THE LONG-RUN RELATIONSHIP BETWEEN FISCAL POLICY AND ECONOMIC GROWTH IN TURKEY

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Abstract

The effectiveness of the fiscal policy on the economic growth is still a much-debated issue in the public finance literature. Current studies for Turkey analyzing this issue, have not a comprehensive econometric model with coherent results. In this vein, our study investigates the relationship between the fiscal policy and the economic growth in Turkey for the period 1980-2017. The main aim of the study is to understand how the fiscal policy affects the economic growth in Turkey both in the short and long run. We employed the autoregressive distributed lag (ARDL) approach and the bounds test to detect the long-run relationship. This is the first study, having coherent results and a correctly specified model, using ARDL to test the long-run effectiveness of the fiscal policy in Turkey. Using the budget balance indicator as the fiscal policy stance, our long-run ARDL results reveal that the fiscal policy is a significant determinant of the output in the long run. However, it is shown that the fiscal policy is not effective in the short run.

Keywords: Autoregressive Distributed Lag, Economic Growth, Fiscal Policy, Budget Balance.

TÜRKİYE'DE MALİYE POLİTİKASI İLE EKONOMİK BÜYÜME ARASINDAKİ UZUN VADELİ İLİŞKİ

Öz

Maliye politikasının ekonomik büyüme üzerindeki etkinliği kamu maliyesi literatüründe hala çok tartışılan bir konudur. Bu konuda Türkiye için literatürde tutarlı sonuçlar içeren, yapısal kırılmaları dikkate alan kapsamlı ekonometrik modeller kullanan güncel bir ampirik çalışma bulunmamaktadır. Bu bağlamda, çalışmamız 1980 – 2017 yıllarını kapsayan dönemde Türkiye için maliye politikası ile büyüme oranı arasındaki ilişkiyi incelemektedir. Çalışmanın temel amacı Türkiye'de maliye politikasın ekonomik büyümeyi uzun ve kısa vadede nasıl etkilediğini anlamaktır. Bu ilişkinin analizi için otoregresif dağıtılmış gecikme modeli (ARDL) kullanılmış ve sınır testi yapılmıştır. Bu çalışma, Türkiye'nin maliye politikası etkinliğini ölçme noktasında ARDL sınır testi metodunu kullanan ve tutarlı sonuçlar

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veren ilk çalışmadır. Ayrıca, çalışmamız daha önceki çalışmalarda göz ardı edilen değişkenleri dikkate alması bakımından da literatüre katkı sağlamaktadır. Bütçe dengesinin maliye politikası duruşunu ifade ettiği modelimizin sonuçları uzun vadede maliye politikasının çıktı üzerinde anlamlı bir etkiye sahip olduğunu göstermiştir. Ancak, modelimizin kısa vadeli sonuçlarına göre kısa vadede maliye politikasının büyüme üzerindeki etkinliği ispatlanamamıştır.

Anahtar Kelimeler: *Otoregresif Dağıtılmış Gecikme, Ekonomik Büyüme, Maliye Politikası, Bütçe Dengesi.*

Introduction

Economic growth is the primary concern of any policymaker and fiscal policy is considered among the most important determinants of the growth, which pushes governments to use public resources effectively and efficiently. However, there is no clear consensus in the literature about the impacts of fiscal policies on the economic growth. There are three main schools having contrary views on this topic: Keynesian, Neoclassical and Ricardian.

On the one hand, the Keynesian view argues that expansionary fiscal policies, named as Keynesian fiscal policies, enhance economic growth due to the multiplier effect. It is because Keynesian economics assumes that consumers have a very high propensity to consume, therefore, an increase in government expenditures raises the income level and pushes the aggregate demand up much more than the change in the expenditures.

In this vein, the Keynesian theory advocates the effectiveness of fiscal policies on the economic growth, objecting to the main assumptions of the Neoclassical theory. According to Keynesians, full employment level cannot be reached automatically in the market economy that is one of the main assumptions of Neoclassical economics. At this point, governments could reduce involuntary unemployment by expansionary policies.

On the other hand, the Neoclassical economics argues that Keynesian policies do not boost the economic growth because of the crowding-out effect. Since it is assumed that a rise in the government expenditure increases the demand for loanable funds and thus interest rates, which raises the borrowing cost of the private sector. This in turn leads to lower investment level and output growth. Further, the Neoclassical economics advocates that government interventıon always causes distortions in the market economy, and governments inefficiently use resources relative to the private sector, and thus favors small size of government. Because of the heavy bureaucracy, especially in the productive sectors of the economy, the cumbersome structure of government mechanism, Keynesian policies tend to hinder economic growth.

Differently from these two paradigms, the Ricardian view focuses on the neutrality of fiscal policy, arguing that an increase in government expenditures does not have any effect on the aggregate demand and output. According to this paradigm, consumers will decrease their consumption and save more when the government spends more and gives deficits. It is because

they think that the government will impose more taxes in the future to finance this deficit.

Based upon these theoretical debates, it is an interesting question whether the Turkish economy, as a developing one having a distinguishing characteristic, reacts positively, negatively or neutrally to the Keynesian fiscal policies. Turkey's fiscal policy strategies were primarily influenced by neoliberal policies introduced in the early 1980s. The macroeconomic uncertainty has prevented Turkey's integration with the advanced economies of the world, owing to a number of factors, including financial liberalization, insufficient financial supervision, and monetary and foreign exchange policy choices. Indeed, the volatile structure of the economy has been a big barrier and challenge for sustainable development. The Turkish economy has undergone three "sudden stops", in which foreign funding dried up rapidly in 1994, 2001, and 2008. These currency shocks have resulted in a considerable drop in the GDP growth (Özer and Karagöl, 2018: 4).

The key problems facing the Turkish economy during those years were the weak financial system, public debt, large and persistent budget deficits, and poor fiscal policy management (Şen and Kaya, 2015:4). Important adverse effects have been generated by the rising government need to fund its budget deficit, causing crowding out in the financial markets, monetization of the debt, inflationary pressures, and expand the degree of dollarization in the economy. Following the disastrous economic crisis in 2001, Turkey implemented serious reforms, including successful fiscal consolidation and a strengthened monetary policy framework by securing the central bank independence. Since then, the financial stability and the price stability became the main priority of the central bank in Turkey (Özer and Karagöl, 2018: 4).

All of these developments motivated us to analyze how fiscal policy has affected the Turkish economy for the last 30 years. Accordingly, we tested the long-run relationship between Turkey's fiscal position and the output employing the autoregressive distributed lag (ARDL) approach and the bounds test proposed by Pesaran et al. (2001). Using the budget balance indicator as the fiscal policy stance, the long-run equation reveals that the budget balance is a significant determinant of the output in the long run. The results further indicate that the negative budget balance, as one of the main structural economic fragility, on the economy, has a negative impact on the economic growth in Turkey in the research period, which could be explained through the crowding-out hypothesis of Neoclassical economics.

Differently from the existing studies for the Turkish economy (Arestis et al., 2019: 1; Özer and Karagöl, 2018: 1), we covered a longer period for the analysis of this relationship and found more robust coefficients for the fiscal and monetary policy variables and provided more consistent results with the existing literature in the related area (Berument, 2007: 9; Barro, 1977: 11; Eken et al., 1997: 38; Engen and Skinner, 1992: 43; Koray and McMillin, 1999: 8). Additionally, to the best of our knowledge, this is the first ARDL

study about the long-run relationship between the fiscal policy and the growth in Turkey covering the period before 1998.

Right after the introduction part, a unifying structure for the studies relating to the effect of fiscal policy instruments on economic growth is laid down in the next section in order to provide an innovative synthesis of recent literature on the relationship between growth and fiscal policy. The following section summarizes the indicators used to assess the impact of fiscal policies on economic growth in Turkey. The methodology used to assess this impact is also discussed in the same section. The next section attempts to assess empirically the nexus between the fiscal policy and the economic growth in Turkey. Concluding remarks and policy implications of the aforementioned discussions are provided in the final part of this study.

1. LITERATURE REVIEW

Fiscal policy is one of the key determinants of many macroeconomic variables. In this respect, there are many theoretical debates about the connection between fiscal variables and macroeconomic variables. On the one side, there are theoretical studies, recently published, supporting Keynesian economics (Blanchard & Leigh, 2013; Christiano et al., 2011). They advocate Keynesian policies by underlining the multiplier effect.

Christiano et al. (2011: 41) asserted that government spending is growth-enhancing thanks to the multiplier impact based upon a dynamic stochastic general equilibrium (DSGE) model. Indeed, the size of the multiplier could be very large when the zero lower bound on the nominal interest binds. This issue is directly related to the liquidity trap that is a case in which monetary policy is totally ineffective. In parallel, Blanchard & Leigh (2013: 20) claimed that an expansionary fiscal stance boosts the economic growth and a contractionary fiscal stance diminishes the growth thanks to the multiplier effect. They asserted that current consumption becomes more important than future consumption, which raises the multiplier effect of expansionary actions by the government.

Indeed, note that there are other theoretical studies highlighting the impacts of specific fiscal policies on economic growth. Aschauer (1989: 2) put forward a hypothesis that some productive government expenditures on maintaining law and order, the provision of public goods and services, and the research and development can foster economic growth in both the short and long run.

From a different point of view, some object to Keynesians and claim that expansionary fiscal actions lower output growth, attributing to the crowding-out effect. Diamond (1965: 23) argues that any rise in the internal or external debt move interest rates up, and the economic growth decelerates, which is widely recognized by Neoclassical economists. Auerbach & Kotlikoff (1987: 46) explains this dynamic through a Neoclassical life-cycle model. They concluded that budget deficits financed by debt issuance certainly crowd out private investments and capital formation.

In the same way, Bernheim (1989: 9) supports the idea of less government intervention and a lower government deficit for a higher long-term economic growth. He further criticizes the Keynesians for looking at the economic dynamics in the short run.

When we look at the empirical studies focusing on the nexus between fiscal and macroeconomic variables, there are mixed results across countries. This relation is mostly tested by regressing budget balance, government debt, taxes and government expenditures on output. Regarding the budget balance and output, some studies demonstrated a significant relation (Ocran, 2011: 7; Ahmad, 2013: 3; Adam and Bevan, 2005: 13), while some could not find any evidence (Ali et al., 2008: 8; Benos, 2009: 25). The connection between the government debt and output is also investigated to analyze fiscal policy effectiveness (Abd Rahman, 2012, January: 3). In addition, Tanzi and Zee (1997: 24) stressed the role of fiscal policy in economic growth in the perspective of taxes and claimed that tax policies are significant determinants of output. Likewise, some researches proved the connection between the fiscal policy and the economic growth by employing government expenditure as a fiscal policy indicator (Ocran, 2011: 7; Özer and Karagöl, 2018: 7).

Ocran (2011: 7) tried to find out the impacts of main fiscal policy variables on output for the economy of South Africa. He followed the VAR methodology to observe the relations between the fiscal variables and output. It was found that budget deficit and government expenditures have a permanent impact on output. Ahmad (2013: 3) also proved the two-way causality between the budget deficit and the growth for the Pakistan economy by employing the Granger causality test.

The tie between fiscal variables and the output is obvious in the literature, but there is not any consensus about whether it is positive or negative. Adam and Bevan (2005: 14) made a panel data analysis covering 45 developing countries and concluded that budget deficits could be growth-enhancing if the government finance this deficit via a limited seigniorage revenue. When budget deficits are financed with domestic borrowing, interest rates go up as well as the supply of government bonds, and thus, private investments are negatively affected, which is known as the financial crowding out effect (Premchand, 1984: 49). Furthermore, according to Fatima et al. (2012: 5), budget deficits negatively affect the output in Pakistan for the period 1978-2009.

Another important issue about the connection between fiscal variables and the output is the time dimension. Fiscal variables may have an effect on the output not only in the short run but also in the long run. To detect this long-run impact, there are some studies employing the ARDL bounds test of Pesaran et al. (2001) and providing mixed results (Ali et al., 2008: 8; Arestis et al., 2019: 16; Ibrahim and Khan, 2019: 11; Madni and Chaudhary, 2017: 14; Özer and Karagöl, 2018: 14; Abd Rahman, 2012, January: 4). Özer and Karagöl (2018) attempted to find out both the effects of monetary policy and fiscal policy on economic growth in Turkey, employing the ARDL bounds

test for the period 1998Q1–2016Q3 using quarterly data. The results demonstrated that monetary policy and fiscal policy have an impact on the growth in the short run, while fiscal policy also affects the long-run growth. However, the model employs the government expenditure as a variable showing the fiscal stance without considering taxes, which can reduce the reliability of the results, contradicting with the literature. As we have mentioned above, a seminal paper by Tanzi and Zee (1997: 24) revealed that taxes, one of the main fiscal tools for governments, have a significant impact on the economic growth. Therefore, the model constructed by Özer and Karagöl seems problematic in terms of model classification.

Further, Özer and Karagöl (2018: 10) employs government consumption in nominal terms in the model, which causes a misinterpretation of their results. Because of this problem, it is claimed that the government consumption and investment expenditures affect the output positively in the long term while the direct and indirect taxes have a negative impact. However, an increasing trend in the government consumption implying an increasing government share in the economy along with unsustainable budget deficits leads to lower growth rates in the long term (Altug et al., 2008: 29; Eken et al., 1997: 38; Engen and Skinner, 1992: 43).

Indeed, Arestis et al. (2019: 1) comparatively examined the effectiveness of fiscal and monetary policy in Turkey for the period 2003Q1-2019Q1 using quarterly data. They followed the ARDL bounds methodology and found that both have a significant effect on the output in the short and long term. In this study, it is claimed that government consumption and investment expenditures affect the output positively in the long term while the direct and indirect taxes have a negative impact. Also, they concluded that expansionary monetary policies decrease the output growth rate in Turkey since the coefficient for the interest rate variable is negative, which strongly contradicts with the existing literature (Berument, 2007: 9; Barro, 1977: 11; Koray and McMillin, 1999: 8).

Looking at the studies about the nexus between fiscal policy and economic growth in other countries, Madni and Chaudhary (2017: 14) took into account institutional quality while analyzing the connection between the economic growth and the fiscal policy for the Pakistan economy following ARDL methodology. They claimed that government spending has a contribution to the long-run economic growth and ability to boost the economy; however, it is not effective in the short-run. Ibrahim and Khan (2019: 11) tried to investigate the long-run relationship between the domestic debt and the economic growth for Nigeria using the ARDL bounds test approach. They revealed that the domestic debt negatively affects the long-run economic growth. Likewise, Abd Rahman (2012, January: 3) followed the same methodology to find out whether a change in the government debt has an impact on the output in the long run for Malaysia's economy. He could not find any evidence in his study covering quarterly data for the period 2000-2011. In parallel to Abd Rahman (2012: 4), Ali et al. (2008: 8) found that the

budget balance does not significantly cause the economic growth in some selected South Asian countries (Pakistan, India, Sri Lanka, and Bangladesh). However, they provided a clear evidence that monetary policy is growth-enhancing in both the short run and long run.

2. DATA AND METHODOLOGY

2.1. Data

This study analyzes Turkey for the period 1980-2017 using yearly data. We did not cover the years 2018 and 2019, even if the data is available because the Turkish economy faced a severe currency shock at these years and almost all the macroeconomic variables were abnormally affected therefore it may lead to some structural problems for our econometric model and misinterpretation of the results.

We tested the long-run relationship between the economic growth and the fiscal policy, therefore our main variable was income which was the dependent variable in the model. We also constructed a different model employing per capita income as the dependent variable to check the robustness of the results. The second variable as an indicator of fiscal policy stance was the budget balance. There are many studies suggesting the budget balance as a fiscal indicator in an output equation (Adam and Bevan, 2005: 13; Ahmad, 2013: 3; Ali et al., 2008: 8; Benos, 2009: 11). On the other hand, some studies employ government expenditures and/or revenues to investigate the relationship between fiscal variables and output (Ocran, 2011: 7; Özer and Karagöl, 2018: 10). We did not use revenues and expenditures separately because we concentrated on the impact of the fiscal policy stance of the government on the output in the long run. Governments sometimes use both of these channels at the same time and the net effect implies the policy stance. To illustrate, a government may increase expenditures while increasing tax rates, therefore we can conclude that it follows an accommodative fiscal policy if the rise in expenditures is higher than the decline in the revenues. Accordingly, to measure the net effect for the stance of the government, we should look at the coefficient for the budget balance. Other independent variable was the real deposit interest rate that was the proxy for the monetary policy stance, which was one of the main determinants of GDP in Turkey. Deposit rates determine the saving rate in an economy and thus, indirectly affects consumption and investment decisions of households and firms. Note that our main focus was to find out the long-run impact of fiscal policy, but we included monetary stance indicator in the model to avoid omitted variable bias problem.

The data were gathered from the World Development Indicators of the World Bank database and the Ministry of Treasury and Finance. GDP data, GDP per capita, and deposit rate data were acquired from the World Bank while budget balance data was provided by the Ministry of Treasury and Finance. The definitions and the sources of the variables are given in Table 1.

We also provided the basic descriptive statistics for all the variables in Table 2. As is seen, we had 38 observations for all the variables. In Turkey, the average budget balance to GDP ratio was -3.5% and the real interest rate was 0.9% for the period 1980–2017. The maximum budget deficit was 12.2%, and the minimum was 0.8% thus the budget balance was always negative in Turkey from 1980 to 2017. The real interest rate for deposits fluctuated in an interval between -86% and 20% for the covered period, which implies a highly unstable monetary environment.

Table 1: Variables

Variable	Definition	Source
y	Gross domestic product (constant prices; log-level)	World Bank, WDI
y_pc	Per capita gross domestic product (constant prices; log-level)	World Bank, WDI
bb	Budget balance (% of GDP)	Ministry of Treasury and Finance
r	Deposit rate (real)	World Bank, WDI

Table 2: Descriptive Statistics

	y	y_pc	bb	r
Mean	11.846	4.061	-0.035	0.009
Standard Error	0.034	0.022	0.005	0.029
Median	11.839	4.046	-0.022	0.058
Standard Deviation	0.211	0.135	0.030	0.177
Sample Variance	0.044	0.018	0.001	0.031
Kurtosis	-0.962	-0.890	1.608	15.623
Skewness	0.096	0.262	-1.506	-3.358
Range	0.740	0.475	0.114	1.066
Minimum	11.488	3.845	-0.122	-0.863
Maximum	12.229	4.320	-0.008	0.203
Observations	38	38	38	38
Confidence Level (95.0%)	0.069	0.044	0.010	0.058

The connection between the GDP and the fiscal and monetary variables for the period we covered is revealed in Figure 1 and Figure 2. As Figure 1 illustrates, the budget deficit increased each year and GDP growth rates had been negative for many times in the 1980s and 1990s. After the IMF stand-by agreement in 2001, the budget balance was under control and the growth performance improved except the 2008-09 Global Financial Crisis. Thus, the plot suggested a positive relationship between the output and the budget balance that was budget deficits negatively influence the output. Furthermore,

Figure 2 demonstrates that the sign of the relationship between GDP and the real interest rate was negative, but it is not clear. In these figures, it is seen that how economic growth collapsed in 1994, 2001, and 2008 crises and note that we employed a dummy variable for them in our model to interpret coefficients properly.

Figure 1: The Relationship between GDP and Budget Balance
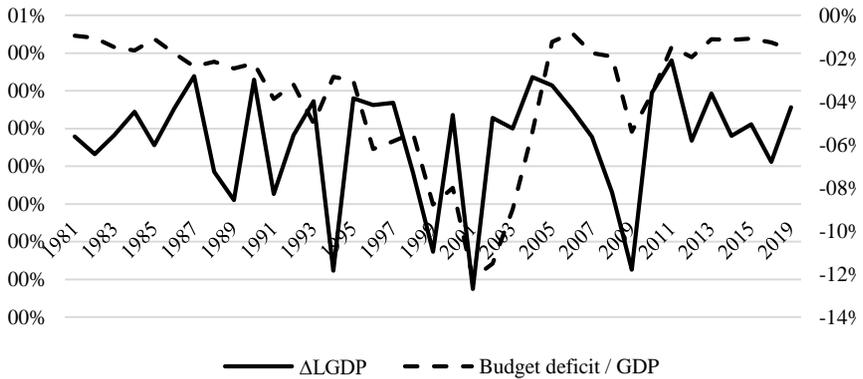
Source: World Bank, Ministry of Treasury and Finance

Figure 2: The Relationship between GDP and Interest Rate
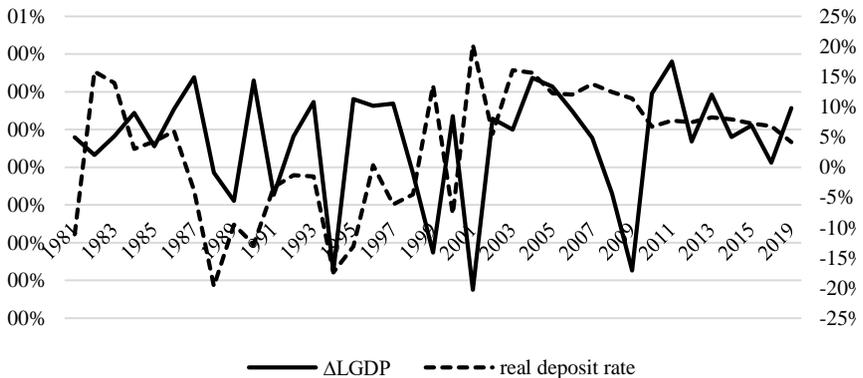
Source: World Bank

2.1. Methodology

To detect the long-run relationship, the ARDL bounds test developed by Pesaran et al. (2001) was used in the study. The main advantage of this method is that it allows both I(0) and I(1) variables in the model, so stationarity is not a requirement (Pesaran et al. 2001).

We constructed an income equation to estimate the coefficients for the fiscal and monetary policy stance variables. The dependent variable is GDP (y), while the independent variables are the budget balance (bb) and real deposit interest rate (r). Also, there is a dummy variable in the model for the economic crises and recessions occurred in 1994, 2001, and 2009. We also created another model with the dependent variable, per capita income (y_pc) in order to check the robustness of the results. The long-run equations for these two models are specified as follows:

$$\Delta y_t = \alpha + \beta_1 \sum_{i=0}^{p} \Delta y_{t-i} + \beta_2 \sum_{i=0}^{p} \Delta bb_{t-i} + \beta_3 \sum_{i=0}^{p} \Delta r_{t-i} + \emptyset_1 y_{t-1} \quad (1)$$
$$+ \emptyset_2 bb_{t-1} + \emptyset_3 r_{t-1} + \theta_4 crises.\,dummy + \mu_t$$

$$\Delta y\_pc_t = \alpha + \beta_1 \sum_{i=0}^{p} \Delta y_{t-i} + \beta_2 \sum_{i=0}^{p} \Delta bb_{t-i} + \beta_3 \sum_{i=0}^{p} \Delta r_{t-i}$$
$$+ \emptyset_1 y_{t-1} + \emptyset_2 bb_{t-1} + \emptyset_3 r_{t-1} \quad (2)$$
$$+ \theta_4 crises.\,dummy + \mu_t$$

where α is the constant term; the long-run coefficients are $\theta_1, \theta_2, \theta_3$, and θ_4; the short-run coefficients are β_1, β_2 and β_3; μ_t is the error term; the lag length is p; Δ is the first difference operator. The lag length of the model is determined according to the information criteria. We followed Akaike Information Criterion (AIC) and Bayesian Information Criterion (BIC) in this study.

The joint significance of long-run coefficients (θ_1, θ_2, and θ_3) were tested to detect the cointegration relationship among the variables. The rejection of the null hypothesis (H0: $\theta_1 = \theta_2 = \theta_3 = 0$) against the alternative (H1: $\theta_1 \neq \theta_2 \neq \theta_3 \neq = 0$) suggests that there is a long-run connection between the variables so we can follow ARDL bounds methodology. Critical values are provided by Pesaran et al. (2001: 15), and the Wald-test (F-statistic) was employed to find out the significance of the long-term relationship. Pesaran et al. (2001: 15) calculates lower critical values based upon the assumption all the variables are I(0) and upper critical values with the assumption that all the variables are I(1). If the calculated F-statistic value is greater than the upper

critical value, then we reject the null hypothesis of no long-run relationship. If the F-statistic is less than the lower critical value, then we cannot reject the null hypothesis and conclude that there is no long-run relationship between variables. Also, an F-statistic value that is between the lower and the upper critical values implies that the existence of a long-run relationship is ambiguous. Rejecting the null hypothesis for both the lower and upper critical values proves the cointegration. After ensuring the long-run relationship following this cointegration methodology of Pesaran et al. (2001: 7), we can construct an error correction model to get short-run coefficients and test the stability of the model based upon an error correction term. The equations for the error correction models are as follows:

$$\Delta y_t = \alpha + \beta_1 \sum_{i=0}^{p} \Delta y_{t-i} + \beta_2 \sum_{i=0}^{p} \Delta bb_{t-i} + \beta_3 \sum_{i=0}^{p} \Delta r_{t-i} \qquad (3)$$
$$+ \pi ECM_{t-1} + \mu_t$$

$$\Delta y\_pc_t = \alpha + \beta_1 \sum_{i=0}^{p} \Delta y_{t-i} + \beta_2 \sum_{i=0}^{p} \Delta bb_{t-i} + \beta_3 \sum_{i=0}^{p} \Delta r_{t-i} \qquad (4)$$
$$+ \pi ECM_{t-1} + \mu_t$$

where the coefficient (π) of the error correction term (ECM_{t-1}) implies the stability of the model and the speed of the convergence to the long-run equilibrium. It is necessary to get a significant coefficient between -1 and 0 for the stability condition (Yıldırım and Yağcıbaşı, 2019: 9).

3. EMPIRICAL ANALYSIS
Before moving to the cointegration analysis, we needed to ensure that all the variables were I(0) or I(1). ARDL bounds methodology allows both I(0) and I(1) variables. ADF test was carried out to investigate the stationarity of the variables. Table 3 reveals that all of the variables are I(1) since the null hypothesis of non-stationarity was not rejected for level but first difference.

Table 3: Augmented Dickey Fuller (ADF) Unit Root Test

	Level		Difference	
	constant	constant + trend	constant	constant + trend
y	0.236	-2.397	-4.111***	-4.123**
y_pc	0.402	-2.003	-4.102***	-4.245**
bd	-2.242	-2.134	-4.084***	-4.203**
r	-1.430	-2.382	-3.905***	-3.854**

Note: ***, **, * represent 1%, 5% and 10% significant level, respectively.

To test the long-run relationship (cointegration), we employed the bounds test. The critical values provided in Table 4 are suggested by Pesaran et al. (2001: 12). The table reveals that the null hypothesis of no-cointegration relationship was strongly rejected at 1 percent significance level for upper critical value.

Table 4: Pesaran, Shin and Smith (2001) Cointegration Test

-	F-test	-
	<------- I (0)	I (1) ----->
10% critical value	3.760	4.795
5% critical value	4.510	5.643
1% critical value	6.238	7.740
F-statistic = 8.471		

Having proved the cointegration, we continued with the calculation of the coefficients of the model to interpret relationships. We tried to estimate the income (y) equation with the variables, the budget balance and the interest rate. The lag lengths of the variables were determined following the Akaike Information Criterion (AIC) and Bayesian Information Criterion (BIC) and we constructed an ARDL (2,1,1) model. Table 5 introduces the estimation results for two different ARDL models. The first model was constructed with the income as the dependent variable while the other one was with the per capita income. The results for the coefficients were robust as both models gave similar values. Also, the error correction term was negative and significant, which showed the stability of the model. All the diagnostic test results for the normality, homoscedasticity, and autocorrelation indicate the robustness of our model. In addition, the Ramsey RESET test result did not imply any misspecification error for the model since we cannot reject the null hypothesis of the correct specification. CUSUM and CUSUMSQ tests did not imply any problem with the stability of the model (see Figure A1 in the Appendix).

When we first look at the short-run equation, it is seen that only the interest rate is a significant determinant of the income while the budget balance is not. On the other hand, the long-run equation reveals that both the budget balance and the real deposit rate are significant determinants of the income in the long run. In parallel to these findings, Tanzi and Zee (1997: 24)

concluded that fiscal policy has a paramount role in the long-run growth in their study, surveying a vast amount of literature about the relationship between fiscal policy and growth. In addition, we tested the effect of government expenditures and revenues on the output to prove the stability of our model and the robustness of the coefficient for the interest rate variable. For the results, see Table A1 in the Appendix.

Table 5 further indicates that the long-run coefficient of the budget balance is positive which implies that if the balance deteriorates, the output was negatively affected in the long run. Otherwise, in case the Turkish government reduces the deficit (or improves the balance), the output growth rises. This dynamic could be attributed to the crowding-out hypothesis of Neoclassical economics. In parallel to our claim, Başar & Temurlenk (2007: 8) indicated that government spending crowd out private investment in Turkey.

This relation can also be explained by comparing two periods 1980-2002 and 2003-2017 in the Turkish economy. For the period before IMF stand-by agreement (1980-2002), the average yearly budget deficit was 4.1 percent of the GDP, and the average output growth rate was 3.8%. After 2002, the average budget deficit ratio reduced to 2.6% and the average growth rate increased to 5.8%. Before 2000s in Turkey, increasing budget deficit was financed through printing money resulting in higher inflation and unstable economic environment, and consequently lower output growth rates (Altug et. al., 2008: 29). In this vein, the negative relationship between the budget deficit and the output in the long run is obvious for the Turkish economy.

In line with our results, Eken et al. (1997: 38) found that reducing budget deficits is one of the main conditions for a stable and higher economic growth. Furthermore, Engen and Skinner (1992: 34) examined 107 countries and predicted that a 10 percent increase in government expenditures lower the output growth rates by 1.4 percent in the long term.

Table 5 also reveals that the relationship between the interest rate and output was negative and significant in Turkey for both the short and long run as expected. Berument (2007: 9) proved the same negative relationship for the Turkish economy. Higher interest rates suppress the consumption and the investment; therefore, the output growth rate declines. Furthermore, the significant and the negative sign of the coefficient for the crises dummy variable indicates the clear negative effects of three economic crises (1994, 2001, and 2009) on the output.

Table 5: Estimation of Coefficients

Short-Run Equation

	Model1 ARDL (2,1,1)	Model2 ARDL (2,1,1)
Dependent Variable:	income (y)	per capita income (y_pc)
(Intercept)	8.469***	2.976***
ecm(-1)	-0.736***	-0.772***
Δbb	0.022	0.070
Δr	-0.094***	-0.081***
crises.dummy	-0.040***	-0.039***
trend	0.014***	0.010***
Δy(-1)	0.093	0.063
Long-Run Equation		
(Intercept)	8.469***	2.976***
bb	0.241***	0.339***
r	-0.081**	-0.062**
crises.dummy	-0.054***	-0.053***
Pesaran et. al. (2001) Cointegration Test		
F-test	8.471***	9.516***
Diagnostics		
Test	Prob.	Prob.
Adjusted R-Squared	0.742	0.761
Normality	0.520	0.563
Homoscedasticity	0.299	0.293
Breusch-Godfrey Autocorrelation	0.944	0.970
Ramsey Reset Test	0.151	0.203

Note: ***, **, * represent 1%, 5% and 10% significant level, respectively.

The long-run significant impact of the main fiscal policy variable–budget balance–on the output draws attention to the importance of the efficient public financial management in Turkey. A sustainable level of budget deficit is a necessity for a developing economy such as Turkey to enhance the long-run growth performance based upon our empirical results. Higher budget deficits and accumulating public debt deteriorate the general outlook of the economy because of the increasing risk premium as well as directly affecting

some main macroeconomic variables like inflation, interest rates, and investments. A most well-known consequence of higher deficits is inflation, which is related to the financing of the deficit (Altug et. al., 2008: 29). A common type of deficit financing–money printing–devaluates the local currency and push prices up. Another source of debt financing is issuing bonds resulting in soaring interest rates and slowing down investments along with a crowding-out effect (Premchand, 1984: 49). We proved how increasing interest rates lower the economic growth both in the short and long term. Also, governments can finance the deficit borrowing from abroad in foreign currency. It raises the fragility of the economy since the increasing dependence on foreign capital inflows. Any sudden stop in capital inflows may lead to a debt crisis for the government, which resulted in an economic crisis just as happened to Turkey in 2001. Therefore, to secure a stable economy, the Turkish government should carefully monitor the movements in the public debt and its consequences in the overall economy. Even if expansionary fiscal policies resulting in budget deficits may boost the economy in the short run, they significantly diminish the long-term growth rates.

Moreover, borrowing costs for an emerging economy like Turkey are considerably higher relative to developed economies. Broner et al. (2013: 2) indicated that how higher risk premia hikes the borrowing costs in emerging economies, especially for long-term bonds, which means an additional cost of spending for the government. Any expansionary policy accumulating deficits raises the share of interest payments in the budget and, in the future, constrains the capability of the government about the allocation of the resources for education, infrastructure, and health expenditures etc.

Conclusion
The impacts of fiscal policies on the economic growth are a debating issue since the direction and the size of this impact depends on many economic dynamics. For a developing economy, Turkey, we measure this impact and examined the long-run relationship between the fiscal policy and the output with the help of an empirical model following ARDL bounds methodology. Our results strongly suggest that the budget balance is a long-run determinant of the output, and there is a negative relationship between budget deficits and GDP for the period 1980-2017. However, this relationship is not significant in the short run. Additionally, we found that the influence of the deposit interest rate, a proxy variable for the monetary policy, is significant for both the short and long run and the sign of the coefficient is negative, which is not surprising. The robustness of the coefficients was also confirmed by constructing two equations employing different dependent variables.

Governments sometimes resort to expansionary fiscal policies in case of economic downturns. Especially developed economies like the USA, Japan and some EU countries having relatively sustainable public debt levels frequently implements these policies. However, based upon our empirical

results about the long-term tie between the budget balance and the output in Turkey, we do not suggest expansionary fiscal policies in parallel to the findings of Altug et al (2008: 29), Eken et al. (1997: 38) and Engen and Skinner, (1992: 43). The relatively higher budget deficit and lower growth environment before 2002 and the higher growth performance along with the lowered budget deficit after 2002 also support our policy suggestion. Furthermore, the higher cost of borrowing for the Turkish government compared to developed economies is another reason of our recommendation about the prudent fiscal management.

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Appendix
Figure A1: CUSUM, CUSUMQ and MOSUM Tests
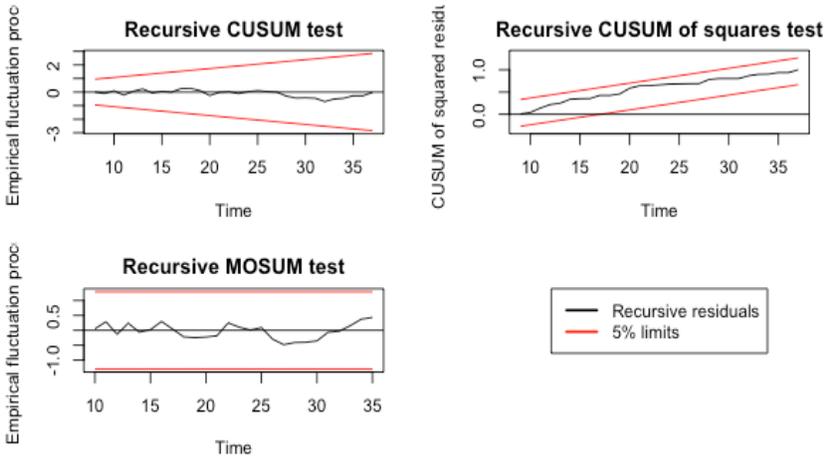
Table A1: Estimation of Coefficients for the Government Expenditures and Revenues

Short-Run Equation

	Model1 ARDL (2,1,1)	*Model2 ARDL (2,1,1)*
Dependent Variable:	*income (y)*	*per capita income (y_pc)*
(Intercept)	10.095***	3.685***
ecm(-1)	-0.877***	-0.957***
Δg	-0.001**	-0.001***
Δt	0.001*	0.001*
Δr	-0.081***	-0.067***
crises.dummy	-0.032***	-0.030***
trend	0.016***	0.011***
$\Delta y(-1)$	0.081	0.102
Long-Run Equation		
(Intercept)	10.095***	3.685***
g	-0.001*	-0.001**
t	0.001**	0.002**
r	-0.072*	-0.054*
crises.dummy	-0.043**	-0.038**
Pesaran et. al. (2001) Cointegration Test		
F-test	6.806**	8.025***
Diagnostics		
Test	Prob.	Prob.
Adjusted R-Squared	0.766	0.788
Normality	0.127	0.095*
Homoscedasticity	0.678	0.754
Breusch-Godfrey Autocorrelation	0.380	0.310
Ramsey Reset Test	0.130	0.110

Note: ***, **, * represent 1%, 5% and 10% significant level, respectively.
g: government expenditures
t: government revenues
r: real interest rate
y: income