ADF) test, and the co-integration degree of the series was determined.

2.5. Delay Length Analysis

The results of the tests performed to determine the length of the delay to be used in the model are given in Table 3. The results symbolized with " * " related to testing show the appropriate lag length.

Table3. Determine the Lag Order Criteria

VAR Lag Order Selection Criteria
Endogenous variables: LOGINTERESTSA LOGBISTSA LOGCREDITSA LOGEXCHANGESA LOGM1SA LOGCPISA LOGIPISA
Exogenous variables: C
Sample: 1990M01 2011M11
Included observations: 244

Lag	LogL	LR	FPE	AIC	SC	HQ
0	-984.6632	NA	7.99e-06	8.128387	8.228716	8.168794
1	1690.345	5174.606	3.59e-15	-13.39627	-12.59364	-13.07301
2	1850.057	299.7883	1.45e-15	-14.30375	-12.79882*	-13.69765
3	1953.843	188.8566	9.27e-16	-14.75281	-12.54559	-13.86386*
4	2004.963	90.08695	9.15e-16*	-14.77018*	-11.86066	-13.59839
5	2038.298	56.83496	1.05e-15	-14.64179	-11.02996	-13.18714
6	2076.128	62.32582	1.16e-15	-14.55023	-10.23610	-12.81274
7	2114.008	60.23538	1.29e-15	-14.45908	-9.442652	-12.43874
8	2140.686	40.89105	1.58e-15	-14.27611	-8.557381	-11.97292

9	2174.893	50.46986	1.83e-15	-14.15486	-7.733830	-11.56882
10	2216.910	59.58147	2.01e-15	-14.09762	-6.974292	-11.22874
11	2269.413	71.43814	2.03e-15	-14.12633	-6.300702	-10.97460
12	2354.503	110.8971	1.59e-15	-14.42216	-5.894229	-10.98758
13	2411.837	71.43176	1.58e-15	-14.49047	-5.260235	-10.77304
14	2469.657	68.72068*	1.58e-15	-14.56276	-4.630232	-10.56249
15	2512.774	48.77166	1.81e-15	-14.51454	-3.879710	-10.23142

* indicates lag order selected by the criterion
LR: sequential modified LR test statistic (each test at 5% level)
FPE: Final prediction error
AIC: Akaike information criterion
SC: Schwarz information criterion
HQ: Hannan-Quinn information criterion

In this context, the longest delay time in all periods is taken as 15 months. According to the test results, the optimal lag length in Likelihood Ratio Test (LR) is 14 months, the last prediction error (FPE) is 4 months, Akaike Information Criterion (AIC) is 4 months, Schwarz Information Criterion is 2 months, and Hannan–Quinn information criterion (HQ) is 3 months. The appropriate lag length for the VAR model is set as 2 months, based on the Schwarz Information Criterion.

2.6. Unit Root Analysis

The results of the unit root analysis are given in the following table. In this study, the stationary model and the stationary in the model including both constant and trend will be examined. Money supply logarithm is taken, seasonally adjusted and identified as LOGM1SA. The results of the model with a constant for LOGM1SA variable are shown below.

Table 4. Unit Root Test Results of Constant M1 Variable

Null Hypothesis: LOGM1SA has a unit root
Exogenous: Constant
Lag Length: 2 (Automatic - based on SIC, maxlag=2)

	t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic	**-4.518377**	**0.0002**
Testcriticalvalues: 1%level	**-3.455786**	
5%level	**-2.872630**	
10%level	**-2.572754**	

*MacKinnon (1996) one-sided p-values.

According to the T statistics given by MacKinnon, 1%, 5%, 10% (-3455, -2872, -2572), as t value (-6737), whose significance levels are calculated, is high as the absolute value, ΔLOGM1SA has no unit root, and the series is stationary. The results of the model is located in constant and linear trend LOGM1SA.

Table 5. Unit Root Test Results of Constant and Linear Trend M1 Variable

Null Hypothesis: LOGM1SA has a unit root
Exogenous: Constant, Linear Trend
Lag Length: 2 (Automatic - based on SIC, maxlag=2)

	t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic	**0.745462**	**0.9997**
Test critical values: 1% level	**-3.994310**	
5% level	**-3.427476**	
10%level	**-3.137059**	

*MacKinnon (1996) one-sided p-values.

According to MacKinnon τ statistics, 1%, 5%, 10% (-3994, -3427, -3137), the significance levels of t value (0745) are calculated. Since it is low as the absolute value, the LOGM1SA series has unit root; the series is not in stationary state. ΔLOGM1SA is produced to make the new series stable.

Table 6. Unit Root Test Results First Degree of Difference Constant and Linear Trend M1 Variable

Null Hypothesis: D(LOGM1SA) has a unit root Exogenous: Constant, Linear Trend Lag Length: 1 (Automatic - based on SIC, maxlag=2)		
	t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic	**-16.5269**	**0.0000**
Test critical values: 1% level	**-3.99431**	
5% level	**-3.42748**	
10% level	**-3.13706**	
*MacKinnon (1996) one-sided p-values.		

According to the t statistics given by MacKinnon, 1%, 5%, 10% (-3994, -3427, -3137), the significance levels of t value (-16,526) is calculated. Since it is high as the absolute value, ΔLOGM1SA has no unit root series. They are stationary. Constant and linear trends LOGM1SA have been co integrated. The logarithm of the actual basic interest rate and the seasonally adjusted time series has been identified as LOGINTERESTSA. The results of the model are located in constant LOGINTERESTSA.

Table 7. Unit Root Test Results of Constant Interest Variable

Null Hypothesis: LOGINTERESTSA has a unit root Exogenous: Constant Lag Length: 1 (Automatic - based on SIC, maxlag=2)		
	t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic	**0.247957**	**0.9751**
Test critical values: 1% level	**-3.455685**	
5% level	**-2.872586**	
10% level	**-2.572730**	
*MacKinnon (1996) one-sided p-values.		

In accordance with MacKinnon τ statistics, 1%, 5%, 10% (-3.456; -2872; -2572), t value significance levels are calculated (0.247). It is low as the absolute value, so LOGINTERESTSA has the unit root; the series is not in a stationary state. ΔLOGINTERESTSA is designed to make the new series stable.

Table 8. Unit Root Test Results First Degree of Difference Constant Interest Variable

Null Hypothesis: DLOGINTERESTSA has a unit root Exogenous: Constant Lag Length: 0 (Automatic - based on SIC, maxlag=2)		
	t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic	**-23.61517**	**0.0000**
Test critical values: 1% level	**-3.455685**	
5% level	**-2.872586**	
10% level	**-2.572730**	
*MacKinnon (1996) one-sided p-values.		

In accordance with the MacKinnon τ statistics, 1%, 5%, 10% (-3.456; -2872; -2572), as t value (-23 615), whose significance levels are calculated, is high as the absolute value, ΔLOGINTERESTSA has no unit root; the series is in stationary state. Constant and linear trend LOGINTERESTSA has been cointegrated. The results of the model is located in constant and trend LOGINTERESTSA.

Table 9. Unit Root Test Results of Constant and Linear Trend Interest Variable

Null Hypothesis: LOGINTERESTSA has a unit root Exogenous: Constant, Linear Trend Lag Length: 1 (Automatic - based on SIC, maxlag=2)		
	t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic	**-2.200790**	**0.4867**
Test critical values: 1% level	**-3.994167**	
5% level	**-3.427407**	
10% level	**-3.137018**	
*MacKinnon (1996) one-sided p-values.		

According to MacKinnon τ statistics, 1%, 5%, 10% (-3.994; -3427; -3137), t value (-2200), whose significance levels are calculated, is low as the absolute value, the LOGINTERESTSA has unit root; the series is not stationary. ΔLOGINTERESTSA is designed to make it stable.

Table 10. Unit Root Test Results First Degree of Difference Constant and Linear Trend Interest Variable

Null Hypothesis: DLOGINTERESTSA has a unit root Exogenous: Constant, Linear Trend Lag Length: 0 (Automatic - based on SIC, maxlag=2)		
	t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic	**-23.79151**	**0.0000**
Test critical values: 1% level	**-3.994167**	
5% level	**-3.427407**	
10% level	**-3.137018**	
*MacKinnon (1996) one-sided p-values.		

According to MacKinnon τ statistics, 1%, 5%, 10% (-3.994; -3427; -3137), t value (-23 791), whose significance levels are calculated, is high as the absolute value, and thus, ΔLOGINTERESTSA has unit root and these series are stationary. Constant and linear trend LOGINTERESTSA has been cointegrated. The logarithm of the National 100 Index (closing price) and seasonally adjusted time series has been defined as the LOGBISTSA. The result of the model is located in constant LOGBISTSA

Table 11. Unit Root Test Results of Constant BIST Variable

Null Hypothesis: LOGBISTSA has a unit root Exogenous: Constant Lag Length: 1 (Automatic - based on SIC, maxlag=2)		
	t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic	**-1.418092**	**0.5733**
Test critical values: 1% level	**-3.455685**	

5% level	**-2.872586**	
10% level	**-2.572730**	

*MacKinnon (1996) one-sided p-values.

In accordance with t statistics given by MacKinnon, 1%, 5%, 10% (-3455, -2872, -2572), since t value (-1418), whose significance levels are calculated, is low as the absolute value, LOGBISTSA has unit root; the series is not in stationary state. ΔLOGBISTSA is designed to make the new series stable.

Table 12. Unit Root Tests Results the First Degree of Difference Constant And Linear Trend BIST Variable

Null Hypothesis: DLOGBISTSA has a unit root
Exogenous: Constant, Linear Trend
Lag Length: 0 (Automatic - based on SIC, maxlag=2)

	t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic	**-12.52862**	**0.0000**
Test critical values: 1% level	**-3.994167**	
5% level	**-3.427407**	
10% level	**-3.137018**	

*MacKinnon (1996) one-sided p-values.

According to MacKinnon τ statistics, 1%, 5%, 10% (-3456, -2872, -2572), as t value (-12 471), whose significance levels are calculated, is high as the absolute value, ΔLOGBISTSA has unit root, and the series is in stationary state. Since it as large as the absolute value, ΔLOGBISTSA has no unit root and the series is in stationary state. Constant and linear trend LOGBISTSA has been cointegrated. The results of the model are located in constant and trend LOGBISTSA.

Table 13. Unit Root Test Results of Fixed BIST Variable

Null Hypothesis: LOGBISTSA has a unit root
Exogenous: Constant, Linear Trend
Lag Length: 1 (Automatic - based on SIC, maxlag=2)

	t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic	**-1.121951**	**0.9223**
Test critical values: 1% level	**-3.994167**	
5% level	**-3.427407**	
10% level	**-3.137018**	

*MacKinnon (1996) one-sided p-values.

In accordance with t statistics given by MacKinnon, 1%, 5%, 10% (-3994, -3427, -3137), the significance levels of t value (-1121) are calculated. It is low as the absolute value, LOGBISTSA has unit root, and the series is not in stationary state. ΔLOGBISTSA is designed to make the new series stable.

Table 14. Unit Root Tests Results the First Degree of Difference Constant and Linear Trend BIST Variable

Null Hypothesis: DLOGBISTSA has a unit root
Exogenous: Constant, Linear Trend
Lag Length: 0 (Automatic - based on SIC, maxlag=2)

	t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic	**-12.52862**	**0.0000**
Test critical values: 1% level	**-3.994167**	

5% level	**-3.427407**
10% level	**-3.137018**

*MacKinnon (1996) one-sided p-values.

MacKinnon τ statistics are given as 1%, 5%, 10% (-3994, -3427, -3137), and the significance levels of t value (-12 528) are calculated. Since it is high as the absolute value, ΔLOGBISTSA has unit root, and the series are in stationary state. Constant and linear trend LOGBISTSA has been cointegrated.
The logarithm of the Purchase Price Dollar Currency exchange and the seasonally adjusted time series have been described as the seasonally adjustedLOGEXCHANGESA. The results of the model are presented in constant LOGEXCHANGESA.

Table 15. Unit Root Test Results of Constant Exchange Variable

Null Hypothesis: LOGEXCHANGESA has a unit root Exogenous: Constant Lag Length: 1 (Automatic - based on SIC, maxlag=2)		
	t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic	**-3.573792**	**0.0069**
Test critical values: 1% level	**-3.455685**	
5% level	**-2.872586**	
10% level	**-2.572730**	

*MacKinnon (1996) one-sided p-values.

According to t statistics given by MacKinnon, 1%, 5%, 10% (-3455, -2872, -2572), t value (-3573), whose significance levels are calculated, is high as the absolute value. LOGEXCHANGESA has no unit root, and the series is in stationary state.The results of the model are located in constant and trend LOGEXCHANGESA.

Table 16. Unit Root Test Results of Constant and Linear Trend Exchange Variable

Null Hypothesis: LOGEXCHANGESA has a unit root Exogenous: Constant, Linear Trend Lag Length: 1 (Automatic - based on SIC, maxlag=2)		
	t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic	**-0.272673**	**0.9911**
Test critical values: 1% level	**-3.994167**	
5% level	**-3.427407**	
10% level	**-3.137018**	

*MacKinnon (1996) one-sided p-values.

In accordance with t statistics given by MacKinnon, 1%, 5%, 10% (-3994, -3427, -3137), the significance levels of t value (-0272) are calculated. As it is low as the absolute value, ΔLOGEXCHANGESA has unit root, and the series are not in stationary state. ΔLOGEXCHANGESA is produced to make the new series stable.

Table 17. Unit Root Tests Results the First Degree of Difference Constant and Linear Trend Exchange Variable

Null Hypothesis: DLOGEXCHANGESA has a unit root

Exogenous: Constant, Linear Trend Lag Length: 0 (Automatic - based on SIC, maxlag=2)		
	t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic	**-10.56528**	**0.0000**
Test critical values: 1% level	**-3.994167**	
5% level	**-3.427407**	
10% level	**-3.137018**	
*MacKinnon (1996) one-sided p-values.		

In accordance with MacKinnon τ statistics, 1%, 5%, 10% (-3994, -3427, -3137), significance levels of t value (-10 565) are calculated. As it is high as the absolute value, ΔLOGEXCHANGESA has no unit root, the series is in stationary state. Constant and linear trend ΔLOGEXCHANGESA has been cointegrated.The logarithm of the Industrial Production Index and seasonally adjusted time series has been described as LOGIPISA., and the results of the model with a constant for LOGIPISA variable are presented below.

Table18. Unit Root Tests Results of Constant IPI Variable

Null Hypothesis: LOGIPISA has a unit root Exogenous: Constant Lag Length: 1 (Automatic - based on SIC, maxlag=2)		
	t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic	**-2.336287**	**0.1614**
Test critical values: 1% level	**-3.455685**	
5% level	**-2.872586**	
10% level	**-2.572730**	
*MacKinnon (1996) one-sided p-values.		

In accordance with t statistics given by MacKinnon, 1%, 5%, 10% (-3457, -2872, -2573), t value (-2336) significance levels are calculated. It is low as the absolute value, LOGIPISA has unit root, and the series is not in stationary state. ΔLOGIPISA is designed to make the new series stable.

Table 4. 19. Unit Root Tests Results the First Degree of Difference Constant IPI Variable

Null Hypothesis: DLOGIPISA has a unit root Exogenous: Constant Lag Length: 0 (Automatic - based on SIC, maxlag=2)		
	t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic	**-24.30972**	**0.0000**
Test critical values: 1% level	**-3.455685**	
5% level	**-2.872586**	
10% level	**-2.572730**	
*MacKinnon (1996) one-sided p-values.		

According to MacKinnon τ statistics given as 1%, 5%, 10% (-3457, -2873, -2573), t value (-24 309) significance levels are calculated. Since it is low as the absolute ΔLOGIPISA has no unit root; the series is stationary. Constant and linear trend ΔLOGIPISA has been cointegrated. The results of the model are located in constant and trend LOGIPISA.

Table 20. Unit Root Tests Results of Constant and Linear Trend IPI Variable

Null Hypothesis: LOGIPISA has a unit root
Exogenous: Constant, Linear Trend
Lag Length: 1 (Automatic - based on SIC, maxlag=2)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		**-3.554144**	**0.0359**
Test critical values:	1% level	**-3.994167**	
	5% level	**-3.427407**	
	10% level	**-3.137018**	

*MacKinnon (1996) one-sided p-values.

In accordance with t statistics given by MacKinnon, 1%, 5%, 10% (-3994, -3427, -3137), as t value (-3554), whose significance level is calculated, is high as the absolute value LOGIPISA has no unit root. Constant and linear trend ΔLOGIPISA has been cointegrated. The logarithm of Banking Sector Domestic Credit Volume and the seasonally adjusted figure is described as LOGCREDITSA. The results of the model with a constant for LOGCREDITSA variable are displayed below.

Table 4. 21. Unit Root Test Results of Constant Credit Varieble

Null Hypothesis: LOGCREDITSA has a unit root
Exogenous: Constant
Lag Length: 1 (Automatic - based on SIC, maxlag=2)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		**-4.549155**	**0.0002**
Test critical values:	1% level	**-3.455685**	
	5% level	**-2.872586**	
	10% level	**-2.572730**	

*MacKinnon (1996) one-sided p-values.

According to T statistics given by MacKinnon, 1%, 5%, 10% (-3456, -2873, -2573), as t value (-4549), whose significance levels are calculated, is high as the absolute, LOGCREDITSA has no unit root and the series is in stationary state.

Table 4. 22. Unit Root Test Results of Fixed Constant and Linear Trend Credit Variable

Null Hypothesis: LOGCREDITSA has a unit root
Exogenous: Constant, Linear Trend
Lag Length: 1 (Automatic - based on SIC, maxlag=2)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		**-0.691602**	**0.9720**
Test critical values:	1% level	**-3.994167**	
	5% level	**-3.427407**	
	10% level	**-3.137018**	

*MacKinnon (1996) one-sided p-values.

In accordance with t statistics given by MacKinnon, 1%, 5%, 10% (-3994, -3427, -3137), significance levels of t value (-0691) are calculated. It is low as the absolute value, so, LOGCREDITSA has unit root, the series is not stationary. ΔLOGCREDITSA is designed to make the new series stable.

Table 23. Unit Root Test Results First Degree of Difference Constant and Linear Trend Credit Variable

Null Hypothesis: DLOGCREDITSA has a unit root Exogenous: Constant, Linear Trend Lag Length: 2 (Automatic - based on SIC, maxlag=2)		
	t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic	**-6.175402**	**0.0000**
Test critical values: 1% level	**-3.994453**	
5% level	**-3.427546**	
10% level	**-3.137100**	
*MacKinnon (1996) one-sided p-values.		

In accordance with t statistics given by MacKinnon, 1%, 5%, 10% (-3996, -3428, -3137), as t value (-6175), whose significance level is calculated, is high as the absolute value, ΔLOGCREDITSA has no unit root and the series is in stationary state. Constant and linear trend ΔLOGCREDITSA has been cointegrated. The logarithm of the Consumer Price Index and the seasonally adjusted figure has been identified as LOGCPISA. The model results for constant LOGCPISA variable are given below.

Table 4. 24. Unit Root Test Results of Constant CPI Variable

Null Hypothesis: LOGCPISA has a unit root Exogenous: Constant Lag Length: 0 (Automatic - based on SIC, maxlag=2)		
	t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic	**-1.401741**	**0.5814**
Test critical values: 1% level	**-3.455585**	
5% level	**-2.872542**	
10% level	**-2.572707**	
*MacKinnon (1996) one-sided p-values.		

According to T statistics given by MacKinnon, 1%, 5%, 10% (-3455, -2872, -2572), as t value (-1401), whose significance levels are calculated, is low as the absolute value, LOGCPISA has unit root, the series is not stationary. ΔLOGCPISA is designed to make new series stable.

Table 25. Unit Root Tests Results First Degree of Difference Constant CPI

Null Hypothesis: DLOGTUFESA has a unit root Exogenous: Constant Lag Length: 0 (Automatic - based on SIC, maxlag=2)		
	t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic	**-15.94255**	**0.0000**
Test critical values: 1% level	**-3.455685**	
5% level	**-2.872586**	
10% level	**-2.572730**	
*MacKinnon (1996) one-sided p-values.		

According to MacKinnon τ statistics, 1%, 5%, 10% (-3455, -2872, -2572), since t value (-15 942), whose significance levels are calculated, is high as the absolute value, ΔLOGCPISA has no unit root; the series is in stationary state. Constant and linear trend ΔLOGCPISA has been cointegrated. The results of the model are located in constant and trend LOGCPISA.

Table 4. 26. Unit Root Test Results of Constant and Linear Trend CPI Variable

Null Hypothesis: LOGCPISA has a unit root Exogenous: Constant, Linear Trend Lag Length: 0 (Automatic - based on SIC, maxlag=2)		
	t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic	**-2.012527**	**0.5913**
Test critical values: 1% level	**-3.994026**	
5% level	**-3.427339**	
10% level	**-3.136978**	
*MacKinnon (1996) one-sided p-values.		

In accordance with t statistics given by MacKinnon, 1%, 5%, 10% (-3994, -3427, -3136), as t value (-2012), whose significance levels are calculated, is low as the absolute value, LOGCPISA has unit root and the series is not in stationary state. ΔLOGCPISA is designed to make the new series stable.

Table 27. Unit Root Tests Results the First Degree of Difference Constant and Linear Trend CPI Variable

Null Hypothesis: DLOGCPISA has a unit root Exogenous: Constant, Linear Trend Lag Length: 0 (Automatic - based on SIC, maxlag=2)		
	t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic	**-15.93696**	**0.0000**
Test critical values: 1% level	**-3.994167**	
5% level	**-3.427407**	
10% level	**-3.137018**	

*MacKinnon (1996) one-sided p-values.

According to MacKinnon τ statistics, 1%, 5%, 10% (-3994, -3427, -3137), since t value (-15 936), whose significance levels are calculated, is high as absolute value, ΔLOGCPISA has no unit root; the series is in stationary state. Constant and linear trend ΔLOGCPISA has been cointegrated. All the variables have constant and linear trends and they are in stationary state.

2.7. Sorting Variable

In light of all this information; the variables are sorted according to how they are influenced by the monetary transmission mechanism as M1SA, INTERESTSA, BISTSA, CREDITSA, EXCHANGESA, CPISA and IPISA.

3. Conclusion

The model results suggest the exchange rate channel in Turkey have influence over the general level of prices. However, it does not significantly influence production levels. As mostly imported raw materials are used in the production phase in Turkey, exchange rate shocks adversely affect the real economy. On the other hand, conditions are reversed for exports. The price level of final goods increases drastically due to exchange rate shocks, which has a negative impact on the balance sheet. Turkey has been struggling with hyperinflation for decades. Therefore, the financial sector has been returning to the market with short term contracts. Thus, the effect of changes in monetary policy causes the goods and services sector to emerge for a short duration.

The development of stock prices is negatively affected due to the continuing development on the capital market operations. Results include no findings over stock prices and credit channel. On the other hand, short term debt financed the budget deficit and raised the real interest rates in the 1990s. This led accelerated investment banks

to purchase government bonds rather than funding the open market. Thus, the banking sector entered into the crisis by not fulfilling the most basic function of financial intermediation. The restructuring process that was executed in the aftermath of the 2001 crisis was considered to be an obstacle to the operations of credit channels. Comments in the financial system in Turkish economy and the analysis of applications made to create Var models support the literature. Traditional interest rates work effectively in Turkey. The fact that the exchange rate channel has no considerable effect on the overall outcome, it is observed that it significantly affects the general price level. In addition, stock prices and the credit channel are deemed to be working ineffectively.

References

SAHN, Byung Chan; "Monetary Policy and the Determination of the Interest Rate and Exchange Rate in a Small Open Economy with Increasing Capital Mobility", Federal Reserve Bank of St.Louis Working Paper, 1994 – 024A, 1-27.

ANGELONI, IGNAZIO, Anil K. KASHYAP, Benoit MOJON ve Daniele TERLIZZESE, (2003) "Monetary Transmission in the Euro Area: Does the Interest Rate Channel Explainit All?", NBER Working Paper, No: 9984, p.1 – 41.

ARCANGELIS, Giuseppe De and Di Giorgio GIORGIO; "Monetary Policy Shocks and Transmission in Italy: A VAR Analysis", 1999.http://www.econ.upf.edu/docs/papers/downloads/446.pdf

BERNANKE, Ben S. and Alan S. BLINDER; "The Federal Funds Rate and The Channels of Monetary Policy", American Economic Review, 82 (4), 1992, p. 901-921.

CHAROENSEANG, June and Pornkamol MANAKIT; ''Thai Monetary Policy Transmission In An Inflation Targeting Era'', Journal of Asian Economics, 18, 2007, p. 144 –157.

FERREIRA, Cândida; ''The Bank Lending Channel Transmission Of Monetary Policy In The Emu: A Case Study of Portugal'' The European Journal of Finance, 2007, vol. 13, no. 2, p.181-193.

FRIEDMAN, Milton; ''John Maynard Keynes'' Economic Quarterly, Federal Reserve Bank of Richmond, 83/82 (Spring), 1997, p.1- 23.

FRIEDMAN, Milton and Anna J. SCHWARTZ ''Monetary Trends in The United States and The United Kingdom'', Chicago and London, The University Of Chicago Press.

HOLTEMOLLER, Oliver; "Identifying a Credit Channel of Monetary Policy Transmission and Empirical Evidence for Germany", 2002.

ITURRIAGA, Felix. J. LOPEZ; "More on the credit channel of monetary policy transmission: an international comparison", Applied Financial Economics, Vol 10, 2000, p.423-434.

MEHROTRA, Aaron N.; (2007), "Exchange and Interest Rate Channels During a Deflationary Era – Evidence From Japan Hong Kong and China", Journal of Comparative Economics, 35, p. 188-210.

PAPADAMOU, Stephanos and Georgios OIKONOMOU; ''The Monetary Transmission Mechanism: Evidence from Eight Economies in Transition'', International Economic Journal, 21, (4), 2007.

YUE YI Ding and Shuang–Hong ZHOU (2007), ''Empirical Analysis of Monetary Policy Transmission'', Chinese Business Review, 6, (3), p.6 13.