

Is Fiscal Policy in Turkey Pro or Counter-Cyclical? Evidence from the ARDL Analysis ¹

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Maliye Politikası Çevrim Yanlısı Mı Yoksa Çevrim Karşıtı mı? Türkiye için ARDL Yaklaşımından Kanıtlar

Öz

Maliye politikası uygulamalarının çevrimsel hareketlerinin nasıl tasarlanması gerektiği konusunda süregelen normatif tartışmaların önemli bir kısmı, Keynesyen görüş temelli çevrim-karşıtı maliye politikalarının istikrarlandırıcı etkileri nedeniyle çevrim-yanlısı uygulamalara tercih edilmesi gerektiğini savunmaktadır. Bu bağlamda, maliye politikasının çevrimsel davranışlarının ampirik analizi ilk defa Gavin ve Perotti (1997) tarafından ortaya konulmuş, güncelliğini koruyan bir alanıdır. Bu konudaki ampirik çalışmaların ortak kanısı, çevrim-karşıtı uygulamalara gelişmiş ekonomilerde; çevrim yanlısı uygulamalara ise gelişmekte ve az gelişmiş ekonomilerde daha sık rastlanıldığı yönündedir. Bu çalışma Türkiye’de ihtiyari maliye politikası uygulamalarının çevrimsel hareketlerini 1990-2020 dönemi için ARDL yöntemiyle incelenmektedir. Çalışma sonucunda Türkiye’de maliye politikası uygulamalarının çevrim-karşıtı ancak giderek mali manevra alanını kaybeden bir yapıya sahip olduğuna dair bulgular elde edilmiştir. Yapılan sağlıklılık sınamaları da elde edilen bulguları desteklemektedir.

Anahtar Kelimeler: İş Çevrimi, Maliye Politikası, Zaman Serisi Analizi

Makale Türü: Araştırma

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Abstract

An essential part of the ongoing normative debate on how to design the cyclical movements of fiscal policy practices argues that counter-cyclical fiscal policies based on the Keynesian view should be preferred to pro-cyclical practices because of their stabilizing effects. In this context, the empirical analysis of the cyclical behavior of fiscal policy is an area that is up to date, first introduced by Gavin and Perotti (1997). The common opinion of empirical studies is that counter-cyclical practices are applied in developed economies; pro-cycle practices are more common in developing and underdeveloped economies. This study examines the cyclical movements of fiscal policy practices in Turkey from 1990-2020 with the ARDL method. As a result of the study, findings were obtained that Turkey’s fiscal policy practices have a counter-cyclical structure but lose its fiscal space for a maneuver. The robustness tests also support the findings.

Keywords: Business Cycle, Fiscal Policy, Time Series Analysis

Paper Type: Research

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1. Introduction

Business cycles are a wide field of discussion that had maintained their importance since the 18th century when economic thought began to gain a scientific framework. Consequently, an extensive body of literature has emerged, both theoretical and empirical, on the business cycle's properties. Considering the classifications drawn by Mitchell (1927) and contemporized by Mazzi and Ozyildirim (2017), it is possible to group business cycle theories at the thematic level. When analyzed on a theme basis, it is understood that the early days of business cycle theories are entirely based on nature's external effect. Then, in the period until the Great Depression in 1929, Classic economic thought and market mechanism-based approaches constituted the first age of business cycle theories. There was no comprehensive business cycle model during this period since conventional classical economists believed short-term fluctuations to be balanced by the *invisible hand*. Approaches based on Keynesian macroeconomic political activism, which became known for proposing an interventionist fiscal policy after the 1929 Great Depression, constitute the middle age of business cycle theories. Later, in the 1970s, the Keynesian view, which was exposed to notable criticism due to its inability to provide a solution to the stagflation problem, was partially replaced by the Neo-classical business cycle theories of view, which rely on both market and state failure (Kazgan, 1989: 185). Finally, the wage and price stickiness of post-Keynesian thought and the rational expectations-based approaches of the New Classics represent the modern era of business cycle theories. In this background, it is possible to suppose that determinants, guides, and measurements of the business cycle definition are the principal reasons for separating economics schools from each other (Schumpeter, 1923; Mitchell, 1927; Mazzi and Ozyildirim, 2017).

The academic interest in business cycles is linked to the rise of market economies and the increase in macroeconomic imbalances on a national and international scale in parallel with this rise. As a reflection of this situation, Ulgener (1970:4) points out that investigation of business cycles gains importance, especially in recession and depression, not in periods of expansion and prosperity. Consequently, academic interest in business cycles, which have an extensive structure historically and theoretically, have attracted the attention of many researchers from Europe, the USA, and Asia, especially England. However, this comprehensive structure uses conjuncture, economic cycles, economic circuits, and economic fluctuations terms as substitutes for the term business cycles⁴. Therefore, it should not be forgotten that there is considerable conceptual uncertainty regarding the term business cycles in the literature.

According to Schumpeter (1923: 5), "*business cycles are not self-healing and separable elements like tonsils but the essence of the formation that exhibits them like heartbeats*". In this sense, the common aim of the ongoing research on business cycles is to understand the total level of economic activity, how it can be measured, and what factors direct it. In addition, Schumpeter (1923: 11) claims that the primary target of market economies is the desire to boost production and employment levels. Therefore, a comprehensive understanding of business cycles is vital in protecting the existence and advantages of market economies. Unfortunately, measuring the total economic activity is impractical due to the extremely high transaction capacity and integration level of modern market economies. However, the indicator accepted as the nearest measurement to the total economic activity is the gross domestic product (GDP). Therefore, the studies use the "total economic activity" term as the theoretical concept (Ihori and Kameda, 2018).

⁴ The business cycle, which is accepted as a "Business Cycle" in Continental Europe and America, is defined as a "Trade Cycle" in England. This differentiation is explained by the fact that English has different usage patterns among regions.

Many similar definitions have been made in the literature to explain the concept of business cycles. In these definitions, some features we can accept as the intersection set come to the fore. Briefly, the business cycle; can be expressed as a-typical and a-periodic, but continuous expansion and contraction movements are observed simultaneously in many sectors that constitute the total level of economic activity (Hansen, 1941: 14; Burns and Mitchell, 1946: 3; Parkin, 2016: 334). Barro (1997: 4) declares that the term the business cycle is prone to misinterpretation, as the meaning of the word evokes the idea of regular expansion and contraction rather than an a-typical structure. However, the author also accepts that the term cannot be changed simply since it has a strict structure.

Business cycles are considered contraction-expansion trade-offs where each cycle has its characteristics. In this sense, the successive contraction and expansion processes can also be divided into sub-titles. The contraction process is evaluated under two headings: Recession and depression, regarding the duration of adverse effects. Accordingly, the concept of recession is an economic contraction process lasting two quarters or longer, observed at the level of total economic activity (Moore, 1983: 19). Alternatively, the concept of depression, on the other hand, is expressed as the economic contraction lasting more than one year in the total economic activity. However, decreases of up to 10% in total output and decreases of 25% are defined as minor and major depressions, respectively (Barro and Ursua, 2017: 384). On the other hand, the expansion definitions have a more straightforward nature. In its simplest form, it is accepted that the expansion period starts when the level of total economic activity begins to increase from the bottom. Furthermore, it is accepted that the welfare period, the second expansion stage, starts when the actual output level of total economic activity exceeds the potential output level.

The idea of using fiscal policies actively to stabilize business cycles, coincides with the 2nd quarter of the 20th century (Tanzi, 2006: 11). However, the Keynesian school does not have a pure business cycle theory. It has brought the discussion of effective demand and underconsumption to the agenda again. By doing this, the Keynesian school has heightened the awareness of fiscal policy within the scope of business cycle theories (Kazgan, 1989: 108). The basic premise of the Keynesian school is that fiscal policy practices should be designed in a counter-cyclical manner. Counter-cyclical policies stabilize the business cycle by altering the total demand level. However, Barro (1979) argues that counter-cyclical fiscal policy practices might not be the first best option. The author states that while establishing the relationship between fiscal policy and business cycles, tax rates should be kept flat at the steady public expenditure level. Moreover, it would be better to design the budget deficit in a pro-cyclical manner. It is also known as the tax smoothing hypothesis.

Gavin and Perotti (1997) brought the ongoing discussions on the cyclical movements of fiscal policies to an empirical basis with their study, in which they examined the cyclical movements of fiscal policy in Latin America and developed countries via the panel data method. After this seminal study, a large body of empirical literature has emerged those deals with the causes of cyclical movements of fiscal policy practices in the context of countries' level of development, preferred fiscal policy tools, and institutional and political factors. A considerable part of the results from empirical studies reveals that counter-cycle practices are observed in developed countries (Gavin and Perotti, 1977; Kaminsky, Reinhart and Vegh, 2004; Fatas and Mihov, 2009; Égert, 2014; Bashar, Bhattacharya and Wohar, 2017) and pro-cyclical practices are observed mostly in developing economies (Manasse, 2006; Carmignani, 2008; Strawczynski and Zeira, 2013; Klemm, 2014). It is frequently emphasized that developing countries should prefer counter-cycle practices to become developed (Frankel, Vegh and Vuletin, 2013). Does this way proposed by empirical studies preferred in Turkiye? In order to answer this hypothesis for Turkiye, the period of 1990-2020, during which significant systemic economic crises were observed, is preferred within the scope of our study. Thus, the answer to how fiscal policy is designed in the face of crises that cause recessions in total economic activity will be sought.

Furthermore, the preferred dependent variable for the empirical analysis is the primary budget balance (% GDP), an indicator frequently used in the literature to represent discretionary fiscal policies (Manasse, 2006; Fatas and Mihov; 2009; Turan, 2013, Égert, 2014). With this aspect, it is expected that our study will contribute to the literature with the findings obtained by using an empirical method that was not previously preferred for Türkiye, robustness results, and up-to-date data on discretionary fiscal policy practices. The second contribution of the study is that it allows to development of a policy proposal in comparison with the crises experienced in the past regarding the economic crisis, the effect of which is observed today.

The rest of the study is planned as follows: In the second part, the theoretical discussions about the cyclical movements of fiscal policy are briefly summarized. Then, the empirical literature examining the cyclical movements of fiscal policy practices is presented. The fourth chapter introduces the data set, methodology, and empirical model. In Chapter 5, the results of the empirical analysis are given. The last part of the study was completed by comparing the findings with the existing literature and giving policy suggestions and research questions considered important for forthcoming studies.

2. Cyclical Movements of Fiscal Policy

There are many policies that states can choose to affect economic growth, or in other words, the intensity of total economic activity. According to Solow (1997: 230), the trend level of real GDP is determined by supply-side factors. In this perception, increases or decreases in the level of factor inputs, in the long run, are considered one of the determinants of economic growth. On the other hand, debates continue about what role the state should play in the market economies, such as increasing production and employment, ensuring economic growth, and stabilizing business cycles (Snowdon and Vane, 2005: 620). Within the scope of business cycle theories, the issue of whether states cause economic instability and which fiscal policies should be used to combat emerging instability has a critical position in these debates. Some studies argue that pro-cyclical or a-cyclical fiscal practices might be preferred over counter-cyclical practices. (Kaminsky et al., 2004). In this phase, it is thought that demonstrating ideas about business cycle movements could be beneficial. Figure 1 presents graphs formed from the characterizations confronted in the theoretical literature on the cyclical movements of fiscal policy.

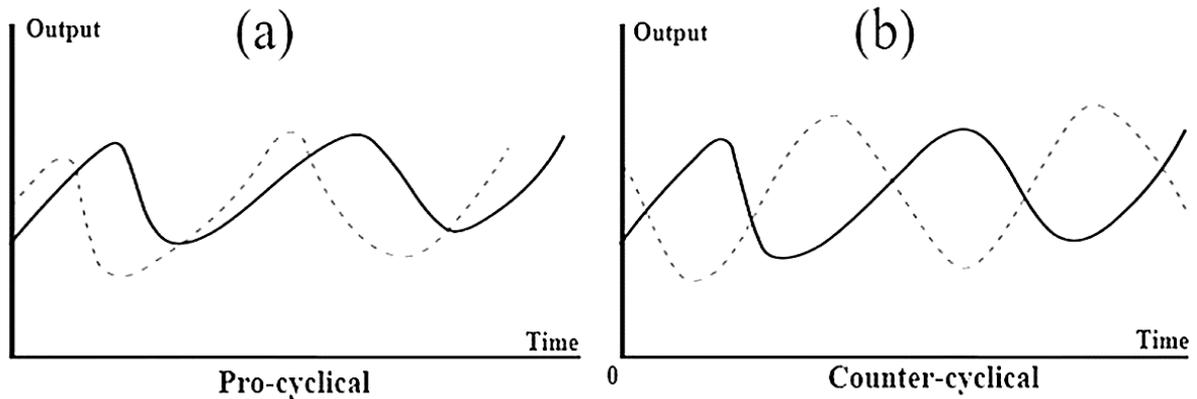


Figure 1: Practices of fiscal policies

In Figure 1, the black line represents the total economic activity, and the dashed lines in both panels represent fiscal policy practices. In the presented graphs, the output level and time are on the vertical and horizontal axes, respectively. Fiscal policy practices that potentially increase the severity of business cycle waves are defined as pro-cyclical shown (Fatas and Mihov, 2009) in panel (a). Alternatively, in panel (b), counter-cyclical fiscal policies that act in the opposite direction of the business cycle (Kaminsky et al., 2004) are presented.

The Keynesian approach has come to the fore in the context of the history of economic thought, arguing that the deterioration in the overall level of economic activity after the Great Depression cannot balance itself in the short run. In this context, Keynesian thought, which rejects the supply-side approach, defended by the Classical view and known as Say's Law, accepts that it is possible to determine the consumption/production level by adjusting the effective demand (Kazgan, 1989: 186). Therefore, Keynesian thought argues that fiscal policy practices should promote effective demand. In this context, the Keynesian view argues that increasing total demand with expansionary actions is possible when total demand is low and the underconsumption level is high. Consequently, counter-cyclical fiscal policy states that public expenditures should be reduced, and measures to increase public revenues should be implemented during expansion periods, and vice versa valid in recession periods.

In the 1970s, when the Keynesian view could not find a reasonable solution to the problem of stagflation, the debates on how to design the cyclical policy resurfaced. Towards the end of the 1970s, there was a shift in focus from the Keynesian fiscal policies based on macroeconomic political activism to the monetary policy of the Monetarist school. The monetarist view argues that the natural structure of the total level of economic activity is stable, but uncontrolled and irregular monetary expansions have a destabilizing effect. In this period, the opinion that business cycles can be intervened by adjusting the money supply through monetary policy has been the subject of significant debates. Sure enough, the money supply is not the only tool in the intervention process for business cycles, but it is one of the most dominant instruments. On the other hand, the velocity of money is also a critical variable in the intervention process. Throughout the recession in the USA in the 1980s, the velocity rate of money dropped sharply. The high velocity of the money is substantial in terms of the money supply and demand functions of the monetarist school. Thus, it has led to the loss of the validity of the fixed-rate monetary growth hypothesis, which is the fundamental proposition of the monetarist school (Snowdon and Vane, 2005: 173). After this depreciation, research on fiscal policy was reshaped as an influential field again. The neo-classical view and its advocates, which came to the fore in the mid-1980s, consider fiscal policy practices in the context of demand factors and supply-side effects. In the neo-classical approach, it is accepted that public expenditures are demand-sided and public revenues are a supply-sided policy tool. In this sense, also the Neo-classical view, which has not established a pure business cycle theory, mentions the necessity of supply-side interventions to market conditions through public revenues as well as eliminating market failures in the stabilization process of business cycles (Yildirim, Cakmakli and Ozkan, 2011: 154; Şen and Kaya, 2015: 59).

Finally, Barro (1979), one of the most influential proponents of the Real Business Cycles Theory, argues that the optimal fiscal policy structuring that will provide stability in the face of the business cycle can be achieved by using a combination of a-cyclical and pro-cyclical policy tools. The author states that tax rates must be kept flat throughout the business cycle for an optimal fiscal policy. However, budget deficits should be designed as pro-cyclically (Lane, 2003: 2663). In this context, the tax smoothing hypothesis also partially accepts that pro-cyclical practices, which have been heavily criticized in the literature, are not just harmful (Ihori and Kameda, 2018). Therefore, public expenditures and revenues may be generated pro-cyclically, relying on the sensitivity of the deterioration in business cycles. The following phase of the study reviews the empirical literature on the cyclical policy.

3. Empirical Literature

The inquiry for determining the direction of the cyclical movements of fiscal policy practices, first discussed empirically in 1997, has attracted deep interest in the literature. Within this scope, many studies have been conducted on implementing fiscal policy in various empirical methods, different country groups, periods, and the design process of policy instruments. On the subject, panel data and

time series analysis are frequently favored in empirical papers. However, it is possible to note that panel data techniques are used extensively in the literature. The reason for selecting panel data so frequently stems from the tendency to compare developed and developing countries. However, as different analysis techniques and models began to be preferred over time, countries at the same level of development, different fiscal policy instruments, and even institutional factors were included in the content of the examinations.

Within the scope of the research, it has been tried to reach specific results for Türkiye rather than a comparison between countries. For this reason, the ARDL method, a time-series technique that has not been applied earlier in the literature, and FMOLS and DOLS resistant estimators were favored to exhibit whether the findings from the ARDL show variability. Secondly, the ARDL method is a process based on the error correction principle, and it is a cointegration test that can provide information about when to return to the corrective position, allows short and long-term coefficient estimation, and has a wide usage area. Therefore, it would be rational to use the ARDL method to investigate the cyclical behavior of the fiscal policy for Türkiye. Lastly, the ARDL method was also preferred because it allows working with series with different degrees of integration. The relevant empirical literature on this subject is presented below. Empirical studies are divided into three groups: those that follow the seminal work of Gavin and Perotti (1997), those that consider the impact of fiscal rules, and those that finally examine the consequence of institutional quality on fiscal cyclicity.

At the beginning of the literature, Gavin and Perotti (1997) investigated the direction of the cyclicity of fiscal policy for 18 Latin American and 13 developed countries during the 1968-1995 period utilizing panel data analysis. Authors have claimed that while the fiscal policy in Latin American countries is pro-cyclical, developed countries are counter-cyclical. Lane (1998), using the time series analysis, examined the direction of Ireland's cyclical movements of fiscal policy in the 1989-1996 period. The author concluded that the fiscal policy practices in Ireland have a pro-cyclical manner. In another study, Kaminsky et al. (2004) used the partial correlation relations technique to determine the cyclicity of fiscal policy for 104 developed and developing countries during the 1960-2003 period. The authors argued that public expenditures are counter-cyclical in OECD countries; however, pro-cyclical in developing countries. This study played an important role in choosing better dependent variables in examining the cyclical movements of fiscal policy in the following periods.

In order to understand why fiscal policy implementations generally have a pro-cyclical nature, Alesina and Tabellini (2005) studied the fiscal policy implementations for 87 developed and developing countries in the 1960-1999 period using panel data analysis. Interestingly, the entire sample in the study was chosen from countries with a population of more than 1 million as small countries are more vulnerable to financial shocks; on the other side, all sample includes time series of at least three business cycles (approximately 16 years). According to the empirical results, fiscal policy is counter-cyclical in OECD member countries and pro-cyclical in Latin American and African countries. Using panel data analysis, Talvi and Vegh (2005) examined the direction of the cyclical movements of fiscal policy instruments for 36 developing and 20 developed countries during the 1970-1994 period. The authors reported that public revenues in developed countries are a-cyclical, while in developing countries, public expenditures are pro-cyclical. The abovementioned study has added a valuable dimension to the literature by presenting a tax-based cyclicity approach. Using the panel data technique, Ilzetzi and Vegh (2008) investigated the cyclical movements of fiscal policy practices for 27 developing and 22 developed countries in the 1960-2006 period. In conclusion, it is pointed out that contrary to the general acceptance of the existing literature, fiscal policy might also have a pro-cyclical nature in developed countries. Along with this proposal, the authors in the literature indicated that developed countries can also have pro-cyclical policies and started a new discussion in which the causes of the pro-cyclical policy in developed countries were discussed.

Using panel data analysis, Carmignani (2008) scrutinized the cyclical movements of fiscal policy for 34 African and 83 developing countries during the 1990-2007 period. The author reported that pro-cyclical fiscal policy practices are preferred in developing countries. Similarly, African countries' fiscal policy is generally pro-cyclical but occasionally a-cyclical. In addition, Fatas and Mihov (2009) preferred panel data analysis to examine the cyclical movements of fiscal policy practices in 22 OECD member countries during the 1970-2007 period. The authors pointed out the reality of counter-cyclical practices in the USA while they argued that moderate pro-cyclical fiscal policies were implemented in the rest of the sample. The authors have also been the reference point for most empirical studies, with their proof that the primary budget balance among the preferred variables in the literature can produce much more robust results. Strawczynski and Zeira (2013) investigated the cyclical movements of fiscal policy instruments for 22 developed and 23 developing countries during the 1960-2006 period using panel data analysis. The study has reported that public investment expenditures are pro-cyclical for developed countries. On the other hand, in developing countries, total public and transfer expenditures are pro-cyclical. However, the authors emphasize that developed countries may be more resilient when choosing pro-cyclical policies in the face of fiscal shocks. On the other hand, using panel data analysis, Jha, Mallick, Park and Quising (2014) evaluated the effectiveness of expansionary counter-cyclical fiscal policy practices for 10 developing Asian countries from 1977: Q3- 2009: Q2. The authors found that the tax reduction might have been more effective than public expenditures in stimulating total economic activity. The most practical contribution of the authors to the literature with this research is that it comparatively exemplifies the effectiveness of policy instruments.

In another seminal contribution, using the panel data analysis Égert (2014) scrutinized the cyclical movements of fiscal policy instruments for 25 OECD countries from 1970-to 2008. The author noted that the fiscal policy is counter-cyclical when the discretionary and automatic stabilizing instruments are evaluated. The author also indicates that countries with a budget deficit/GDP ratio of more than 3% and a public debt stock/GDP ratio of more than 90% are more prone to pro-cyclical policy implementations. The findings reveal the fiscal fragilities that lead to pro-cycle practices regarding the thresholds set. In the same year but with a different sample, Klemm (2014) discussed the cyclical movements of fiscal policy for 19 Latin American countries in the 1990-2012 period with panel data analysis. The author concluded that the fiscal policy for Latin American countries is pro-cyclical. Larch, Kumps, Cugnasca and Orseau (2019) studied how the cyclical movements of fiscal policy should be designed to maximize the social welfare level with the real-time forecasts method for 28 EU countries during the 2003-2017 period. Although the authors maintain that the optimal type of fiscal policy should have a counter-cyclical, they noted that the tendency to implement pro-cyclical fiscal policy is high in the studied sample.

Another branch of empirical studies deals with fiscal rules. Gali and Perotti (2003) studied the factors affecting the cyclical movements of fiscal policy practices for 11 European Union members during the 1980-2002 period. The authors claimed that the fiscal rules introduced under the Maastricht agreement reinforce the counter-cyclicity of fiscal policy practices. Following the work of Gali and Perotti (2003), García, Arroyo, Mínguez and Uxó (2009) surveyed the responses to the cyclical movements of fiscal policy instruments to permanent economic shocks in 11 EU countries during the 1984-2005 period using panel data analysis. The authors reported that the fiscal policy practices before the Maastricht agreement had a pro-cyclical structure, but the level of pro-cyclicity decreased after the Maastricht agreement. Moreover, using similar panel data analysis method, Candelon, Muysken and Vermeulen, (2010) analyzed the cyclical movements of discretionary and non-discretionary fiscal policy implementations for 11 EU member states during the 1980-2004 period, by dividing them into two different periods, before and after the Maastricht agreement. It was stated that the Maastricht agreement did not affect the pro-cyclical profile of discretionary fiscal policy practices.

Studies that test the effect of fiscal rules on cyclical behaviors with different methods and variables on the same sample indicate that the common finding, the Maastricht criteria, strengthens the counter-cyclical structure. However, these studies also draw attention to the fact that the fiscal rules introduced within the scope of Maastricht may narrow the government's range of action by limiting the implementation of discretionary fiscal policy. Recently, Gootjes and Haan (2022) studied the factors affecting the cyclicity of fiscal policy for 27 EU countries in the 2000-2015 period using panel data analysis. The empirical findings indicate that the fiscal rules in the EU are designed a-cyclically. Still, the budget deficit, which is the primary fiscal policy tool, has a pro-cyclical nature. However, the authors also reported that increased fiscal rules and government effectiveness might limit the impact of pro-cyclical practices.

It is widely accepted that institutional factors play an influential function at all levels of economic activity. According to North (1999), institutions are the rules of a game. Moreover, institutions are patterns of behaviors that transcend human life that reputable and continual (Williamson, 2000). In this context, the institutional quality understanding of the new institutionalist approach based on state-based governance indicators has gained an important place in examining the cyclicity of fiscal policy. Shortly after the emergence of empirical studies examining the cyclical behavior of fiscal policy (after Gavin and Perotti (1997)), institutional factors were included in the analysis. The first known empirical research in fiscal cyclicity and institutional quality was put forward by Lane (2003). The author uses panel data analysis to investigate the cyclical movements of fiscal policy instruments and the effect of political factors on this movement for 22 OECD member countries during the 1960-1998 period. The author points out that current public expenditures are counter-cyclical, but the primary budget balance and total public expenditures have a pro-cyclical structure. Moreover, the author also reported that political corruption is exacerbating pro-cyclical practices. Subsequently, Manasse (2006) examined the factors pushing the fiscal policy toward a pro-cyclical structure (*such as fiscal shocks, fiscal rules, and institutional quality*) for 37 developing and 12 developed countries in the 1970-2004 period using the Multivariate Adaptive Regression Spline (MARS) method. The author determined that the fiscal policy in developed countries has an a-cyclical structure, particularly in periods of recession, and pro-cyclical in periods of expansion, although typically pro-cyclical in developing countries. Furthermore, it is proclaimed that the higher level of institutional quality contributed to the preference for mild pro-cyclical policies. The author has made an essential contribution to the literature by revealing that fiscal cyclicity alters at different periods of the total level of economic activity.

Intercalarly as an extended version of Alesina and Tabellini (2005), Alesina, Campante and Tabellini. (2008) scrutinized the cyclical movements of fiscal policy and the effects of political institutions on fiscal policy for a total of 83 countries, 24 of which were developed and 59 of which were developing during the 1960- 2003 period using a panel data analysis. Alesina et al. (2008) stated that the public debt stock would increase to keep the public revenue level low due to political motivations (*as Leviathan will be starved*). Therefore, the authors argue that increasing overgrowing public debt stocks might result in pro-cyclical fiscal policy practices. One more interesting finding of the investigation is that pro-cyclical fiscal policy practices are more common in highly corrupted and politically unstable economies. Lledo, Yackovlev and Gadenne (2009) examines the impact of political factors on the cyclical movements of fiscal policy in a substantial sample. The authors examined the cyclical movements of fiscal policy practices for 174 countries in Sub-Saharan Africa, developing and developed countries in the 1970-2008 period using unbalanced panel data analysis. It is found that fiscal policy practices are strongly pro-cyclical in Sub-Saharan African countries while moderately pro-cyclical in developing countries. However, it has been reported that no statistically significant result could be obtained regarding the pro-cyclical structure in fiscal policy practices in developed countries. This paper noted that the institutional quality variable is not statistically significant on fiscal cyclicity and

that presenting finding from the existing literature. Frankel et al. (2013), analyzed the cyclicity of fiscal policy practices and institutional factors relationship in 73 developing countries using panel data in the 1960-2009 period. The result of the study revealed that counter-cyclical practices are not unique to developed countries but developing countries can also implement counter-cyclical policies. The authors argued that improvements in institutional quality also strengthened counter-cyclical practices. With this study, the authors added a new dimension to the literature and referenced research on the graduation of pro-cyclical schools.

Another study by Carneiro and Garrido (2015) investigated the cyclical movements of fiscal policy practices using unbalanced panel data analysis methods for a comprehensive sample, including 180 Underdeveloped, Developing, and Developed countries within the 1980-2012 period. The authors point out that it has been reported that counter-cyclical policy practices are encountered in more and more developing countries. Furthermore, unlike Lledo et al. (2009), the authors argue that a higher level of institutional quality also boosts the applicability of counter-cyclical practices. Moreover, Bashar et al. (2017) studied the cyclical movements of fiscal policy practices and the relationship between institutional quality for 11 OECD countries during the 1960-2011 period using the multivariate unobserved components model (MUCM). The authors argued that in 7 of 11 countries, counter-cyclical fiscal policies were implemented, and the degree of institutional quality is related to the implementation of counter-cyclical policies. Ichori and Kameda (2018) examined the cyclical behavior of fiscal policy for 24 OECD and 20 developing countries in the period 1960: Q1-2016: Q4 using the panel data analysis technique. The investigation results indicate that the tendency to apply pro-cyclical policies in developing countries is higher than in OECD member countries. Furthermore, the study emphasizes that the functions of the government are among the key determinants of fiscal cyclicity, and it remarks that the relationship of cyclicity with institutional factors is essential.

Martorano (2018) investigated the effect of fiscal space, institutional quality, and political structure on the cyclicity of fiscal policy for 14 Latin American countries during the 1990- 2005 period with panel data analysis. The author proclaims that the decrease in the level of the public debt stock and the increase in public revenues create fiscal space, and therefore, the power of Latin American countries to prefer counter-cyclical fiscal policy strengthens. In short, the term fiscal space defines as the difference between the current debt level of the countries and the debt limit, which reveals the economic characteristics of these countries and is determined analytically (Ostry, Ghosh, Kim and Qureshi, 2010). In this research, the author presents a retrospective point of view, revealing that Latin American countries are subject to a paradigm shift and can implement counter-cyclical policies today. Lastly, regarding institutional factors, Dincă, Dincă, Dauti, Baba and Popione, (2020) scrutinized the cyclical movements of fiscal policy for 26 EU countries in the 1996-2014 and 1995-2014 periods using both time and panel data analysis together. The authors concluded that fiscal policy practices have a pro-cyclical nature, and it has a direct correlational relationship between the degree of political corruption and pro-cyclical practices. The common finding of empirical studies modeling institutional factors is that there is an inverse relationship between institutional quality and pro-cycle practices. These studies, which commonly adopt the governance-based institutional quality approach of the new institutional economics, mainly deal with institutional quality within the scope of political corruption. Therefore, it is possible to consider the pro-cyclical practices of countries where political corruption, that is, democratic institutions, are weak, as an obstacle to the economic development process.

The use of time series analysis techniques in examining the cyclical movements of fiscal policy remains limited compared to panel data analysis techniques. Parallel to this situation, the empirical literature shows that studies on Türkiye are pretty limited. In this context, Turan (2013) analyzed Türkiye's fiscal policies' cyclicity during 1998: Q1- 2012: Q3 period using time series analysis. The author aimed to obtain consistent results on the cyclical behavior of fiscal policy by using two different

regressions. The first regression model uses public expenditures as the dependent variable. Any statistically significant results were obtained in the first regression model. However, in the second regression model, which preferred the primary balance as the dependent variable, it was stated that the fiscal policy in Türkiye is counter-cyclical. Additionally, Turan and Telatar (2013) examined the effect of political factors and fiscal rules on fiscal policy cyclicity for Türkiye in 1987: Q1-2007: Q3 period with a fixed and time-varying estimator method. Firstly, the authors empirically stated that time-varying estimation is more effective than fixed effect estimator because of frequent political and economic instabilities' distortive effect. After that, they point out that the 1994-1998 period has pro-cyclical, but the 2000-2007 has counter-cyclical practices.

Most of the studies present comparative results by examining the countries grouped according to their level of development with panel data analysis. However, the empirical research findings are typical in that pro-cyclical fiscal policies are generally preferred in countries with lower fiscal space, low institutional quality, and a high degree of political corruption (Gavin and Perotti, 1997; Lane, 1998; Manasse, 2006; Ilzetzki and Vegh, 2008; Alesina et al. 2008; Carmignani, 2008; Lledo et al., 2009; Klemm, 2014; Ithori and Kameda, 2018; Dincă et al. 2020; Gootjes and Haan, 2022). On the other hand, the rest of the literature proclaims that developed countries are generally able to apply counter-cyclical fiscal policies (Gali and Perotti; 2003; Kaminsky et al., 2004; Bashar et al., 2017). Empirical studies for Türkiye, on the other hand, point to the existence of counter-cyclical fiscal policy practices (Turan, 2013; Telatar and Turan, 2013). The main finding, understood from the majority of these studies in the empirical literature, is that counter-cyclical practices demand macroeconomic stability, institutional quality, and fiscal space. When viewed retrospectively, it is observed that economies with positive developments in these indicators are more likely to prefer counter-cyclical policies. For more detailed information on analysis techniques and samples, see the appendix.

4. Data Set, Model and Methodology

4.1. Data Set and Model

In this study, the cyclicity of the fiscal policy is examined during the 1990- 2020 period using annual data for Türkiye. The Model used in the study is also presented in equation 1:

$$PB = \beta_0 + \beta_1 OG + \beta_2 PD + \beta_3 PPE + \beta_4 PR + \beta_5 Trade + \varepsilon_t \quad (1)$$

Table 1: Explanations on the variables used in the analysis

| Variable | Explanation | Unit | Source |
|----------|-----------------------------|--------|---------------------------------------|
| PB | Primary Budget Balance | % GDP | T.R. Ministry of Treasury and Finance |
| OG | Output Gap | %Ratio | Calculated by authors |
| PD | Public Debt Stock | % GDP | T.R. Ministry of Treasury and Finance |
| PPE | Primary Public Expenditures | % GDP | T.R. Ministry of Treasury and Finance |
| PR | Tax Revenues | % GDP | T.R. Ministry of Treasury and Finance |
| Trade | Trade Openness | % GDP | WDI |

The variables in the model are introduced in Equation 1 for the calculation unit, and the sources are demonstrated in Table 1. Data on fiscal policy were obtained from the official database of the T.R. Ministry of Treasury and Finance. The GDP data used to calculate the level of the output gap and the trade openness are obtained from WDI. However, the output gap level is not officially published data. Therefore, it was calculated by following the method presented in equation 2.

$$Output\ Gap = \frac{GDP - GDP_{trend}}{GDP_{trend}} \times 100 \quad (2)$$

The value of trend GDP is needed in the output gap calculation process. So that it was derived from the real GDP data using the Hodrick-Prescott (1997) filtering method. Hodrick-Prescott (1997) argues that for annual data, the exponent value should be 2, and the lambda(smoothing) [λ] parameter value should be 100. However, Ravn and Uhlig (2002) proved that if the exponent value is 4 and the lambda [λ] parameter value is 6.25 for annual data, more effective results will be obtained in calculating the output gap. Therefore, within the scope of this study, the recommendations of Ravn and Uhlig (2002) were followed to calculate the output gap.

Primary budget balance as a ratio to GDP is preferred as the dependent variable in the study. The most important reason for choosing the Primary Budget Balance/GDP ratio as the dependent variable in Equation 1 is to reveal how the government designs its fundamental fiscal policy in the absence of interest payments. And it must be clarified that normally cyclically adjusted series presumably generate the more sensitive result; however, unfortunately, for adjusting for cyclical, we have a lack of reliable data for Türkiye from 1990-2020. For this reason, similar to Manasse (2006) and Turan (2013) and Turan and Telatar (2013), Primary Budget Balance/GDP and Primary Public Expenditures/GDP ratios were preferred in the model to reach more accurate results regarding the cyclical movements of fiscal policy. Additionally, Favero and Monacelli (2005: 3) define output gap variables as valuable for capturing automatic fiscal stabilizers' spill-over effect. In Table 2, explanatory statistics about the data used in the study are presented.

Table 2: Explanatory statistics

| | Mean | Min. | Max | Std.Dev | Skewness | Kurtosis | JB | JB (p-value) |
|-------|--------|--------|--------|---------|----------|----------|-------|-----------------|
| PB | 1.157 | -3.632 | 4.611 | 2.385 | -0.176 | 2.104 | 1.197 | 0.594 |
| OG | 0.122 | -8.757 | 6.669 | 3.940 | -0.445 | 2.582 | 1.245 | 0.536 |
| PD | 42.445 | 27.369 | 75.510 | 12.338 | 1.089 | 3.719 | 6.802 | 0.033 |
| PPE | 25.592 | 13.696 | 35.559 | 6.755 | -0.283 | 1.749 | 2.437 | 0.295 |
| PR | 16.590 | 11.558 | 19.050 | 1.985 | -1.075 | 3.072 | 5.981 | 0.052 |
| Trade | 47.430 | 30.476 | 62.682 | 8.498 | -0.361 | 2.810 | 0.719 | 0.697 |

Even though 1994, 2001, 2008, and 2018 are extremely hard periods in the perspective of macroeconomic instabilities, As seen in table 2, the average values of the Fiscal policy tools in Türkiye in the 1990-2020 period have a mostly positive sign.

4.2. Methodology

The empirical analysis applied within the scope of the study consists of 4 stages. The first step of the empirical analysis is the unit root test application. Zivot and Andrews's (1992) unit root test, which considers structural breaks internally, is used in this phase to analyze the series' stationarity structure. In the second stage, the cointegration relationship is examined using the ARDL method developed by Pesaran, Shin and Smith (2001). In the third step of the empirical analysis, diagnostic tests are performed on the preferred model, and the short and long-term coefficients are estimated. Finally, Phillips and Hansen (1990) FMOLS and Stock and Watson (1993) DOLS and resistant estimators were used to testing the results' robustness. Herewith, we control the sensitivity of the findings obtained from the ARDL model.

4.2.1. Zivot-Andrews (1992) Unit Root Test with Structural Break

Zivot and Andrews (1992) unit root test differs from traditional unit root tests as it allows the determination of structural breaks internally. Zivot and Andrews's (1992) unit root test has two different models. Model (A) allows a structural break at the intersection, and model (C) allows for a

structural break at both intersection and trend. Related methodology of Model (A) and (C) are presented in Equations (3) and (4) below, respectively.

$$\text{Model A: } \Delta Y_t = \delta + \beta t + \alpha Y_{t-1} + \mu_1 DU(\lambda)_t + \sum_{i=1}^m n_i \Delta Y_{t-i} + \varepsilon_t \quad (3)$$

$$\text{Model C: } \Delta Y_t = \delta + \beta t + \alpha Y_{t-1} + \mu_1 DU(\lambda)_t + \mu_2 DT(\lambda)_t + \sum_{i=1}^m n_i \Delta Y_{t-i} + \varepsilon_t \quad (4)$$

The dummy value in Model (A) shows the change in the intersection, while the dummy value in Model (C) illustrates the change in the trend. Zivot and Andrews (1992) determined the minimum t statistic for the unit root test (α) value, and the value was defined as the structural break point. In addition, the lagged value of the dependent variable is used with the difference operator (ΔY_{t-i}) so that the lagged value of the dependent variable does not cause autocorrelation problems. It is represented by the difference operator (Δ), which is common in both models. Also, the normally distributed white noise error term is denoted by (ε_t). The null hypothesis is established in the unit root test process as [$H_0: \alpha=0$]. If the calculated t statistical value is greater than the critical value calculated by Zivot and Andrews (1992), the null hypothesis is rejected, and the series has a stable structure under the structural break is decided.

4.2.2. ARDL

In empirical studies, it is observed that researchers frequently prefer the Pesaran et al. (2001)'s ARDL model. The ARDL model provides meaningful flexibility as it allows the independent variables to be stationary at the [I (0)] or [I (1)] level. However, under the assumption that the dependent variable is stationary [I (1)]. At this stage, Pesaran et al. (2001)'s F-limit test and the t-boundary test are used to decide whether there is a cointegration relationship between the series in the ARDL method.

$$F_{test} H_0: \phi_1 = \phi_2 = \phi_3 = \phi_4 = \phi_5 = \phi_6 = 0 \quad (5)$$

$$t_{test} H_0: \phi_1 = 0 \quad (6)$$

In examining the cointegration relationship with the ARDL model, the estimated F-test critical value is compared with the F-test values calculated by Pesaran et al. (2001). If the estimated F test statistic, according to this approach, is smaller than all the connected [I (0)] critical values calculated by Pesaran et al. (2001), the null hypothesis presented in equation 5 cannot be rejected, and it is concluded that there is no cointegration between the series. On the other hand, when the obtained F-test statistic coincides with the region of instability between the lower limit critical value [I (0)] and the upper limit critical value [I (1)], it is not possible to determine the existence of a cointegration relationship. However, only if the F-test and t-test values are greater than the critical values of Pesaran et al. (2001) or Narayan (2005) adjusted for sample size, the null hypothesis will be rejected and decided that there is cointegration. In the light of the explanations made, the equation to be estimated by the ARDL method is presented in equation 7.

$$\begin{aligned} \Delta PB_t = & \vartheta_0 + \vartheta_1 DUM_t + \omega_1 \sum_{i=1}^h \Delta PB_{t-i} + \omega_2 \sum_{i=0}^s \Delta OG_{t-i} + \omega_3 \sum_{i=0}^c \Delta PD_{t-i} + \omega_4 \sum_{i=0}^p \Delta PPE_{t-i} \\ & + \omega_5 \sum_{i=0}^k \Delta PR_{t-i} + \omega_6 \sum_{i=0}^l \Delta TRADE_{t-i} + \phi_1 PB_{t-1} + \phi_2 OG_{t-1} + \phi_3 PB_{t-1} \\ & + \phi_4 PPE_{t-1} + \phi_5 PR_{t-1} + \phi_6 TRADE_{t-1} + \mu_t \end{aligned} \quad (7)$$

5. Empirical Results

In analyzing time series, it is crucial to investigate the stationary condition of the variables. Although ARDL models developed by Pesaran et al. (2001) offer the opportunity to work with [I (0)] and [I (1)] series, unit root tests must be applied to confirm that the preferred series is not integrated at [I (2)]. For this reason, first of all, Zivot-Andrews (1992) structural break unit root test results for the series included in the empirical model are presented in Table 3.

Table 3: Zivot-Andrews (1992) unit root test results

| | Model (A) | Lag | Break date | Model (C) | Lag | Break date |
|---------|--------------|-----|------------|--------------|-----|------------|
| PB | -3.41 | (0) | 1998 | -4.49 | (0) | 2007 |
| OG | -4.32 | (4) | 2001 | -4.44 | (4) | 2001 |
| PD | -3.94 | (0) | 1999 | -2.89 | (0) | 1999 |
| PPE | -4.64* | (0) | 1999 | -5.06** | (0) | 1999 |
| PR | -2.18 | (2) | 1997 | -2.26 | (2) | 2001 |
| TRADE | -4.28 | (1) | 2005 | -6.46*** | (1) | 1998 |
| Δ PB | -7.54*** | (0) | 2010 | -7.42*** | (0) | 2010 |
| Δ OG | -7.03*** | (0) | 2011 | -7.02*** | (0) | 2011 |
| Δ PD | -8.24*** | (0) | 2003 | -8.05*** | (0) | 2003 |
| Δ PPE | - | - | - | - | - | - |
| Δ PR | -6.82*** | (2) | 2010 | -6.70*** | (2) | 2010 |
| Δ TRADE | -6.75*** | (1) | 1998 | - | - | - |

Note: Note: 1%, 5% and 10% significance level are indicated by ***, ** and *, respectively. The values presented in parentheses indicate the selected lag lengths. The critical values for Model (A) -5.34 (1%), -4.93 (5%) and -4.58 (10%), respectively. The critical values for Model (C) -5.57 (1%) and -5.08 (5%), respectively.

Table 3 depicts that all series are non-stationary in [I (0)], except for primary public expenditures, under the structural break. The series becomes stationary when first differenced. Therefore, it has been decided that the maximum degree of integration of the variables is [I (1)], and there is no obstacle to using the ARDL method. In addition, Table 3 shows that the dependent variable stationary at the [I (1)] level is met for the ARDL method to produce reliable results. In the second stage of the empirical analysis, the existence of the cointegration relationship between the series is tested by estimating the F and t-test statistics. F and t-test statistical values obtained by estimating the equations presented in Equations 5 and 6 are shown in Table 4.

As can be followed in Table 4, according to both critical values calculated by Pesaran et al. (2001) and Narayan (2005), a cointegration relationship is revealed between the series at the 1% significance level. The critical values Pesaran et al. (2001) presented were calculated for large samples such as $n=1000$. For this reason, $n=30$ asymptotic values, closest to our sample among the critical values rearranged for the small sample by Narayan (2005), are also reported in Table 4.

Table 4: ARDL bound test

| Model (2,1,1,0,0,2) | | F_{test} | | t_{test} | | | |
|---------------------------------------|--|-----------------------|-------|----------------|-------|------|------|
| $PB=f(OG, PPE, PD, PR, TRADE, DUMMY)$ | | 8.507*** | | -5.513*** | | | |
| | | Pesaran et al. (2001) | | Narayan (2005) | | | |
| | | F_{test} | | F_{test} | | | |
| Critical Values | | I (0) | I (1) | I (0) | I (1) | | |
| %1 | | 3.41 | 4.68 | -3.43 | -4.79 | 4.53 | 6.37 |
| %5 | | 2.62 | 3.79 | -2.86 | -4.19 | 3.12 | 4.60 |
| %10 | | 2.26 | 3.35 | -2.57 | -3.86 | 2.57 | 3.85 |

Note: 1% significance level is indicated by ***. The lag length was determined according to the SC information criterion.

Based on these findings, long and short-term predictions for the ARDL model and diagnostic tests for the model's validity were performed. Diagnostic tests and long-term coefficient estimate for the ARDL model are presented in Table 5.

Table 5: ARDL long term results and diagnostic test statistics

| Variables | Coefficients | t-statistics | Standard Errors | Diagnostic tests | |
|-----------|--------------|--------------|-----------------|------------------|---------------|
| OG | 0.2480** | 1.9888 | 0.1247 | LM | 1.998 [0.39] |
| PPE | -0.2561*** | -3.1821 | 0.0804 | BPG | 10.700 [0.55] |
| PD | 0.0840*** | 3.1100 | 0.0270 | Ramsey | 1.139 [0.30] |
| PR | 1.0172*** | 4.8164 | 0.2112 | JB | 0.581 [0.74] |
| TRADE | -0.0671*** | -1.1355 | 0.0591 | Cusum | S |
| | | | | CusumQ | (S) |

Note: 1% and 5% significance levels are indicated by *** and **, respectively. probability values of diagnostic tests are given in parentheses, and S(S) represent stability.

According to the long-term estimations and diagnostic test results presented in Table 5, in the preferred model: According to the LM test statistic [$p > 0.05$], there is no serial correlation problem; BPG test statistics [$p > 0.05$], there was no heteroscedasticity problem in the model; Jarque-Bera test statistic [$JB > 0.05$], the residues are normally distributed, and lastly the Ramsey Rest statistic is [$Ramsey > 0.05$], so there is no specification error in the model. In this context, it was understood that the model could respond to all diagnostic tests required at the 1% significance level to generate valid results.

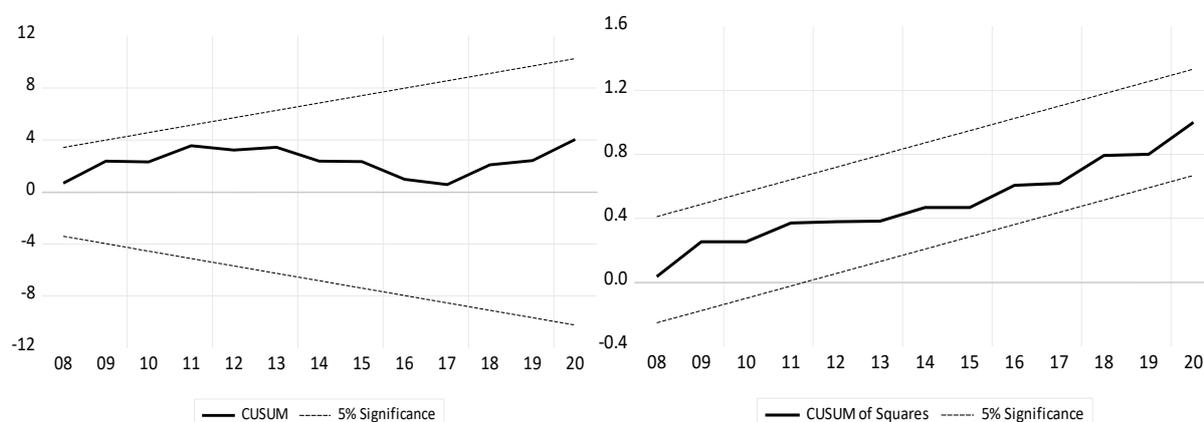


Figure 2: Cusum and CusumQ test results

In addition, the Cusum and CusumQ tests presented in Figure 2 also show that the parameters within the model are stable at the 5% significance level. In this case, it is decided that the obtained parameters are also stable. According to the long-term estimation results of the variables presented

in Table 5, a positive relationship was found between the Primary Budget Balance/GDP and the output gap. If the coefficient is positive, the primary budget balance (%GDP) to the output gap, primary balance rises more than the output gap in boom periods and vice versa. Therefore, the dependent variable is the Primary Budget Balance/GDP, and the positive output gap coefficient indicates the counter-cyclical practices of the fiscal policy (Manasse, 2006; Fatas and Mihov, 2009; Égert, 2014; Martorano, 2018). The result is similar to the findings of Turan (2013) and Turan and Telatar (2013), who examined Türkiye as a sample. In addition, the coefficient for primary public expenditures was found to be negative. In this case, the decrease (*increase*) in primary public expenditures means that the ratio of Primary Budget Balance/GDP has increased (*decreased*). The obtained finding is compatible with the theoretical expectations and shows that the model can produce rational results.

Another finding is that the Public Debt Stock/GDP ratio coefficient is positive. The positive coefficient of Public Debt Stock/GDP also shows that public debt is in a sustainable structure based on the public budget constraint transformation method developed by Bohn (1988) (Manasse, 2006; Turan, 2013). In this context, in our study, it is understood that public debt has a sustainable structure according to the Bohn (1988) public budget constraint transformation method for the period 1990-2020 in Türkiye. In addition, the tax revenues variable included in the model to deal with the revenue aspect of the fiscal policy has also been found to be statistically significant with a positive coefficient. Of course, within the scope of the fiscal theory, the increase in tax revenues is expected to create fiscal space and empower counter-cyclical practices. Finally, the degree of trade openness included in the model as a control variable was not statistically significant. Table 6 presents the short-run coefficients and error correction terms obtained from the ARDL model.

Table 6: ARDL short-term results

| Variables | Coefficients | t-statistics | Standard Errors |
|---------------|--------------|--------------|-----------------|
| L. OG | 0.036 | 1.254 | 0.029 |
| L. PPE | -0.804*** | -14.869 | 0.054 |
| L. TRADE | -0.091*** | -4.111 | 0.022 |
| L. TRADE (-1) | -0.110*** | -5.183 | 0.021 |
| D2007 | -0.669 | -1.302 | 0.514 |
| ECT_{t-1} | -0.505*** | -8.185 | 0.061 |

Note: 1% significance level are indicated by ***.

According to the short-term results in Table 6, the output gap was estimated as positive but statistically insignificant in the long term. For this reason, it is impossible to make a short-term conclusion about the cyclical movement in general fiscal policy implementations. However, the coefficient of primary public expenditures was found as negative. This phenomenon indicates that the relationship between primary public expenditures/GDP and primary budget balance/GDP ratio in the short run is also adversely related and theoretically reasonable. Also, this finding is in line with the long-term finding. In addition, the degree of trade openness in the short term was statistically significant. As the lagged level increases for trade openness, the effect of the corresponding negative coefficient value also increases. This effect could explain a negative relationship between a deficit in current balance payment and fiscal space. Also, the dummy variable (D2007), obtained from the unit root analysis process and considering the breakout date of the dependent variable, had a negative coefficient as expected but was found statistically insignificant.

The error term coefficient's significance must be interpreted according to the t-limit test results (Mert and Çağlar, 2019: 295). Accordingly, the critical values calculated for the t-boundary test are greater than all the upper critical values ($5.51 > 4.79$). Therefore, the error correction coefficient is statistically significant at %1, and the obtained finding means that the fluctuations occurring in the

long term will tend to balance. The error term is -0.5055, and it is understood that it will recover after $[1/0.5055 = 1.98]$ years and reach the long-term average equilibrium.

Table 7: FMOLS-DOLS estimator results

| Variables | FMOLS | | DOLS | |
|-----------|----------------------|--------------|-----------------------|--------------|
| | Coefficients | t-statistics | Coefficients | t-statistics |
| OG | 0.120 (0.142) | 1.520 | 0.495*** (0.000) | 5.971 |
| PPE | -0.237*** (0.000) | -4.405 | -0.226*** (0.002) | -4.916 |
| PD | 0.076*** (0.001) | 3.499 | 0.083*** (0.000) | 7.024 |
| PR | 1.036*** (0.000) | 6.205 | 1.518*** (0.000) | 8.486 |
| TRADE | -0.065* (0.064) | -1.944 | -0.139*** (0.005) | -4.280 |
| D2007 | -0.850 (0.414) | -0.830 | -0.740 (0.138) | -1.710 |
| C | -9.977*** (0.000) | -5.546 | -14.616*** (0.000) | -13.446 |

Note: D2007 is the dummy variable that represents the break.1% and 10% significance level are indicated by *** and *, respectively.

Finally, although there was no doubt of the standard errors and, accordingly, the parameters, resistant estimators were used to prove that the findings obtained in the study were robust. FMOLS and DOLS estimators were used to measure the ARDL cointegration test's reliability and whether the coefficients obtained were robust. According to both estimation methods reported in Table 7, the same results were obtained in terms of the directions of the coefficients of the variables but different in terms of the coefficient sizes and statistical significance. As a result, there is a substantial similarity between the results presented in Table 7 and the results obtained in Tables 5 and 6. In this case, as a result of the evaluation of the discretionary fiscal policy practices in Türkiye for the period 1990-2020 as a whole, with the ARDL analysis, statistically significant results were obtained, showing that they are counter-cyclical.

6. Conclusion and Discussion

It is necessary to approach each condition with suspicion and accept that there is no general truth about any subject in economics. In this context, most studies examining the cyclicity of fiscal policy argue that fiscal policy practices should be designed to have a counter-cyclical structure. On the other hand, theoretical and empirical studies argue that pro-cyclical practices are not necessarily bad or non-optimal (Barro, 1979; Alesina and Tabellini, 2005; Ihori and Kameda, 2018). Undoubtedly, it will not be possible to design the fiscal policy optimally within the "*ceteris paribus*" assumptions. For this reason, it is crucial to understand the economy's current conditions by considering the different aspects that make up the total economic activity, as suggested by the business cycle theory. Furthermore, to create the optimal fiscal policy combination, it is necessary to plan the timing of the appropriate steps within the possibilities rather than the unrealistic propositions. Otherwise, the results of the policy to be implemented will not be able to provide the desired level of efficiency in terms of macroeconomics. In order to realize all these propositions, as Schumpeter (1923) stated, business cycles should be carefully examined.

One of the biggest problems in researching the cyclical movements of fiscal policy is determining the robust and reliable variables to represent the fiscal policy. In the empirical literature, there is no

consensus on which variable should be derived from the indicator that will represent the current state of the public sector. At this stage, it is seen that the dependent variable is mainly the primary budget balance, public debt stock, public expenditure, and public revenues. Within the scope of the study, the size of the primary budget balance was preferred because it indicates the direction of the discretionary fiscal policy in the absence of interest obligations and the overall fiscal system (Lane, 2003; Manasse, 2006; Fatas and Mihov, 2009; Égert, 2014; Martorano, 2018). As a result of the analysis, the estimated coefficient for the output gap was determined positive. The positive coefficient is accepted as a counter-cyclical fiscal policy (Lane, 2003: 2664; Fatas and Mihov, 2009; Telatar and Turan, 2013; Turan, 2013; Égert, 2014; Martorano, 2018). The theoretical explanation of this result can be expressed very simply: If the coefficient is positive, the primary budget balance (%GDP) with respect to the output gap, primary balance rises more than the output gap in boom periods. On the contrary primary balance diminish more than the output gap in bust periods (Manasse, 2006; Fatas and Mihov, 2009). Therefore, the findings obtained as a result of the analysis have determined that counter-cyclical fiscal policy practices, as suggested by the Keynesian view, are preferred in Turkiye.

The results we obtained are consistent with Turan (2013) and Turan and Telatar (2013), which are the subject of Turkiye in the literature, and we prefer the same dependent variable. However, is the opposite of Frankel et al. (2013), examining pro-cyclical developing countries using the dependent variable of public expenditure (%GDP) and preferring panel data techniques. Although it has been determined that the fiscal policy in Turkiye has a counter-cyclical structure, the findings do not represent an obvious success. The partial success of fiscal policy in Turkiye is faced with the problem of sustainability. In this context, according to Ozatay and Sak (2019), applying counter-cyclical policies makes it impossible to use a country's entire fiscal space. In this sense, it is understood that the fiscal space needed for counter-cyclical policies also shrinks. For this reason, risks arise regarding the sustainability of counter-cyclical fiscal policy practices.

In addition, T.C. Central Bank's difference between the net assets and the net foreign exchange position is increasing, creating a significant exchange rate fragility in terms of public external debt, external debt service, and the balance of payment deficits. The high difference in net assets and net foreign exchange position also makes the real sector fragile to exchange rate shocks because companies with a high foreign exchange short position are incapable of maneuvering in the face of exchange rate shocks (Ozatay, 2019: 282). In this sense, the deepened financial sector, high institutional quality, and vital real sector components of the financial field, which can be expressed as the most basic requirement of counter-cyclical policies, have rapidly lost their strength in the last five years. Additionally, the fiscal structure, which has deteriorated further with the pandemic, loses its maneuverability even faster due to the new monetary and fiscal policies put into power. Unfortunately, these negative effects restrict the ability to implement counter-cyclical policies. The narrowing fiscal space for maneuver signals that Turkiye will have to resort to pro-cyclical policy practices in the near future.

It is possible to develop some policy recommendations on the factors that probably help to increase the sustainability of the counter-cyclical structure of the fiscal policies implemented in Turkiye. In a way that serves the purpose of contributing to the expansion of the fiscal space. First of all, revenue, expenditure, and borrowing tools of fiscal policy should be considered. For this reason, it is necessary to add instruments for taxing wealth to the tax system and gradually increase its ratio. As taxing wealth in Turkiye was quite limited in the 1990-2020 period, only %1 of GDP. The fact that wealth is not taxed within the scope of economic growth targets also has negative consequences in terms of the income distribution. In addition, the fact that the tax base is not taxed in certain areas also indicates that the tendency of institutional factors to degenerate is high (Talvi and Vegh, 2005; 181). Bringing wealth taxes closer to their optimal size will also reduce the need for public borrowing, which is another

constraining factor in terms of fiscal space. In addition, this action will be an improvement step in terms of the share of indirect-direct taxes in total revenues.

Another phase of expanding the fiscal space in terms of public revenues is related to the informal economy. Increasing public revenues by reducing the tax loss caused by informal economic activities by reaching 25% of GDP is crucial (Elgin, Kose, Ohnsorge and Yu, 2021). Additionally, fiscal discipline is required to ensure that public expenditures and borrowing management is aligned with macroeconomic targets. In this regard, it is vital to implement new fiscal rules that determine the limitations and sources of public borrowing and expenditure. Implementation of fiscal discipline will limit public expenditures and public borrowing, apart from its positive effects on public revenues (Demir and Inan, 2011; 25). In this respect, fiscal discipline is a very important resource for establishing real economic growth rather than nominal economic growth, that is, for graduating from pro-cyclical schools. On the other hand, implement reforms to improve institutional quality to reduce state-based vulnerabilities in the international and national arena for encouraging saving and investing. In this context, the most important reform is establishing the rule of law. Ensuring the rule of law is key to accessing international markets and mobilizing foreign capital. In addition, political corruption and accountability are important for the country's economy both in terms of controlling the risk perception of the real sector as well as in the process leading to fiscal discipline.

Finally, considering the macroeconomic fragilities, establishing incentive mechanisms to encourage the increase of low savings levels throughout the economy and thus create cheap and abundant resources for public and private investments. Furthermore, it is essential to reconsider postponing large public expenditures in these challenging periods, except to prevent wastefulness in public expenditures and substantial infrastructure investment expenditures. In this way, it will be possible to re-establish some of the lost fiscal space. Additionally, since market economies are shaped according to expectations, it is crucial to prefer predictable and trustworthy fiscal policy practices in the short and long term. Ultimately, for Türkiye, the cyclicity of automatic stabilizing fiscal policy instruments and the necessity of examining the effects of fiscal rules and institutional quality on cyclical movement are important research subjects for future studies.

Authors Contribution Statement

Ethics approval and consent to participate

Not applicable.

Competing interest

The authors declare no competing interests.

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APPENDIX

Appendix 1: Summary of empirical literature

| Author(s) | Sample | Sample | Period | Method | Findings |
|----------------------------|--|----------|-----------|--|--|
| 1997 Gavin & Perotti | Latin America Developed Countries | 18 13 | 1968-1995 | Panel Data | Pro-Cyclical in Latin American Countries. Counter-Cyclical in Developed Countries. |
| 1998 Lane | Ireland | 1 | 1980-1996 | Time Series | Pro-cyclical |
| 2003 Lane | OECD | 22 | 1960-1998 | Panel Data | The current public expenditures are counter-cyclical. The primary budget balance and total public expenditures have a pro- cyclical structure. Political corruption is exacerbating pro-cyclicality. |
| 2003 Gali & Perotti | EU | 11 | 1980-2002 | Panel Data | Maastricht agreement strengthens the counter-cyclical of fiscal policy. |
| 2004 Kaminsky et al. | Developed & Developing Countries | 104 | 1960-2003 | Partial correlation relations | Public expenditures are counter- cyclical in OECD. Public expenditures are pro-cyclical in developing countries. |
| 2005 Talvi &Vegh | Developed Countries Developing Countries | 20 36 | 1970-1994 | Panel Data | Public revenues are a-cyclical in developed countries. Public expenditures in developing countries are pro-cyclical. |
| 2006 Manasse | Developed Countries Developing Countries | 12 37 | 1970-2004 | Multivariate Adaptive Regression Spline (MARS) | Developed countries have a-cyclical structure in periods of contraction and pro-cyclical in periods of expansion. Developing countries have pro- cyclical practices. |
| 2008 Ilzetzki & Vegh | Developed Countries Developing Countries | 22 27 | 1960-2006 | GMM VAR | Developing countries have Pro- cyclical implementations. The fiscal policy might also have a pro-cyclical nature in high-income countries. |
| 2008 Alesina et al., | Developed Countries Developing Countries | 24 59 | 1960-2003 | Panel Data | Pro-cyclical fiscal policy practices are more common in economies with high corruption and political corruption levels. |
| 2008 Carmignani | Developing Countries Africa | 83 34 | 1990-2007 | G-OLS Panel Data | Africa Countries have Pro and a- cyclical practices. Developing countries have Pro- cyclical implementations. |
| 2009 Lledó et al., | Sub Saharan Africa Developed Countries | 44 33 | 1970–2008 | SYS-GMM Diff-GMM | Sub-Saharan African Countries are strongly pro-cyclical. Developing countries are moderately pro-cyclical. |

| | | | | | |
|---------------------------|--|-----|------------------|--|--|
| | Developing Countries | 97 | | | Political institutions did not have a statistically significant effect on the direction of the cyclical movements of the fiscal policy. |
| 2009 Fatas & Mihov | OECD | 22 | 1970-2007 | Panel Data | The USA implements Counter-cyclical fiscal policy; however, the rest of the sample have pro-cyclical practices. |
| 2009 Garcia et al., | EU | 11 | 1984-2005 | G-OLS SUR | Before, the Maastricht agreement had a pro-cyclical structure The level of pro-cyclicality decreased after the Maastricht agreement. |
| 2010 Candelon et al., | EU | 11 | 1980-2004 | GMM IV | Maastricht agreement did not affect the pro-cyclical profile of the discretionary fiscal policy practices. |
| 2013 Strawczynski & Zeira | Developing Countries | 23 | 1960-2006 | GMM | Public investment expenditures are pro-cyclical for developed countries. Total public expenditures and transfer expenditures are pro-cyclical for developing countries. |
| | Developed Countries | 22 | | | |
| 2013 Turan | Turkey | 1 | 1998:12012:3 | Time Series | Counter-cyclical |
| 2013 Turan & Telatar | Turkey | 1 | 1987:1 2008:3 | Time Series | Counter-cyclical |
| 2014 Jha et al., | Developing Countries | 10 | 1977:3 2009:2 | SVAR | Tax reduction instruments might have more effective than public expenditures in combating business cycles. |
| 2014 Égert | OECD | 25 | 1970-2008 | Sys-GMM | The fiscal policy is counter-cyclical when the discretionary and automatic stabilizing instruments are evaluated. Countries with a Budget deficit/GDP ratio of more than 3% and a public debt stock/GDP ratio of more than 90% are more prone to pro-cyclical policy implementations. |
| 2014 Klemm | Latin America | 19 | 1990-2012 | Sys-GMM | Pro-Cyclical. |
| 2015 Carneiro & Garrido | Developing & under-developed Countries | 134 | 1980-2012 | Unbalanced Panel Data | Counter-cyclical policy practices are encountered in more and more developing countries. A high level of institutional quality also increases the applicability of counter-cyclical fiscal policies. |
| | Developed Countries | 46 | | | |
| 2017 Bashar et al., | OECD | 11 | 1960-2011 | Multivariate unobserved components model (MUCM). | 7 of 11 countries have counter-cyclical fiscal policies. |

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|---------------------------|---------------------------------|----------|-----------------------------|----------------------------------|---|
| 2018 Martorano | Latin America | 14 | 1990-2005 | Sys-GMM | The power of Latin American countries to prefer counter-cyclical fiscal policy practices increases parallel to fiscal space. |
| 2018 Ihori & Kameda | OECD Developing Countries | 24 20 | 1960:1- 2016:4 | P-VAR | Pro-Cyclicality is higher in developing countries compared to OECD. |
| 2019 Larch et al., | EU | 28 | 2003-2017 | Real-Time Forecasts Method | The tendency to implement pro-cyclical fiscal policy is high. |
| 2020 Dincă et al., | EU | 26 | 1996-2014 & 1995-2014 | Time Series Sys-GMM | Fiscal policy has a pro-cyclical nature. There is a direct correlational relationship between the degree of political corruption and pro-cyclical policies. |
| 2022 Gootjes & Haan | EU | 27 | 2000-2015 | GMM | Pro-cyclical. |