Monetary Transmission Mechanism in the New Economy: Evidence from Turkey (1997-2006)

Cifter, Atilla and Ozun, Alper
Marmara University

01. January 2007

Monetary Transmission Mechanism in the New Economy: Evidence from Turkey (1997-2006)

Atilla Cifter[*] **Dr. Alper Ozun**[♦]

January 2007

Abstract

This study aims to test the money base, money supply, credit capacity, industrial production index, interest rates, inflation and real exchange rate data of Turkey during the years 1997 – 2006 through the monetary transmission mechanism and passive money hypothesis using the vector error correction model based causality test. Empirical findings show that the passive money supply hypothesis of the new Keynesian economy is supported in part by accommodationalist views and they do not confirm to the view points of structuralist and liquidity preference theorist. However, according to the monetary transmission mechanism it has been established that long-term money supply only affects general price levels and production is influenced by interest rates in the new economy period for Turkish economy. Empirical findings show that in the new economy period interest transmission mechanism are brought to the fore.

.

Key Words: *Monetary transmission mechanism, money supply endogeneity, Credit, New Keynesian Economy*

JEL Classification: *E58, E52, E4, C32*

1. Introduction

As well as being an advocate for similar theories in the use of monetary politics tools, the New Keynesian and the Monetarist Schools, the main split in opinions intensify around whether or not money is active or passive. Whilst the Monetarist School defends the fact that monetary tools, therefore, money supply, is under the control of the Central Bank, the New Keynesian School argues that, as credit control is not tied to the Central Bank, it does not completely control money supply. Defenders of the New Keynesian School put forward the following evidence in support of these claims (Seyrek and others, 2004). (1) The statistical stochastic in money data and the resulting great errors that occur determine that money is passive; (2) According to general econometrical tests, money stock is passive; (3) The passivity of monetary stock derives from the macroeconomic character of the banking system;

[*] PhD Candidate, Econometrics, Marmara University, Istanbul, Turkey, and Financial Reporting Vice President, Deniz Invest-Dexia Group, İstanbul, Turkey, atillacifter@denizyatirim.com

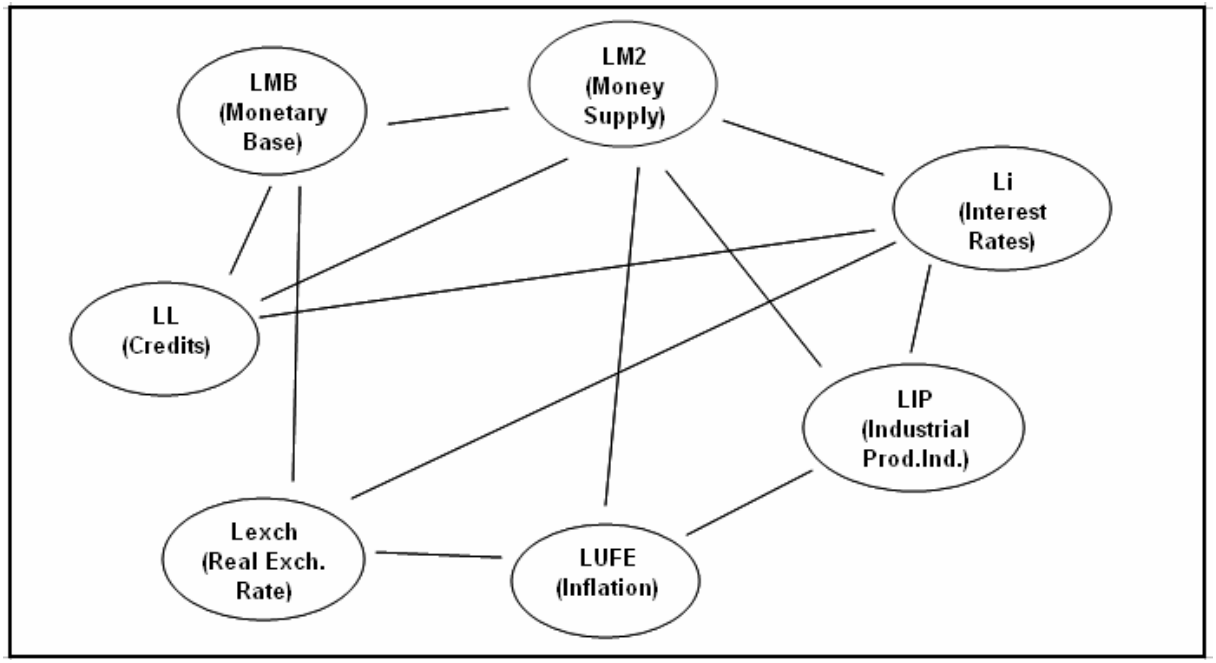
[♦] PhD, Inspector, Market Risk Group, Is Bank, Istanbul, Turkey, alper.ozun@isbank.com.tr

(4) The passivity of money stock can be explained with many macro economical variables. In this aspect, in addition to credit-money supply, weather or not money supply is active or passive is also based on the correlation between money, interest, inflation and productivity. During this process in the new economical period exchange rates also have their place. The New Keynesian view, the correlation between money, credit, interest, inflation and exchange rates can be tested through long term analysis. The econometric methods in long-term analysis are a causality test based on the vector error correction model for cointegrated data or the granger causality tests for non-cointegrated data. During the study, together with the vector error correction method and the granger causality test, monetary transmission mechanism and monetary passivity hypothesis is tested. The second section deals with literature scan, the third section with methodology and the fourth section with empirical findings. The fifth section contains the results.

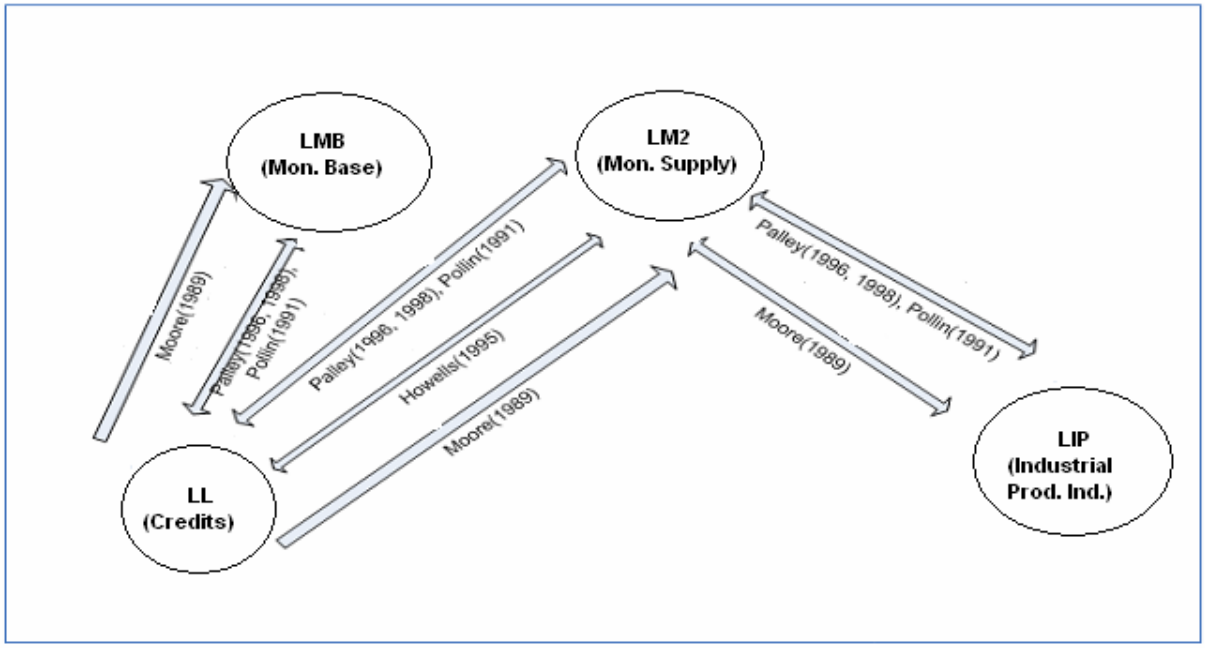
2. Literature Review and Theory

There are three main types of monetary transmission mechanism models found in literature; the interest rate channel, the asset channel and the credit channel (Seyrek and others, 2004). According to the monetary transmission mechanism, money supply is active and, in the short term, monetary tools and increased money supply reduce interest rates and the liquidity effect is only short term. The drop in interest rates increases the credit value. This situation causes a short term increase in income. In the long term, the increased price in money supply increases its general level and the real value of money stock declines. According to the Monetarist approach, money supply is active during these processes and is controlled by the Central Bank. According to the Keynesian approach, monetary politics tools affect, in order, the monetary base and money supply. Following this, the changes in money supply affect the interest rates, which in turn affects firstly investments and secondly revenues. New Keynesian economics argues that money supply is passive.[*] Opposite to the Central Banks' exported money supply, credit money is determined according to the banks' credit preferences. When economic units use credit, deposits created by the credit multiplier. The passive money hypothesis presumes that causality moves away from credits towards deposits. Credit demands are set by the preferences of the credit applicants and creditor. For this reason, Central Banks do not have control over credits, and therefore, money stocks (Shanmugan and others, 2003). There are three approaches in regards to passive money stock; accommodationalist, structuralist and liquidity preference. According to the accommodationalists (Moree, 1989) credits are the causality of money supply and money base and that money supply and money revenue (GDP) are cointegrated and the causalities of one another. According to the structuralists (Palley, 1996, 1998; Pollin 1991) credits are the causalities of money supply, money base and money multipliers and money supply and money revenue (GDP) are cointegrated and the causality of one another. Finally, according to liquidity preference theorists (Howells, 1995), credits and money supply are cointegrated and the causality of one another. The monetary transmission mechanism can be found in Diagram No.1 and the New Keynesian Economical Passive Money Theory can be found in Diagram No. 2. In the new economy period, real exchange rates will also be found apart from the general price levels.

[*] The critical evaluation of New Keynesian monetary politics. See Cottrell (1994).



Graph 1. Monetary Transmission Mechanism



Graph 2. Endogenity of Money in New Keynesian Economy

In the New Keynesian economy the first empirical exercise on passive money was carried out by Pollin (1991). Pollin (1991), obtained data supporting structuralist views for USA between 1953 – 1988. Vera (2001), obtained findings to support accommodationalist and structuralist views for Spain between 1987 – 1998 by applying Granger causality tests using Money Multipliers (according to M1, M2 andM3) and credit data. Nell (2000-01), examined the relationships between money supply, money circulation speed and credit using the vector error correction model for South Africa between 1966 – 1997, and found that all new Keynesian approaches (structuralist, accommodationalist and liquid preference theorist) were empirically present.

Shanmugan, Nair and Li (2003), examined the relationship between money base, money supply, credit and industrial production index using the vector error correction model and granger causality test in Malaysia between 1985 – 2000 and came to the conclusion that supports the findings of accommodationalists and liquid preference theorists. Lavoie (2005), tested the passivity of money according to theoretical an empirical literature for Canada and USA, and reached findings that supported accommodationalist views. Ahmad and Ahmet (2006) carried out short and long term tests on passivity of money supply for Pakistan during 1980 – 2003 using the Granger Causality test. In the short term, they found that empirical findings support structuralist and liquidity preference theorist views, but in the long term, found that the money base set the credit capacity and showed that the Pakistan Central Bank became active in setting money supply.

Gunduz (2001) and Seyrek, Duman and Sarikaya (2004) carried out practises related to Turkey data. Seyrek and others (2004) found that data for Turkey between 1968 – 1996 supported the Keynesian transmission mechanism multi-monetarist hypothesis, driven by credit. Gunduz (2001) analysed the monthly macro data dependant VAR (Vector Autoregressive) model and the bank lending channel roles in Turkey. The findings, for the period 1986 – 1998, show that bank lending channel presents limited support to the transmission mechanism.

3. Data and Methodology

3. a. Data

Monthly data was used between January 1997 – June 2006 for the Monetary Transmission mechanism and passive money supply test. Due to the fact that the Gross Domestic Product (GDP) was published every three months, Production Index (PI) was used instead. Because the treasury bond interest rates indicator was not available on a monthly basis before 2002, the 12 month deposit interest rate was used instead. During analyses made for Turkey, IPI[†], was used instead of GNP for national growth and production indicators and deposit interest rates were used instead of treasury bond interest rates. Money Base, Money Supply, Credit Capacity, Industrial Production Index, Interest Rates and Real Exchange Rates are obtained from www.tcmb.gov.tr and inflation rates from www.tuik.gov.tr. Money Base reserves and total Free Market Procedures (FMP) debts have been calculated by ourselves. Table 1 shows the unit root tests for the chosen indicators. All sequences are proven 90%-100% to contain unit roots. In order to separate the sequences from unit roots, logarithmic differences have been taken and it has been established that all sequences are constant for the sake of entry level logarithmic differences(Table 2).

Sequence graphics are in Diagram No.3, Money Supply(M2) and Credit-Scatter Diagram (Logarithmic difference) with time sequence is in Diagram No.4.

Table 1. Level Sequences, Unit Root Tests and Distribution Specifications

	L [a]	Augmented Dickey-Fuller Test*	Skewness	Kurtosis	Jarque-Bera statistic
R	4	1.35825 {<1.00}	0.625191	0.625191	8.95215
E	3	1.70072 {<1.00}	0.855461	2.56205	14.8155
MB	1	1.59344 {<1.00}	0.884356	2.84869	14.9684

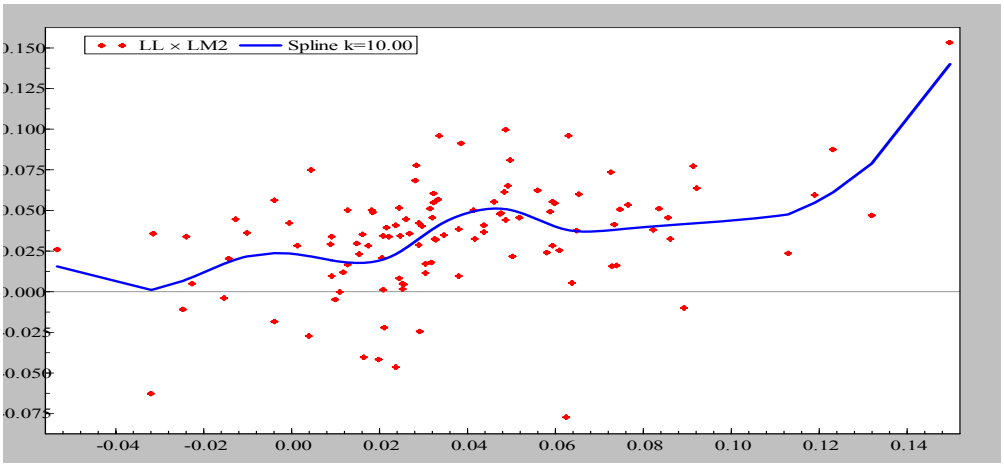
[†] Shanmugan and others(2003), Nell(2000-01) and Ahmad and Ahmet(2006) have also used similar IP figures instead of GNP.

M1	3	1.80713 {<1.00}	0.863718	2.61482	14.8789
M2	3	1.08533 {<1.00}	0.844484	2.68744	14.014
M2Y	3	1.02843 {<1.00}	0.395414	1.99569	7.76173
M3	4	0.86340 {<1.00}	0.847275	2.67047	14.1555
M3Y	2	1.31943 {<1.00}	0.422493	2.02084	7.94562
L	3	1.58811 {<1.00}	1.29503	3.86689	35.4344
Exc	1	-2.6588 {< 1.00}	0.398535	2.33168	5.13939
IP	1	-1.5450 {<0.90}	0.600842	2.68881	7.31921
İ	3	-1.3675 {<0.90}	0.178638	1.864	6.73618
UFE	1	0.32292 {<0.99}	0.101448	1.40765	12.2396

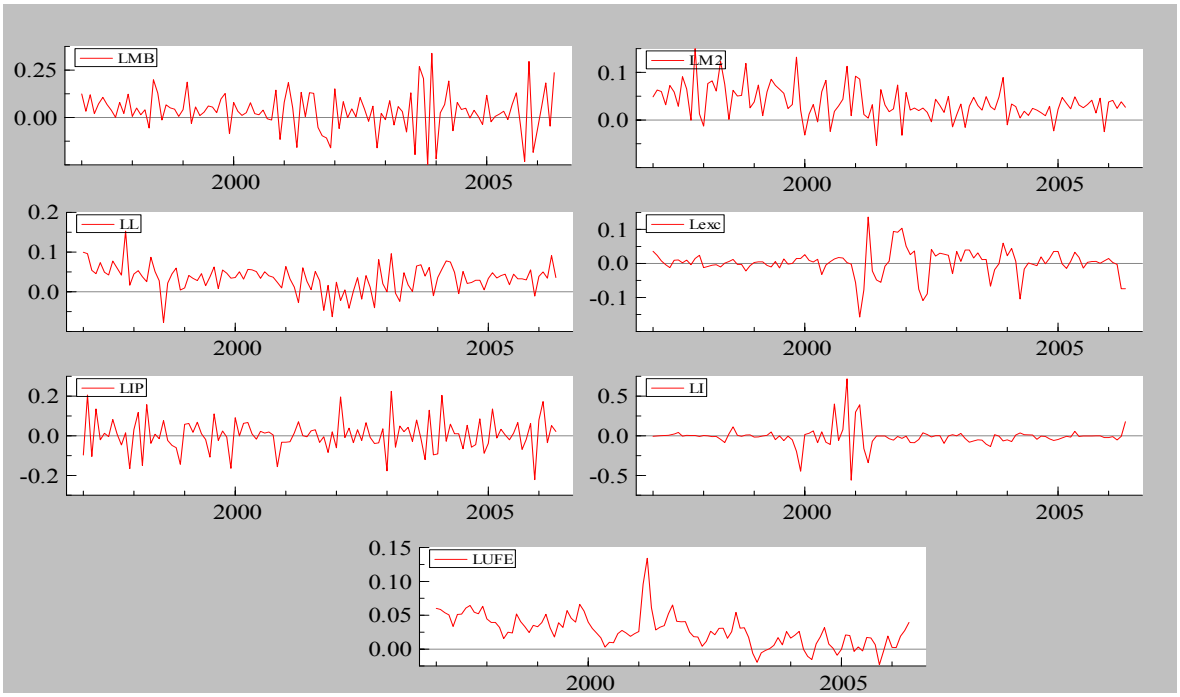
R: Reserve Money, E: Emission, MB: Monetary Base, L: Credit Capacity, Exc: Real exchange rate_MPI, IP: Industrial Production Index, i: Interest rate_12 Month, MPI: Manufacturer Price Index:
* Delay lengths have been identified as maximum 12 according to Schwartz Knowledge Criteria. Values inside brackets are the rejected unit root statistics. [a] Delay length.
Definitions:
Reserve Money = Emission + Bank Mandatory Payments + Bank Unbound Opportunities + Fund Calculations + Non Bank Related Deposits
Monetary Base = Reserve Money + Open Market Activity Debts
Ml = Money in Circulation + Current Deposits at Depositary Banks + Central Bank Deposits
M2 = Ml + Fixed Term Deposits at Depositary Banks
M2Y = M2 + Foreign Currency Deposit Accounts (TL)

Table 2. Logarithmic Difference Sequence Fundamental Statistical Specifications

	LMB	LM2	LL	LIP	LI	LEXC	LUFE
Mean	0.0347	0.0364	0.0336	0.0045	-0.0112	0.0022	0.0275
Mode	0.0377	0.0315	0.0358	0.0045	-0.0050	0.0053	0.0259
Max	0.3384	0.1497	0.1531	0.2238	0.7186	0.1363	0.1341
Min	-0.2467	-0.0532	-0.0772	-0.2209	-0.5579	-0.1577	-0.0228
Std. Deviation	0.1026	0.0347	0.0336	0.0810	0.1275	0.0394	0.0236
Multiplier	-0.1429	0.5159	-0.3160	0.1102	1.1458	-0.6521	0.8737
Oblateness	4.0410	3.9321	4.9116	3.7338	16.609	6.7538	5.7567
J-B	5.4877	9.1042	19.088	2.7642	896.78	74.355	50.159
Probability	0.0643	0.0105	0.0000	0.2510	0.0000	0.0000	0.0000
Observations	113	113	113	113	113	113	113



Graph 3. M2 and Credits Scatter Diagram (Log differenced series)



Graph 4. Series

3.b. Methodology

The vector error correction model based causality test has been selected for the Passive Money Hypothesis test and the transmission mechanism, which in turn is derived from Money Base, Money Supply, Credit Capacity, Industrial Production Index, Interest Rates, Inflation and Real Exchange Rates. Before the vector error correction model is applied, it must be researched as to whether or not the sequences contain unit roots. In literature, unit root-stability identification is done so by the widespread use of ADF (Augmented Dickey Fuller Test) and P-P(Philips-Perron) tests. The ADF test was developed by Dickey and Fuller (1981) and is used together with Equation No.(1).

$$\Delta Y_t = \beta_1 + \beta_2 t + \delta Y_{t-1} + \alpha_i \sum_{i=1}^{m} \Delta Y_{t-i} + \varepsilon_t \qquad (1)$$

ΔY_t ; is the first difference in testing the stability of the variable, t; trend variable and ΔY_{t-i} ; is the delay difference term. The 'i' delay difference term is added enough for the error term to be a non-correlation sequence using knowledge criteria.

Another main unit root test used in literature is the "Phillips-Peron" (P-P) test developed by Phillips-Perron (1988). The P-P test can be applied using the equation No.(2).

$$\Delta Y_t = a + cY_{t-1} + d_1 \Delta Y_{t-1} + d_2 \Delta Y_{t-2} + \ldots\ldots + d_{p-1} \Delta Y_{t-p-1} + \varepsilon_t \qquad (2)$$

ΔY_t ; Primary difference of Y sequence, $a, c, d_1, d_2, \ldots\ldots d_{p-1}$; parameters, t; time, p; delay number and ε_t ; shows error term. $H_0 : c = 0$, shows that the sequence is not constant, $H_1 : c \neq 0$, shows that the sequence is constant.

Before examining the relationship of data that isn't constant and at the same level, the sequences need to be examined as to whether or not they are integrated. Johansen(1988), Johansen and Joselius(1990) developed the Johansen cointegration test, which has become a widely accepted form used in literature.

In the following model, a non-trend setting and non-restrictive cointegration test containing a constant term has been preferred (3)

$$H_1^*(r): \prod y_{t-1} + Bx_t = \alpha(\beta^{'} y_{t-1}) + \rho_0 \tag{3}$$

In the Johansen method the cointegration amongst non-constant sequences are identified using trace and maximum eigenvalue statistics (4-5)

$$\lambda_{trace(r)} = -T \sum_{i=r+1}^{k} In(1-\bar{\lambda}_i), r = 0,1,2,3,....,n-1 \tag{4}$$

$$\lambda_{\max(r,r+1)} = -TIn(1-\bar{\lambda}_{r+1}) \tag{5}$$

In the prepared model, if the cointegration can be identified between dependent and independent variables, then it can be understood that there is at least a single aspect causality (Granger, 1969). If there isn't any cointegration between variables, the standard causality test (Granger, 1969) can be applied; and if there is cointegration between variables, then causality can be examined using the vector error correction model (VECM) (Granger, 1988). Engle and Granger(1987) developed the VECM, which can be shown in the equation below (6).

$$\Delta y_t = \alpha_0 + \sum_{i=1}^{n} \alpha_{1i} \Delta y_{t-i} + \sum_{i=1}^{n} \alpha_{2i} \Delta \chi_{t-i} + \sum_{i=1}^{n} \alpha_3 EC_{t-n} + \varepsilon_i \tag{6}$$

The short term causality relationship in the VECM can be tested using the meaningfulness of the parameters and the wald test. Where as the long term causality relationship can be tested using the EC_{t-n} parameter meaningfulness (Shanmugan and others, 2003).

4. Empirical Findings

Table No.3 shows the ADF and P-P unit root test results of the logarithmic difference sequences. All sequences are constant to a 99% reliance.

Table 3. ADF and P-P Unit Root Tests (Logarithmic difference has been taken)*

Variables	ADF Test		P-P Test
	L [a]	t-statistic	t-statistic
LMB	0	-16.0154 {<0.01}	-16.5017 {<0.01}
LM2	2	-4.11103 {<0.01}	-10.6736 {<0.01}
LL	2	-4.32343 {<0.01}	-9.62207 {<0.01}
Lexc	1	-6.99893 {<0.01}	-6.85118 {<0.01}
LIP	4	-8.85429 {<0.01}	-16.5786 {<0.01}
Lİ	2	-5.17817 {<0.01}	-12.6571 {<0.01}
LUFE	0	-4.14952 {<0.01}	-4.27729 {<0.01}

MB: Monetary Base, L: Credit Capacity, Exc: Real Exchange Rate_MPI, IP: Industrial Production Index, i: Interest rate_12Month, MPI: Manufacturer Price Index
* D Lags have been identified as maximum 12 according to Schwartz Knowledge Criteria. Values inside brackets are the rejected unit root statistics. [a] Lag length.

The unrestrictive Johansen cointegration tests showing passive money hypothesis and the monetary transmission mechanism test can be found in Table Nos. 4 and 5. All sequences are cointegrated at a secure level of %95-%99. Due to the fact that the sequences are all cointegrated, the vector error correction model based causality test has been applied to all hypothesis. The causality between credit-monetary base, credit-monetary base-IP, credit-money supply and credit-money supply-IP for the passive money test was examined using the vector error correction model (Table No.6). The results show that there is causality towards credit=>Monetary Base and Credit=>Money Supply. This situation supports in part the views of the accommodationalists in the new Keynesian approach (this is supported totally because there was no Money Supply=>IP causality found). Table No.8 shows a broader test, the monetary transmission mechanism vector error correction model test. According to Table No.8, long term causalities can be found in Diagram No.5. 8 causality directions were identified, being: Credits=>Money Supply, Interest Rates=>Money Supply, Interest Rates=>Real Exchange Rates (negative), Interest Rates=>Inflation, Interest Rates=>IP (negative), Money Supply=>Inflation, Real Exchange Rates=>Inflation, inflation=>IP (negative). These results show that money supply is the cause of inflation in the long term (influence factor 1.03), that credits affect money supply (influence factor 0.46), that money supply does not affect inflation rates but that interest rates affect money supply (influence factor 0.27) and that real exchange rates affect inflation in a negative and dominant way (influence factor -0.96). Also, it has been found that IP is affected by interest rates but not affected by money supply. This situation does not conform with either the monetary school or the new Keynesian school views. After the 2001 crisis, the Central Bank choosing interest rates as the main indicator and the identifying of net internal assets are one reason of this situation. Another reason is that in the new economy period factors creating the real economic activity affect the real economic activity through credits (consumer credits, business credits and credit cards) and interest rates. Diagram No.6 shows the difference in correlation between money supply and IP and Diagram No.7 shows the difference in correlation between money supply and credits. Due to the fact that it has been notified that correlation is also under the influence of cyclic effects, causality was tested by vector error correction model.

Tablo 4. Unrestricted Johansen Cointegration Test (Endogenity of Money Hypothesis)

	L [a]	**H_0**	λ_{Trace} Stat	λ_{max} Stat
LMB& LL	4	r=0	45.0642 {<0.01}*	34.9867 {<0.01}*
		r≤1	10.0775 {<0.05}	10.0775 {<0.05}
LM2&LL	4	r=0	25.0972 {<0.01}*	14.9121 {<0.1}
		r≤1	10.1851 {<0.05}	10.1851 {<0.05}
LM2& LIP	4	r=0	55.9499 {<0.01}*	43.3068 {<0.01}*
		r≤1	12.6431 {<0.025}	12.6431 {<0.025}
LmaliS&LIP	4	r=0	57.3502 {<0.01}*	49.0907 {<0.01}*
		r≤1	8.25947 {<0.1}	8.25947 {<0.1}
LMB& LL&LIP	4	r=0	93.6593 {<0.01}*	53.529 {<0.01}*
		r≤1	40.1302 {<0.01}*	30.7801 {<0.01}*
		r≤2	9.35016 {<0.05}	9.35016 {<0.05}

LM2& LL&LIP	4	r=0	63.5928 {<0.01}*	40.9484 {<0.01}*
		r≤1	22.6443 {<0.025}	13.2242 {<0.2}
		r≤2	9.42012 {<0.05}	9.42012 {<0.05}

Values inside brackets are the significance values. Lags have been identified as maximum 12 according to Schwartz Knowledge Criteria. * Hypothesis of H_0 is rejected at %1 significance. [a] Lag length.

Tablo 5. Unrestricted Johansen Cointegration Test(Monetary Transmission Mechanism)

	L [a]	H_0	λ_{Trace} Stat	λ_{max} Stat
LM2&Lİ	4	r=0	28.5057 {<0.01}*	16.3041 {<0.05}
		r≤1	12.2016 {<0.025}	12.2016 {<0.025}
LM2&LIP	4	r=0	55.9499 {<0.01}*	43.3068 {<0.01}*
		r≤1	12.6431 {<0.025}	12.6431 {<0.025}
LM2&LUFE	4	r=0	26.8229 {<0.01}*	21.0262 {<0.01}*
		r≤1	5.79668 {<0.5}	5.79668 {<0.5}
LM2&LExc	4	r=0	45.6645 {<0.01}*	31.1411 {<0.01}*
		r≤1	14.5233 {<0.01}	14.5233 {<0.01}
ML2&LL	4	r=0	25.0972 {<0.01}*	14.9121 {<0.1}
		r≤1	10.1851 {<0.05}	10.1851 {<0.05}
Lİ&LIP	4	r=0	75.0987 {<0.01}*	57.0977 {<0.01}*
		r≤1	18.001 {<0.01}	18.001 {<0.01}
LIP&LUFE	4	r=0	63.2395 {<0.01}*	56.6974 {<0.01}*
		r≤1	6.54211 {<0.2}	6.54211 {<0.2}
LUFE&LExc	4	r=0	38.3893 {<0.01}*	32.3643 {<0.01}*
		r≤1	6.02494 {<0.2}	6.02494 {<0.2}
LExc&LL	4	r=0	40.4699 {<0.01}*	30.6964 {<0.01}*
		r≤1	9.77352 {<0.05}	9.77352 {<0.05}

Values inside brackets are the significance values. Lags have been identified as maximum 12 according to Schwartz Knowledge Criteria. * Hypothesis of H_0 is rejected at %1 significance. [a] Lag length.

Table 6. Causality Tests Based on Vector Error Correction Model-Endogenity of Money

	Short-term Effect	**Long-term Effect**	**VECM**	
	Wald test:	**EC_{t-1}**	**Short-term**	**Long-term**
Dependent Var:LMB				
LL	8.28649 [0.0040] *	0.853448 [0.005]*	LL= > LMB	LL = > LMB
LL	8.77713 [0.0124] **	0.861413 [0.006]*	LL = >LMB	LL, LIP = > LMB
LIP		0.192875 [0.457]	LIP ≠ > LMB	
Dependent Var:LM2				
LL	4.25987 [0.0390] *	0.462158 [0.041]*	LL= > LM2	LL= > LM2
LL	3.93154 [0.1400]	0.419147 [0.097]**	LL= > LM2	LL, LIP ≠ >LM2
LIP		0.244108 [0.318]	LIP ≠ > LM2	

Dependent Var:LL				
LMB	0.00203198 [0.9640]	0.00999656 [0.964]	LMB ≠ > LL	LMB ≠ > LL
LM2	2.42909 [0.1191]	0.432127 [0.122]	LM2 ≠ > LL	LM2 ≠ > LL
LMB LIP	1.8055 [0.4055]	0.00573034 [0.981] 0.391690 [0.211]	LMB ≠ > LL LIP ≠ > LL	LMB,LIP ≠ > LL
LM2 LIP	3.14705 [0.2073]	0.511034 [0.081]** 0.120232 [0.602]	LM2=> LL LIP ≠ > LL	LM2,LIP ≠ > LL
Dependent Var:LIP				
LM2	2.31045 [0.1285]	-0.366596 [0.131]	LM2 ≠ > LIP	LM2 ≠ > LIP

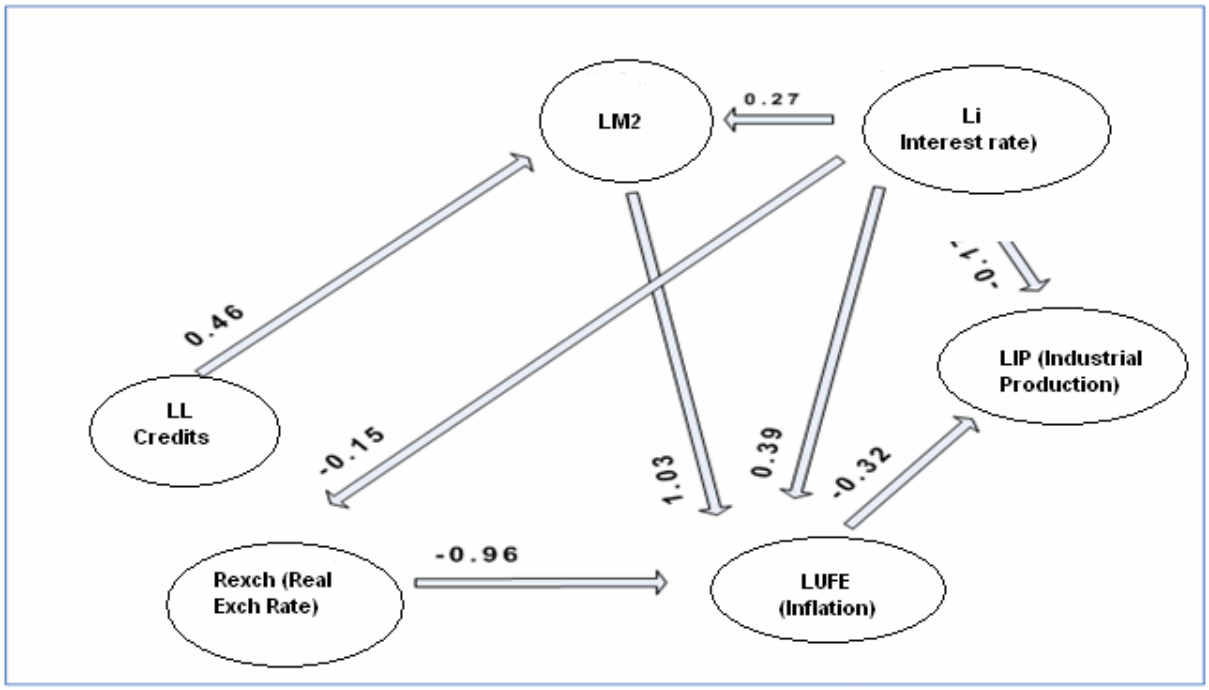
* %1, ** %5 significant level of acceptance respectively. Values inside brackets are t-sats. Lag length is determined as 4.

Table 7. Causality Tests Based on Vector Error Correction Model-Monetary Transmission Mechanism

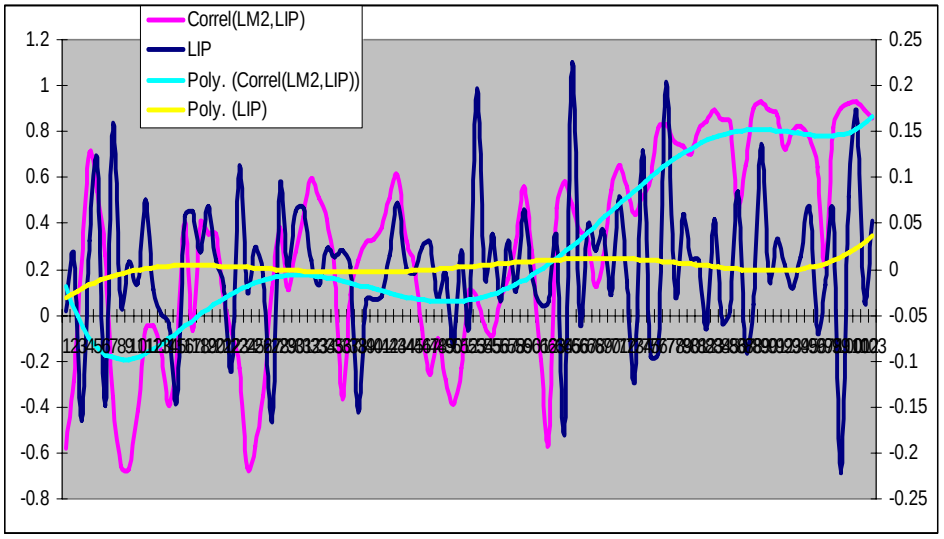
	Short-term Effect	**Long-term Effect**	**VECM**	
	Wald test:	**EC_{t-1}**	**Short-term**	**Long-term**
Dependent Var:LM2				
Lİ	7.31782 [0.0068] *	0.276316 [0.008]*	Lİ=> LM2	Lİ=> LM2
Dependent Var:Lİ				
LM2	0.0034883 [0.9529]	0.0426212 [0.953]	LM2 ≠ > Lİ	LM2 ≠ > Lİ
Dependent Var:LIP				
LM2	2.31045 [0.1285]	-0.366596 [0.131]	LM2 ≠ > LIP	LM2 ≠ > LIP
Dependent Var: LUFE				
LM2	17.9812 [0.0000] **	1.03013 [0.000]*	LM2=> LUFE	LM2=> LUFE
Dependent Var: LM2				
LUFE	0.935116 [0.3335]	0.230699 [0.336]	LUFE ≠ > LM2	LUFE ≠ > LM2
Dependent Var: LM2				
LExc	0.0030329 [0.9561]	-0.0135914 [0.956]	LExc ≠ > LM2	LExc ≠ > LM2

Dependent Var: LExc				
LM2	1.12743 [0.2883]	-0.248525 [0.291]	LM2 ≠ > LExc	LM2 ≠ > LExc
Dependent Var: LM2				
LL	4.25987 [0.0390] **	0.462158 [0.041]*	LL= > LM2	LL= > LM2
Dependent Var: LL				
LM2	2.42909 [0.1191]	0.432127 [0.122]	LM2 ≠ > LL	LM2 ≠ > LL
Dependent Var: LIP				
Lİ	4.76484 [0.0290] **	-0.174685 [0.031]*	Lİ= > LIP	Lİ= > LIP
Dependent Var: LIP				
LUFE	0.606543 [0.4361]	-0.167911 [0.438]	LUFE ≠ > LIP	LUFE ≠ > LIP
Dependent Var: LUFE				
LExc	5.00403 [0.0253] *	-0.967069 [0.027]*	LExc= > LUFE	LExc= > LUFE
Dependent Var: LL				
LExc	0.929813 [0.3349]	-0.281147 [0.337]	LExc ≠ >LL	LExc ≠ >LL
Dependent Var: LUFE				
Lİ	4.33088 [0.0374] **	0.390938 [0.040]*	Lİ= > LUFE	Lİ= > LUFE

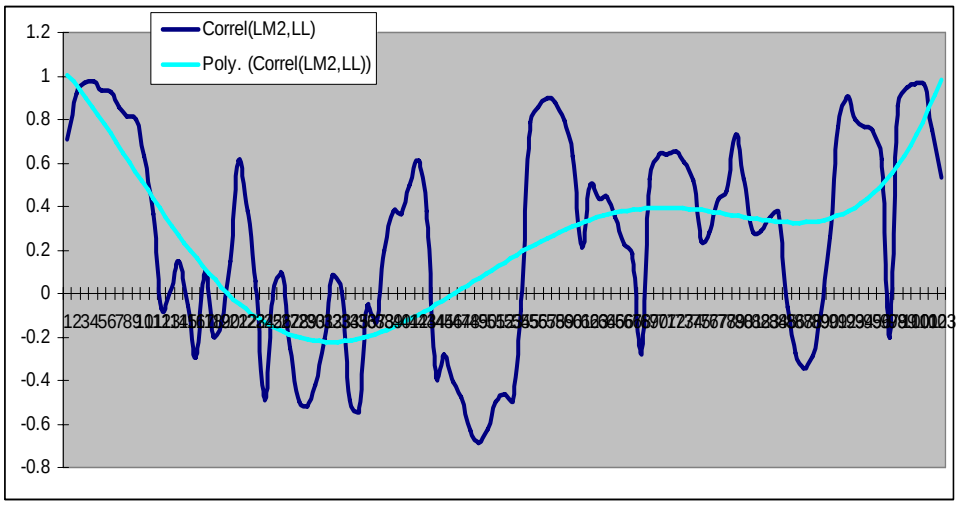
* %1, ** %5 significant level of acceptance respectively. Values inside brackets are t-sats. Lag length is determined as 4.



Graph 5. Monetary Transmission Mechanism (Turkey)



Graph 6. Dynamic Correlation (LM2, LIP, 4 Lags)



Graph 7. Dynamic Correlation (LM2, LL, 4 Lags)

5. Concluding Remarks

This study is conducted to test the money base, money supply, credit capacity, industrial production index, interest rates, inflation and real exchange rate data of Turkey during the years 1997 – 2006 through the monetary transmission mechanism and passive money hypothesis using the vector error correction model based causality test. Empirical findings show that the passive money supply hypothesis of the new Keynesian economy is supported in part by accommodationalist views and they do not confirm to the structuralist and liquidity preference theorist view points. However, according to the monetary transmission mechanism it has been established that long term money supply only affects general price levels and production is influenced by interest rates in the new economy period. Empirical findings show that in the new economy period interest transmission mechanism are brought to the fore. During the monetary transmission mechanism test, it was decided to leave the Markov regime variant, which takes into account cyclic effects, vector error correction model for future studies.

References

Ahmad, N., ve Ahmet F. (2006), *"The Long-run and Short-run Endogeneity of Money Supply in Pakistan: An Empirical Investigation"*, **State Bank of Pakistan-Research Bulletin**, Vol. 2, No. 1

Cottrell, A. (1994). *"Post Keynesian Monetary Economics: A critical survey."* **Cambridge Journal of Economics**, 18(6), ss.587-605.

Dickey, D. A. ve Fuller, W. A. (1981), *"Likelihood Ratio Statistics for an Autoregressive Time Series with a Unit Root"*, **Econometrica**, 49, ss.1057-72.

Engle, R.F. ve Granger, C.W.J. (1987), *"Co-integration and Error Correction: Representation, Estimation and Testing"*, **Econometrica,** 55(2), ss.251-276

Granger, C.W.J. (1969), *"Investigating Causal Relationship by Econometric Models and Cross Special Methods."* **Econometrica**, 37(3), ss.425-435.

Granger, C.W.J. (1988), *"Some Recent Developments in a Concept of Causality***", Journal of Econometrics**, 39, ss.199-211

Gündüz, L. (2001), "*Türkiye'de Parasal Aktarım Mekanizması ve Banka Kredi Kanalı*." **İMKB Dergisi(ISE Review)**, Sayı. 18

Howells, P.G.A. (1995). *"The Demand for Endogenous Money."* **Journal of Post Keynesian Economics**, 18(1), ss.89-106.

Johansen, S. ve Juselius, K. (1990), *"Maximum Likelihood Estimation and Inference on Cointegration-with Application to the Demand for Money"*, **Oxford Bulletin of Economics and Statistics**, 52, ss.169-210

Johansen, S. (1988), *"Statistical analysis of cointegration vectors"*, **Journal of Economic Dynamic and Control**, 12, ss. 231-254

Lavoie, M. (2005*). "Monetary base endogeneity and the new procedures of the asset-based Canadian and American monetary systems."* **Journal of Post Keynesian Economics**, 27, 4: 689-709.

Moore, B.J. (1989). *"The Endogeneity of Credit Money."* **Review of Political Economy**, 1, 1: 64-93.

Nell, K.S. (2000-01). "*The Endogenous/Exogenous Nature of South Africa's Money Supply under Direct and Indirect Monetary Control Measures."* **Journal of Post Keynesian Economics**, 23(2), ss.313-329.

Palley, T.I. (1991). *"The Endogenous Money Supply: Consensus and Disagreement."* **Journal of Post Keynesian Economics**, 13(3), ss.397-403.

——— (1996). *"Accommodationism versus Structuralism: Time for an Accommodation."* **Journal of Post Keynesian Economics**, 18(4), ss.585-594.

——— (1998). *"Accommodationism, Structuralism and Superstructuralism."* **Journal of Post Keynesian Economics**, 21(1), ss.171-173.

Philips, P.C.B. ve Perron, P. (1988), *"Testing for a Unit Root in Time Series Regression"*, **Biometrica**, 75, ss.335-446

Pollin, R. (1991). *"Two Theories of Money Supply Endogeneity: Some Empirical Evidence."* **Journal of Post Keynesian Economics**, 13(3), ss.366-396.

Seyrek, İ., Duman, M., ve Sarıkaya, M. (2004), *"Parasal Aktarım Mekanizması ve Para Politikası Aracı: Türkiye'de Aktarım Mekanizması"*, **C.Ü. Iktisadi İdari Bilimler Dergisi**, Cilt 5, Sayı 1

Shanmugam, B., M. Nair, and O.W. Li (2003). *"The Endogenous Money Hypothesis: Empirical Evidence from Malaysia (1985-2000)"*. **Journal of Post Keynesian Economics**, 25(4), ss.599-611.

Vera, A.P. (2001). *"The Endogenous money hypothesis: some evidence from Spain (1987-1998).*" **Journal of Post Keynesian Economics**, 23, 3: 509-526