ONÜÇÜNCÜ BÖLÜM

MONEY SUPPLY, EMPLOYMENT AND NATIONAL INCOME CAUSALITY: THE TURKISH EXPERIENCE

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Introduction

The role of monetary policy in economic growth has long been a subject of under debate between Keynesians and Monetarist Schools of economic thought. Early Keynesian economists did not have any role for money supply in the economy since they did not have a theory of inflation for situations of less than full employment. Thus, in the 1950's the Keynesian consumption function model did not include money supply and prices or the price levels as explanatory variables. As Landreth and Colander stated (2002), this initial lack of concern about money supply and prices manifested itself in policy based on Keynesian analysis; for example, money supply was used as an instrument to hold the interest rate constant. According to Keynesians, the transmission mechanism between increases in the money stock and the level of nominal income is indirect, operating through the rate of interest. Thus, according to Keynesians, the role of money in income generation operates passively through interest rate channel. In the Keynesian model, prices are assumed to be fixed in the short-run, so an increase in the nominal money supply means an increase in the real money supply. The real interest rate decreases due to the increasing money supply, because wealth owners exchange their money for nonmonetary assets. The purchase of nonmonetary assets drives up their prices, which is the same as decreasing the real interest rate that they pay. Also, the lower real interest rate stimulates both consumption and investment spending. With more demand for their output, firms increase employment and production.

The effect of an increase in money supply can also be evaluated within the Keynesian version of the investment-savings (IS) and liquidity preference-money supply (LM) model (IS-LM model). According to the IS-LM model, an increase in money supply brought about by open-market purchases of bonds by the central bank will shift the LM curve to the right and induce a movement along the IS curve so that real interest rate declines and output increases. At the initial interest rate and output, with the increase in money supply, individuals can have excess money and they attempt to buy bonds with this excess money. As a result, depending on increasing demand for bonds, bond prices increase and interest rates fall. Similarly, the lower real interest rate increases both consumption and investment spending, which in turn drives up output and income. If the money supply is constant, the

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increase in income increases the demand for money and accordingly the money supply increases. In the Keynesian model, the direction of causation runs from income to money, meaning that changes in income cause changes in money stocks via demand for money. On the other hand, there is price rigidity in the short-run in the Keynesian model, if there is a monetary expansion, this will cause real interest rates to fall and employment and output to increase. Hence, interest rates play a crucial role to determine the new equilibrium. Thus, the direction of causation runs from money to income via real interest rate. As a result, according to the Keynesian model, there is a bilateral causality between money supply and income in the short-run.

Throughout the 1950's and 1960's, the primary challengers of the Keynesians were Monetarists. Unlike the Keynesian approach, Monetarists emphasize the importance of monetary factors in the macroeconomy. According to the monetarists, monetary policy has powerful short-run effects on the real economy. In the long-run, however, changes in the money stock have their primary effect on the price level. But, at least in the short-run, money plays an active role in income generation. Friedman and Schwartz (1963) analyzed the monetary history of the United States and they concluded that monetary policy was very powerful and movements in supply of money did explain most of the fluctuations in output. Thus, the direction of causation runs from money supply to income without any feedback.

Keynesians and Monetarists agree that money is not neutral in the short-run; however, changes in money growth only affect price levels, but not real variables in the long-run. Considering the relationship between money and prices, money is also important in the Keynesian Approach in the short-run, but the cause of inflation is due to structural factors rather than monetary ones, while the Monetarist School views inflation as a purely monetary phenomenon. Friedman argues that an increase in money supply will increase spending both by lowering real interest rates (and thus increasing investment) and by causing people to hold more cash balances than they want to. Hence, output and prices will increase. After a couple of years, the interest rates will be back to its previous levels. Inflation, however, will be higher. If the central bank tries to bring the interest rates back down to its previous levels after the first monetary expansion it will require a larger increase in the money supply. This will eventually produce more inflation and higher nominal interest rates. Thus, countries with high nominal interest rates are countries that have had expansionary monetary policy and countries with low nominal interest rates that have had contractionary monetary policy.

Friedman argues that monetary policy, which employs nominal variables, can peg nominal variables, such as the price level, the nominal exchange rate, nominal gross domestic product, the nominal money supply or inflation. It cannot peg real

variables such as the real interest rate, unemployment, real output, or the real money supply. This conclusion is totally different from the Keynesian view since they accept that money supply affects real income only via interest rate channel.

In this study, the causality among money, income, prices, and employment will be analyzed for Turkish economy from 1980 to 2018. This paper is organized as follows: Section 2 presents previous literature; section 3 Turkish economic progresses since 1980; section 4 presents econometric tests and results; finally, conclusion is presented in section 5.

1. Literature Review

The causal relationship between money and income and money and prices has been tested for various economies. Sims (1972) tested the causality between money and income in the U.S. using quarterly data for the period of 1947-1969. Sims could not reject the hypothesis that causality is unidirectional from money to income for the post-war U.S. data, whereas the hypothesis that causality is unidirectional from income to money was rejected. This result is consistent with Monetarist view. Sims's findings, however, were not supported by subsequent studies; Barth and Bennett (1974) used Sims' method for Canadian economy and the authors found bidirectional causality between money and income. Williams, Goodhart, and Gowland (1976) applied Sims' method to the U.K data and they found a unidirectional causality from income to money, which conflicts with Sims' findings. The authors also observed evidence of unidirectional causality from money to prices.

Brillembourg and Khan (1979) examined the relationship among money, income, and prices using a larger data set and their findings supported Sims' results that there is a unidirectional causality from money to income and prices in the U.S. However, Dyreyes, Starleaf, and Wang (1980) tested the direction of causation between money and aggregate income in six developed market economies, Australia, Canada, Germany, Japan, the United Kingdom, and the United States, by using quarterly data and they found a bidirectional causality in the U.S., a unidirectional causality from money to income in Canada, which is contrary to Barth and Bannett (1974) findings. But, the findings of unidirectional causality from income to money in the U.K. are consistent with Williams et al. (1976) results.

In the case of developing countries, Huat and Wai (2000) tested the causality between money supply (M1, M2, and M3) and GDP for Singapore, using the cointegration methodology. Their findings show that money supply and GDP are cointegrated. Granger causality test presents a two-way causality between M1 and GDP; unidirectional causality was found from GDP to money supply for both M2 and M3. Lee and Li (1983) examined causality among money, income,

and prices and bidirectional causality was found between income and money and unidirectional causality was obtained from money to prices for Singapore. Joshi and Joshi (1985) found bidirectional causality between money and income in India. Al-Jarrah (1996) examined the nature of the linkages between money, real income, and prices in Saudi Arabia using quarterly data for the period 1965-1993. He found that real income contributes significantly in explaining changes in the money supply, whereas the reverse is not true. Abbas (1991) tested causality between money and income for some selected developing Asian countries for the period of 1960-1988. He found bidirectional causality in Pakistan, Malaysia, and Thailand.

Ekinci (2003) analyzed the effect of money supply on macroeconomic variables; such as GDP, government expenditures, interest rates, and investment taking the period of 1990-2002 for Turkish economy. Ekinci concluded that there is a statistically meaningful effect of money supply on price levels, public expenditure and GDP. Additionally, he finds that money supply affects interest rates and investments significantly.

Tomsik and Viktorova (2006) examined and presented empirical evidence on money and output in the Czech Republic using vector autoregressions (VAR) model. The authors also examined the Granger causality between the real money supply and real output, finding that real output Granger causes real money supply. In addition, the authors found that the real interest rate had a significant impact on real production in the Czech Republic. According to Keynesian approach, interest rate is determined by the money market so that the importance of the effect of money supply on interest can be understood.

Hossain (2011) tried to explain the causal relationship between money supply (M2) and nominal income in Bangladesh using cointegration and error-correction models for the period of 1974-2008. The study found that nominal income and money supply are cointegrated, indicating that there is a stable long-term relationship between them. The existence of cointegration leads the author to examine the short run dynamics in the money income relationship in Bangladesh. Thus, the error correction models were applied to inference about the short run impact of monetary changes on nominal income. The estimated error correction model showed that there is bidirectional causality between money and income. However, Kamal (2016) examined the long-run causation among real GDP, money supply, and prices in Bangladesh, during the period of 1972-2013, and found that unilateral causation between money supply and prices, causality running from money supply to prices, which can be regarded as empirical evidence supporting the Monetarist claim. Also, the study revealed that there was a unidirectional causation between real GDP and prices.

Bozkurt (2014) examined money, inflation and growth relationship in Turkey by using cointegration test using quarterly data from 1999 to 2012. The study concluded that money supply and velocity of money is a main determinant of inflation in the long run in Turkey. On the other hand, 1% decreases in income directly reduces inflation by 1%. This means that there is a positive relationship between money supply and economic growth for Turkish economy.

Maitra (2015) enquired into the efficacy of money in raising income and stabilizing price level, and the author also attempted to identify the effective component of money in this direction over the period 1971–2012. The autoregressive distributed lag (ARDL) approach to co-integration confirmed the existence of a long-run relationship among money, income and price level. In this study, the Wald test and innovation accounting confirm that only M1 money supply causes a raise in income.

Duman (2016) empirically examined the effect of monetary policy on economic growth in Turkey using quarterly data from 1988 to 2015. He concludes that there is a positive and significant long run and short run relationship between monetary policy and economic growth for Turkish economy. Thus, he suggests that policymakers should focus more on monetary policy in order to ensure economic growth. Gocmen (2016) re-examined the causal relationship between money supply and inflation in the context of Turkish economy using monthly data covering the period 1970-1996. He found that there is unilateral causality from money supply to price level in the bivariate model and feedback in the multivariate model.

Dingela and Khobai (2017) investigated the dynamic impact of broad money supply (M3) on economic growth (GDP) per capita in South Africa using time series data from 1980 to 2016. The authors used the autoregressive distributed lag (ARDL) bound-testing approach to find out short-term and long-run relationship between the variables analyzed in their study. The authors revealed that there is statistically significant positive relationship between money supply and economic growth both in short run and long run. This conclusion supports Keynesian's view that money is important, since in the Keynesian approach money supply affects aggregate demand via interest rates which are determined by money supply and money demand.

Mansoor et al. (2018) examined the relationship between the money supply, price level, and economic growth in the context of Pakistan by using Autoregressive Distributed Lag (ARDL) model, covered a period of 1980-2016. The findings confirmed the long-term relationship between the variables while using broad money supply as a response variable. Also, the authors found unidirectional relationship running from income to money supply, which implies that income do causes money supply in the short run, whereas money supply leads to inflation to support Monetarist view of inflation in a country.

Omodero (2019) examined the effect of money supply on economic growth in Nigeria and Ghana using the data from 2009 to 2018. The findings revealed that broad money supply (M2) has an insignificant and negative influence on real GDP in Nigeria; however the impact is a positive and significant in Ghana.

2. Turkish Economic Progress

Turkish economy has experienced the impact of two major oil shocks of 1970's like all the other countries around the World. In addition, Turkey had to deal with the economic sanctions of the western countries because of the Cyprus Peace Operation, landing of Turkish troops to Cyprus in 1974. These economic sanctions in the form of trade restrictions caused shortages on goods and queues were formed to purchase of even very basic food products, and a black market emerged.

The government launched an economic reform and stabilization program on 24 January 1980 to liberalize the Turkish economy, prevent the black market, and to restore the economic conditions. The reform and stabilization program intended to improve economic and financial efficiency, increase domestic savings, and attract foreign capital. Initially, the stabilization program had shown some positive improvements on the Turkish economy. However, the military once again stepped in on September 12th, 1980, because of the increased armed conflict among different political fractions. The military administration, however, empowered the interim government to implement some of the measures of the economic reform and stabilization program of 24 January 1980. The economy has stabilized and began to recover soon after the implementation of these measures.

At the first phase of the economic reform and stabilization plan (1980-1984), the government gradually liberalized trade policy and ended interest rate controls. The Turkish Lira was devalued and the government started to set the daily exchange rates for Turkish Lira. Measures were taken to transform an import-substitution-oriented-closed economy into an export-oriented, private-sector-driven, free market economy by reducing the state's involvement in the economy. Agricultural product support purchases were limited, subsidies other than fertilizers, energy and transportation were abolished and foreign trade liberalization was initiated (Rodrik, 1990).

In 1984, Turkey took the first step to switch from fixed exchange rate to the market-determined exchange rate system. Banks would be able to make transactions by applying a foreign exchange rate below or above certain rates set daily by the Central Bank. A year later, this regulation was abolished and marked-based system of exchange rate determination was introduced.

In the second phase (1985-1989) the government facilitated the entry of new banks in the banking system and opened the domestic economy to foreign capital flows (Boratav and Yeldan, 2006). Foreign capital investments were incentivized and profit transfers were eased. Overseas contracting services started to be supported. Imports were gradually liberalized. The government provided incentives for exports in the form of tax rebate and low interest credit, and import exemptions for inputs for the exported products. In 1989, the Law on the Protection of the Value of the Turkish Currency was put into effect, and the floating exchange regime was adopted. The Support and Price Stability Fund established to support exports during the period and additional incentives were given to exporters.

The short-lived coalition governments, however, followed populist economic policies and compromised the stabilization program. Subsequent misguided monetary and fiscal policies were not adequate to correct these problems. Turkish economy experienced two major economic crises one in 1994 and one in 2001. It was argued that high rates of inflation rates were result of high interest rates. The government took some measures to reduce interest rates, including cancelling the issuance of internal debt bonds. These measures worsen the economic conditions and an economic crisis emerged.

At the beginning of 1994, all economic indicators were off the charts. Turkish government, with the support of the IMF decided to launch yet another economic stabilization program on April 5, 1994. The economy recovered and economic stability improved under this new stabilization program. The government, again, failed to keep up with the implementation of the structural measures of the April 5th, 1994 stabilization program, which resulted in the further deterioration of the Turkish economy. (Eğilmez, 2018). The worsening economic conditions eventually created the second major crisis in 2001.

Turkey launched another stabilization program with the help of the IMF. The IMF increased its financial support to back the stabilization program. The stabilization program again had shown some positive improvements on the Turkish economy in a short time period. However, governing coalition parties (The Democratic Left Party, The Motherland Party and The Nationalist Movement Party) suffered a great loss in the elections held at the end of 2002 because of the economic downturn in the previous few years. The Justice and Development Party (AKP) won the elections and formed a single-party government.

The most serious economic problem of the 1990's and 2000's was the budget deficit, which has reached an annual average of 5 percent. The public debt stock increased and budget deficits increased as well. In this period, the government followed a supply-side economic policy, based on borrowing as the source for economic growth, rather than supporting the income structure. The external loans

were insufficient to finance the increasing infrastructure investments and build-operate-transfer infrastructure projects were undertaken. The average inflation rate, between 1983 and 2001, was about 66 percent per year. The government tried to maintain a consistent monetary policy. The exchange rate policy was based on the depreciation of TL as much as inflation to support foreign trade and liberalization policies for the markets. The import substitution policy was replaced by an industrialization policy based largely on free foreign trade.

In 2001, Turkey experienced one of the biggest economic crises. A stabilization program was implemented in 2001 and 2002 with the help of IMF in preparation, implementation, and financing. At the end of 2002, the Justice and Development (AKP) won the elections and continued to implement the IMF policies. The cornerstones of this stabilization program were:

- Tight fiscal policy and low budget deficit
- Strict monetary policy and inflation-targeting
- Switching from the managed flexible exchange rate regime to the floating exchange rate regime.

State-owned enterprises had been dominant in many industries, including tobacco, alcohol, textile, energy, and transportation industries, up until 1980's. In the 1980's private sector gained some ground next to the state-owned enterprises. The 2000s were the years when budget deficits decreased and instead the foreign trade deficit and current account deficit increased. At the beginning of the 1980s, the ratio of foreign debt to GDP was around 30 percent, while in the mid-1980s it increased to 40s, and then increased to 50 percent in the second quarter of 2017. The total domestic debt of the public sector reached 574 billion TL and the total debt stock reached 893 billion TL at the end of 2017 (Eğilmez, 2018).

At the AKP's first decade of governance, many economic indicators have improved. GDP, which was 238 billion dollars in 2002, increased approximately 3 times during the period and reached 730 billion dollars at the end of 2011. The average annual income per capita rose from 3.581 dollars to 11.205 dollars. In the 2001-2011 periods, the average annual growth rate was 5.9 percent. Although the budget deficits, which were 11.2 percent at the beginning, fell to 0.5 percent in time and rose again, the average annual budget deficit of the period was 4.1 percent. In the same period, the current account deficit was 4.7 percent. Although inflation was struggled during the period, the annual average inflation (CPI) of the period was as high as 11.7 percent.

Monetary policy was used effectively in all its means from 2002 to 2017 and fiscal policy continued to support monetary policy However, the first and the most

important goal of monetary policy, the mission to reduce inflation to 5 percent, could not be realized. The incentive policy for exports was not as prominent as the previous periods. Non-tariff barriers (anti-dumping) were also implemented during this period and measures were taken to restrict cheap imports, especially from the Far East. Fiscal policy was attempted to be partly based on taxes but mostly on non-tax one-time revenues (such as paid military service and zoning amnesty). Incomes from privatization revenues made a significant contribution to the budget balance as well. One of the most important features of the period was the record inflow in foreign direct investment.

After 2012, the AKP government lost momentum in the economy. Exchange rate fluctuated and moved upward during this period: in 2011 the exchange rate was 1.91TL/USD and increased to 5.40TL/USD at the end of 2018. GDP, which was 730 billion dollars at the end of 2011, increased to 784 billion dollars at the end of 2018, while the average annual income per person declined from $11.340 to $10,546 dollars in 2018. The average annual GDP growth rate in 2012-2018 period was 5,27 percent.

In 2017, when policies aimed at increasing growth were introduced, fiscal policy became an expansionist policy. Monetary policy has lost its previous tightness and policy coordination has disappeared. Fiscal policy focused on expanding the economy, while monetary policy tended to control inflation. As a result of these contradictions, high growth was achieved and inflation increased. These complex and contradictory practices caused the unemployment remain at the two-digit level.

3. Empirical Method and Data

In this study, the relationship among GDP, employment, and money supply is analyzed with Autoregressive Distributed Lag (ARDL) model which was developed Pesaran and Shin (1999) and Pesaran, et al. (2001). The main reason for choosing this method are that short and long-term coefficients can be estimated independently of the degree of stationary; meaning that each variable in the model can be given a different lag length, and the ARDL model can be applied to small samples (Pesaran and Pesaran, 1997: 302-303; Narayan, 2005).

The first model can be formed as followed:

$$RGDP = \beta_0 + \beta_1 EMP + \beta_2 MS + u$$

For the purpose of the estimation, ARDL model and Bound test were adopted following the form specified and advocated by Pesaran (2001) which appears thus:

$$RGDP = \beta_0 + \beta_1 EMP_{t-1} + \beta_2 MS_{t-1} + \sum ai\ \Delta RGDP_{t-1} + \sum bi\ MS_{t-1} + u_t$$

RGDP: Real gross domestic product used as proxy for economic growth.

EMP: Employment

MS: Money supply

β_1 and β_2 : Coefficients of the Parameters of the variables

u_t : error term

ARDL technique is used for the estimation. It has several advantages over other co-integration methods for which cause it is chosen for this work. Firstly, it is efficient in small samples and can allow a combination of I(0) and I(1) variables as per the stationarity of the variables. Other tools used include Bound test, consistent Breakpoint unit root test etc.

Following the Bound test approach, co-integration relationship among the variables is either established or not. Two critical values are to be used for the test for co-integration. They are the lower and the upper band. The decisions are to be made as follows: If

Test statistics > upper band = co-integration

Test statistics < lower band = no co-integration

Test statistics within upper and lower band = inconclusive.

If co-integration is established, short-run dynamic parameters is obtained by estimating an error correction model associated with the long run estimates:

$$RGDP = \beta_0 + \beta_1 EMP + \beta_2 MS_{t-1} + ECM_{t-1}$$

The estimates are subjected to diagnostic tests to confirm validity and reliability of the estimates.

This study uses annual data retrieved from the World Bank catalogue-World Development Indicators for Turkey to analyze the causality among money, income, prices, and employment for the Turkish economy from 1980 to 2018.

3.1. Empirical Results

3.1.1. Basic Descriptive Statistics

To show the statistical properties of the data under study, the basic descriptive statistics is shown in Table 1 below:

Table 1: The basic descriptive statistics of the variables

Variables	Mean	Median	Maxi	Mini	Std.	Skewness	Kurtosis	Jarque-Bera	Prob.
GDP	6.61E+1	5.77E+11	1.21E+12	3.65E+11	2.50E+11	0.701854	2.329712	2.822961	0.244
EMP	21350	2014	2842	17511	3014	1.013	2.815	4.828	0.09
MS	40.51	39.01	55.60	23.74	10.04	0.001	1.689	2.002	0.37

Table 1 contains the basic measures of central tendency, spread and variations calculated on the level series of the dataset. The researcher's interest is the Jacque-Bera (JB) statistics which is a test for normality. JB is acombined test of a skewness (S) of zero (0) and a kurtosis (K) of three (3), which are signs of a mesokurtic distribution. Considering the P-value, all variables passed the normality test since p-value is higher than 0.05 percent level, thus all variables are normally distributed.

3.1.2. Stationarity Properties of the Series:

The first step involves determining whether the datasets contain unit roots in the individual level series. Although the ARDL method allows variables with different degrees of stationary to take part in the same model and test long-term relationships, it requires that variables must not be I(2). Therefore, as in many time series models, it is a necessity to perform unit root tests. The stationarity of the variables was first analyzed using the Augmented Dickey-Fuller (ADF) test and then the Phillips-Perron (PP) (1988) test was applied to compare the results. According to the test results, GDP and EMP are found to be integrated of the same order, but MS is found stationary at the level.

Table 2: Unit Root Test Results

	ADF Test						
	Level			**First Difference**			
Variables	**Test Format***	**Test Statistics**	**Critical Value**(%5)**	**Test Format***	**Test Statistics**	**Critical Value**(%5)**	**Conclusion**
GDP	(c, t)	-0.2222	-3.5875	(c, t)	-4.669	-3.5950	I(1)
EMP	(c, t)	0.02323	-3.5875	(c, t)	-4.622	-3.5950	I(1)
MS	(c, t)	-3.9511	-3.5875	–	–	–	I(0)
PP Test							
GDP	(c, t)	-0.2222	-3.575	(c t)	-8.365	-3.5950	I(1)
EMP	(c, t)	-0.018796	-3.5875	(c, t)	-4.6202	-3.5950	I(1)
MS	(c, t)	-3.947473	-3.5875	–	–	–	I(0)

*Expressions used in the parenthesis represent constant terms and trends, respectively.

** denotes the critical values of MacKinnon (1996)

3.1.3. Bound Test Results

To find the long-run relationship in the ARDL model, the lagged coefficients of the dependent and independent variables are equalized to zero and then F test is applied. The calculated F statistic values are compared with the critical values of Pesaran, et al. (2001). If F statistic value is greater than the upper critical value, it is decided that there is a long-run relationship between the variables and that the variables are co-integrated. Bound test results for model are presented in the Table 2. According to the Table 2, the calculated F statistic value for the model is greater than the upper critical values in all confidence interval. Thus, it can be concluded that there is a long-term relationship among the variables.

Table 3: Bound Test Results

ARDL Bounds Test

Date: 11/11/19 Time: 10:48

Sample: 1994 2017

Included observations: 24

Null Hypothesis: No long-run relationships exist

Test Statistic	Value	k
F-statistic	12.29494	3

Critical Value Bounds

Significance	I0 Bound	I1 Bound
10%	2.72	3.77
5%	3.23	4.35
2.5%	3.69	4.89
1%	4.29	5.61

K is the number of independent variables.

I(0) and I(1) show critical values in Pesaran, et.al. (2001).

Table 4: Diagnostic Test Results

1. Serial Correlation Test

Breusch-Godfrey Serial Correlation LM Test:

F-statistic	3.212776	Prob. F(4,1)	0.3933
Obs*R-squared	22.26729	Prob. Chi-Square(4)	0.0002

Ho: There is no serial correlation. Since p-value is greater than 5 percent level, we cannot reject the null hypothesis, meaning that there is no serial correlation.

2. Heteroskedasticity Test

Heteroskedasticity Test: Breusch-Pagan-Godfrey			
F-statistic	1.496664	Prob. F(18,5)	0.3475
Obs*R-squared	20.24295	Prob. Chi-Square(18)	0.3193
Scaled explained SS	1.084549	Prob. Chi-Square(18)	1.0000

There is no heteroscedasticity in the model.

3. Stability Test

	Value	df	Probability
F-statistic	31.06716	(4, 1)	0.1337

The model is stable, this means that the model is set up correctly and the coefficients are stable.

Table 5: Long-Run Coefficients of the ARDL Models

Model 1: ***ARDL (1,0,0)*** Dependent Variable: GDP				
Variable	**Coefficient**	**Std. Error**	**t-Statistic**	**Prob.**
EMP	41875.7	77843.8	0.538	0.596
M2	0.5416	0.4753	1.14	0.266
Model 2: ***ARDL (1,0,4)*** Dependent Variable: EMP				
GDP	0.000001	0.000004	0.1595	0.8753
M2	0.000018	0.000004	4.7271	0.0002
Model 3: ***ARDL(2,0,3)*** Dependent Variable M2				
GDP	-0.714	0.918	-0.777	0.4479
EMP	-41915.67	66138	-0.633760	0.5347

Note: The optimal lag was found as 4 since the lowest value of AIC was attained.

According to the long-term coefficients of the models, there is an inverse relationship between employment and money supply; causality runs from money supply to employment.

The short-term dynamics of the model in the ARDL model are represented by the error correction mechanism. The error coefficients calculated for each models have been found negative and significant for the model 2; this means that short-term imbalances are eliminated in the long-run and system is converging to the long-term equilibrium. For example, in the model 2, only 44 % of the short-term imbalances are eliminated. The error correction term of the model 3 is not negative and insignificant.

Table 6 shows short term dynamics of the model.

Table 6: Short Term Dynamics

Models		Coefficient	Std. Error	t-Statistic	Prob.
Model 2	CointEq(-1)	-0.442559	0.107078	-4.133064	0.0008
Model 3	Coint.Eq(-1)	0.138373	0.075170	1.840793	0.0832

Conclusion

This study has analyzed the impact of money supply on the Turkish economy by considering GDP and employment. For this purpose, ARDL method has been used to analyze whether there is a long and short term relationship between the variables. In this study, three different models have been formed in order to see the long term relationship. In the first model, where GDP is dependent variable, no meaningful relationship has been found. In other words, there is no long-term relationship between money supply and GDP. The lack of a relationship between money supply and GDP can be interpreted as increasing money supply only increases inflation. This is consistent with the claim of the monetarist approach.

In the second model, a long-term relationship has been found between money supply and employment. This result is consistent with the Keynesian approach that "monetary expansion increases employment by lowering interest rates".

The short-term dynamics of the model in the ARDL model are represented by the error correction mechanism. The error coefficients calculated for each models have been found negative and significant; this means that short-term imbalances are eliminated in the long-run and system is converging to the long-term equilibrium. However, the error correction term of the third model is not negative and insignificant.

The model estimates suggest that money supply does not affect GDP, but affects employment. This result brings to mind the Phillips Curve, which states that, there is an inverse relationship between inflation and unemployment. According to the second model, an increase in money supply increases employment, which is consistent with the results of Friedman and Schwartz (1963).

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