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THE EVOLUTION OF TURKEY'S FINANCIAL STABILITY (2002-2018): A COMPREHENSIVE STUDY

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Abstract:
In an era of increasing globalization and technological integration, the dynamics of economies, both emerging and developed, are subject to diverse economic imbalances. The need to maintain macroeconomic equilibrium has become paramount in this evolving landscape, and this need has given rise to the concept of sustainability. Sustainability, while lacking a precise definition in economic literature, generally encapsulates the notion of sustaining economic continuity and providing the necessary sufficiency for its perpetuation. It encompasses not only the stability of macroeconomic indicators but also the harmonious interaction and coherence among these indicators. Fiscal sustainability, as the earliest concept linked to economic sustainability, plays a pivotal role in this context. This abstract explores the multifaceted facets of economic sustainability, particularly in the context of fiscal sustainability.

Keywords: Economic Sustainability, Fiscal Sustainability, Globalization, Macroeconomic Balance, Integration

1. Introduction

Today, many countries in the world implement free market economies, and the economies of countries and markets are integrated with the advancements in globalization and technology. This process has caused different economic balances in emerged and emerging economies. These conditions of economic balance do not only manifest themselves within emerged and emerging economies; they can differ between these countries, as well. In this context, preserving the macroeconomic balance of these countries is as important as providing it. Preserving macroeconomic balance leads us to the concept of sustainability.

Sustainability is a concept often used even though it does not have a clear definition in the economics literature. This concept generally defines the provision of continuity of the economy and enough sufficiency to ensure this continuity. From this perspective, sustainability can be interpreted as not only the stability of a macro indicator but also the balance and compatibility between macro indicators. The first concept to have appeared related to economic sustainability is fiscal sustainability.

Fiscal sustainability is a concept often used in the economics literature and was especially important in the planning of the economic policies of the 1990s, but it does not have a clear definition. Buiter (1983) defined fiscal sustainability as the implementing of policies that stabilize the net value of the budget deficit ratio, which is the difference between budget revenue and budget expense, to the GDP rate. On the other hand, Blanchard et al. (1991) defined fiscal sustainability as the convergence of the Public Debt/GNP ratio to the starting level and being able to meet loans with public revenue. According to Edwards and Vergara (2002), if the Public Debt/GDP ratio is stable and consistent with the total demand in an economy, then fiscal sustainability is present in that economy. Calculating the primary balance of the public sector that is compatible with a sustainable and stable Public Debt/GDP ratio is an important element in the sustainability analysis of the public sector. Izquierdo and Panizza (2003) defined fiscal sustainability as a country's sufficiency to meet the budget deficit. Balanced budget conditions can be provided with different methods. Public debt is one of these methods and it is widely used by many countries.

Therefore, budget constraints alone are not sufficient conditions for the provision of fiscal sustainability. In light of these definitions, it can be said that fiscal sustainability focuses on two main points: sustainability of the budget balance and sustainability of external debt stock. The sustainability of the External Debt Stock/GDP ratio in the long term is based on the fact that this deficit is not covered by higher interest rates and thus inflation. Therefore, in addition to a reasonable course of external debt stock, financial sustainability requires a macroeconomic environment that supports stable economic growth, stable money and credit flow, and openness to foreign markets. In other words, coordination is needed between growth factors and money policy in order to ensure a sustainability level that will support all macroeconomic goals of the economy. In an economy that has a low Debt/GDP ratio, a low real interest rate and high seigniorage revenue can be provided in an environment of high inflation. In an economy with a high Debt/GDP ratio, on the other hand, sustainability can be ensured with high real economic growth and other stable variables (Fraser, 1999).

Emerging economies resort to external borrowing due to the fact that they cannot finance economic development without an external source of loans, importing intermediate and investment goods and meeting public expenses with public revenue; the costs of internal borrowing are also high. Therefore, a healthy debt structure is vital to an emerging economy. As Burnside (2005) stated, fiscal sustainability is the power of meeting the debt load of the public authority as well as preserving the same set of policies. Accordingly, protecting the same set of policies requires the correct identification of the factors that cause fiscal deficit.

Whether this deficit stems from public savings deficit or private sector savings deficit, the financing of this debt through borrowing is legitimized in today's economies as long as the debt service is sustainable. Since a public savings deficit means a budget deficit, or in other words the difference between public revenue and public expense, the concept of budget deficit sustainability is sometimes used in the literature instead of fiscal sustainability (Karatay Gögül, 2016, p. 90). However, following the privatization practices in emerging economies, public sector involvement in the economy decreased as private sector investment percentages in manufacturing and services increased. In these countries, the financing needed for new investments of the private sector is financed with internal borrowing and/or external borrowing. Therefore, private sector borrowing is as important as public borrowing for the concept of sustainability. Importing public budget deficit stock in the provision of internal funds may negatively affect the investments of the private sector by restricting internal fund provision. This situation, which is known as "crowding out," may lead the private sector to use more external sources of loans. Savings deficits in emerging economies make it difficult to provide resources. Furthermore, problems of high inflation in these economies cause an increase in interest rates. Access to low-cost external sources is important. Therefore, both the public sector and the private sector seek external resources.

Even though external debts provide resource transfer at the moment they are obtained, resource loss is evident when the interest rate and the capital are repaid. Thus, it is necessary to consider how much the loan contributes to the production potential of the country when the benefit and cost of the external debt are analyzed (Karluk, 2002, p. 147). Sustainability of the external debts makes the balance between the real interest rate being paid and the real growth rate of the economy important. The integration of financial markets led to the free movement of portfolio investments made to countries. It is seen that emerging economies cannot take long-term and fixed-rate loans with national currency in each period. Countries with insufficient internal savings are required to offer a sufficient real return in order to attract portfolio investments. However, both external borrowing and the flexibility of the portfolio investments bring about currency and interest risks.

Sustainability of the debt stock becomes harder as the ratio of the debt stock to GDP increases. Once more, when the real interest rate is higher than the growth rate, the ratio of the debt stock to GDP will increase mathematically. The primary surplus of the budget is an important nominal anchor in terms of public finance. Even though the real interest rate is higher than the growth rate, public finance can prevent the increase of the public debt stock by having a primary surplus. However, when both the real interest rate is higher than the growth rate and public finance has a

primary surplus, the ratio of the debt burden to GDP will increase rapidly and the economy of the country will be fragile (Karatay Gögül, 2016).

The primary surplus of the budget is a nominal anchor for public finance while having higher real interest rates than growth rates makes it difficult to maintain financial sustainability of the private sector. This also increases the cost of internal borrowing for the private sector. Resource provision is easier for large companies, while this process is harder for small and medium-sized companies.

Furthermore, an inflow of foreign capital to the country is needed to sustain external debts. The most efficient way to ensure this is to increase net exports. Utilizing the finance provided by loans, especially in the sectors related to exports, contributes to the conversion of external debt. When all of these conditions are taken into account, the concept of sustainability should be considered as not only fiscal sustainability but also as financial sustainability. The macroeconomic balance achieved with both the public and the private sector can be used to define financial sustainability. For this matter, both public and private sector loan usages and the sustainability of these debts are vital.

Turkey is one of the aforementioned countries for which borrowing is seen as a problem. Sustainability of the debt stock particularly came into prominence after the economic crisis of 2001 and it has remained one of the most important problems on the agenda since then (Göktan, 2008). After the economic crisis of 2001, attempts were made to control fiscal discipline, and the nominal anchor of primary surplus was used as a control mechanism. However, the current deficit increased swiftly after this period, bringing about the need for financing and providing continuity in economic growth due to the fact that manufacturing requires imports. Privatization gained momentum and the private sector started to replace the public sector in the economy. Low internal savings and in particular high real interest rates until 2008 caused an increase in the external debt level of the private sector. The global economic crisis after 2008 and global liquidity expansion enabled implementation of more flexible policies. The debt sustainability of the emerging economies began to be questioned after statements towards a global consolidation period and the steps to be followed were explained in 2017. All of these developments made the continuity of financial sustainability important for Turkey, as well.

Many studies have employed stationarity series tests and co-integration tests to empirically measure fiscal sustainability. The application of stationarity tests is a standard approach for testing the sustainability of budget deficits. This method was first used in the works of Hamilton and Flavin (1986), Trehan and Walsh (1988, 1991), and Ahmed and Rogers (1995) (Şen, Sağbaş, & Keskin, 2010, p. 111). The variables examined in stationarity test methods are analyzed by applying unit root tests. If series are stationary in the test results, then it is concluded that the relevant series have sustainability.

In this study, some variables used for examining fiscal sustainability and some variables that may indicate financial sustainability were employed to analyze financial sustainability in Turkey. The variables of EU-Defined General Government Debt Stock/GDP, Public Net Debt Stock/GDP, Net External Debt Stock/GDP, Nonfinancial Private Sector Loan Usage/GDP, GDP Growth, Real Interest Rate of Commercial Credits, and Real Interest Rate of Government Domestic Debt Securities were analyzed with stationarity tests and the levels of difference between the variables of GDP Growth and Real Interest Rate of Commercial Credits and Real Interest Rate of Government Domestic Debt Securities were examined.

2. Literature

Hamilton and Flavin (1986) examined the budget policies of the period between 1960 and 1984 in the USA with an approach that they developed and found results suggesting that sustainability was ensured. In the work conducted by Kremers (1988), following that of Hamilton and Flavin (1986), it was indicated that an insufficient gap lag was used in the regression equation. Kremers repeated the analysis for the same period and claimed that the budget deficits of the USA were unsustainable. The method developed by Hamilton and Flavin (1986) was also employed in different countries: in Canada by Smith and Zin (1991); in Italy by Baglioni and Cherubini (1993); and in Greece by Makyrdakis, Tzavalis, and Belfoussias (1999). These authors all reached results indicating unsustainable budget

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deficits. Feve and Henin (2000) examined the fiscal sustainability of G-7 countries with unit root tests and found that fiscal sustainability was not ensured in some of those countries.

Croce and Juan-Ramon (2003) carried out fiscal sustainability research in their study that included a group of countries and found that Turkey, Argentina, and Brazil did not have sustainability in the 1990s while Belgium, Indonesia, Ireland, and Mexico did have fiscal sustainability in that period. Ono (2008), in his work on the fiscal sustainability of G-7 countries, employed both standard unit root tests and unit root tests depending on nonlinear time series for sustainability research and found results in favor of fiscal sustainability for these countries, except for Japan. Studies conducted on Turkey have generally shown that the economy of Turkey does not have fiscal sustainability. When we look at the studies conducted on the fiscal sustainability of Turkey, those of Göktan (2008) and Aslan (2009) hold an important place in the literature. Göktan (2008) used quarterly data of 1999-2006 and examined the fiscal sustainability of Turkey in terms of debt stock, debt stock/GDP, primary balance, and primary balance/GDP criteria with both ADF unit root tests and co-integration analysis. The results found by Göktan (2008) showed that Turkey did not have fiscal sustainability in the examined period.

On the other hand, Aslan examined the sustainability of the budget deficits on both a monthly (2006:1, 2009:6) and a yearly (1980-2005) basis and employed ADF unit root tests and co-integration analysis. The findings showed that budget deficits in Turkey were sustainable when analyzed on a monthly basis, but not on a yearly basis. In both analyses, standard ADF unit root tests and co-integration analysis were employed and non-consistent results were found. Ucal and Alıcı (2010) used quarterly data of the periods of 1989:1-2000:12, 1989:1-2008:12, and 2001:12008:2 and examined fiscal sustainability with budget revenues, budget expenses, interest payments, and debt stock data by employing unit root and co-integration tests. They found that fiscal sustainability was weak in the periods of 1989:1-2000:12 and 1989:1-2008:12, while it was strong in 2001:1-2008:12. Şen, Sağbaş, and Keskin (2010) used yearly data of 1975-2007 and examined fiscal sustainability with the variables of budget deficit, debt stock, budget revenues, and budget expenses by employing both ADF and PP unit root tests and a co-integration test. They found that fiscal sustainability was not ensured in the period of 1975-2007. Hepsağ (2011) used the quarterly data of 1990:1-2008:4 and examined fiscal sustainability with Debt Stock/GDP data by employing a periodic unit root test with structural break and found that fiscal sustainability was not ensured.

3. Data and Methodology

In this study, quarterly data on the variables of EU-Defined General Government Debt Stock/GDP, Public Net Debt Stock/GDP, Net External Debt Stock/GDP, Non-financial Private Sector Loan Usage/GDP, GDP Growth, Real Interest Rates of Commercial Credits, and Real Interest Rate of Government Domestic Debt Securities/GDP were used to examine financial sustainability. The EU-Defined General Government Debt Stock/GDP data were limited to the period of 2006:1-2018:4, since only data for this period were published; all the other data span the period of 2002:1-2018:4. Table 1 shows the variables used in this study, their abbreviations, and the sources of the obtained data.

Table 1. Variable Description

Variable	Definition	Source
NFPrivateSectorLoan	Non-financial Private Sector Loan Usage / GDP	The Central Bank of The Republic of Turkey
EUDefinedGovDeptStock	EU-Defined General Government Debt Stock / GDP	Ministry of Treasury and Finance
PubNetDeptStock	Public Net Dept Stock / GDP	Ministry of Treasury and Finance
NetExtDpetStock	Net External Debt Stock / GDP	Ministry of Treasury and Finance
GDPGrowth	GDP Growth	Turkish Statistical Institute

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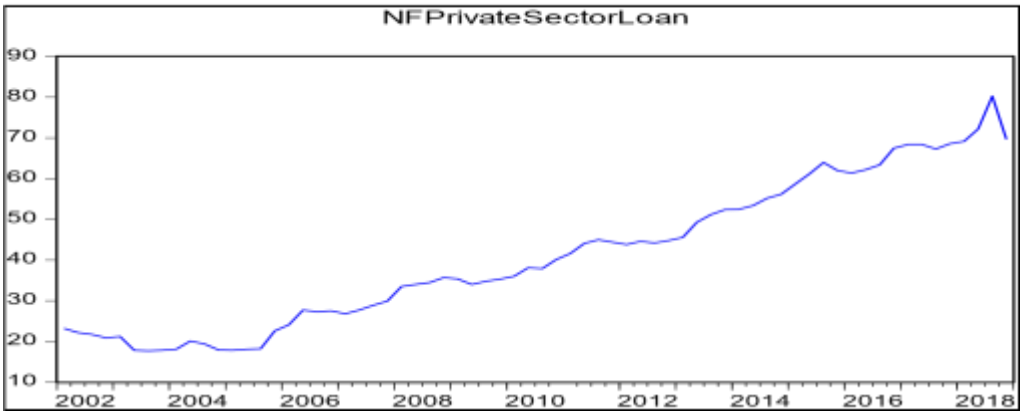
RIRComCredits	Real Interest Rate of Commercial Credits	Generated from data of Turkish Statistical Institute and The Central Bank of The Republic of Turkey
RIRGovDomDeptSec	Real Interest Rate of Government Domestic Dept Securities	Generated from data of Turkish Statistical Institute and Bloomberg Terminal

Even though Schwarz (1978) claimed that the ADF test is the best unit root test, Campbell and Perron (1991) proved that ADF tests are liable to lag length and suggested that tests be chosen in accordance with suitable lag lengths. Furthermore, structural breaks interpreted as changes in the parameter can affect the intercept term and slope parameter in the time series for the subperiods. The probability of faulty results increases in unit root tests carried out without taking these breaks into account. Perron (1989) suggested adding structural breaks into unit root tests with the help of dummy variables as a solution for this problem. Perron (1989) determined the date break as external, but later, approaching this situation critically, tests were developed in which date break was determined as internal. Zivot and Andrews (1992) suggested unit root tests that focused on an internal single break. Even though tests that enabled multiple breaks were developed later on, tests with more than one break may cause faulty results since they show unit root series as stationary.

Therefore, the stationarity of the series was examined in this study by employing the ADF unit root test with the Zivot-Andrews unit root test and the financial sustainability of Turkey was examined with these methods. The EViews econometrics program was used in the unit root tests.

The following graphics show the variables used in the study.

Graph 1. NFPrivateSectorLoan



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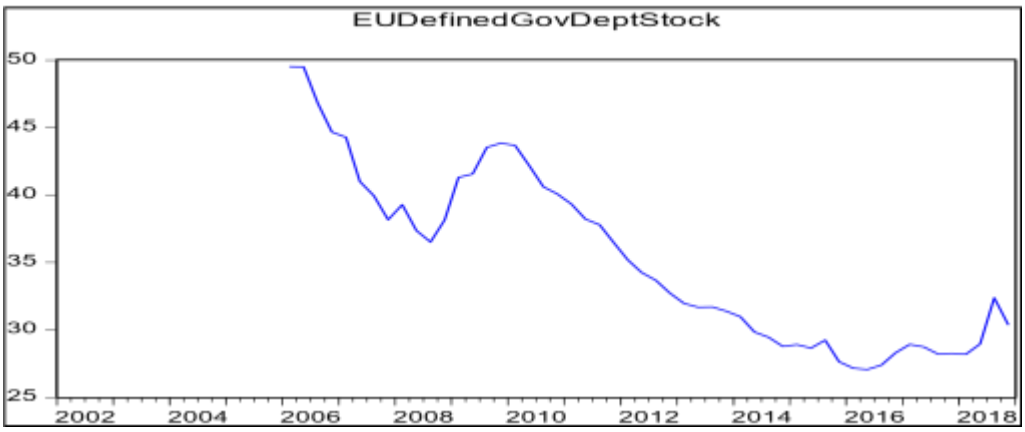
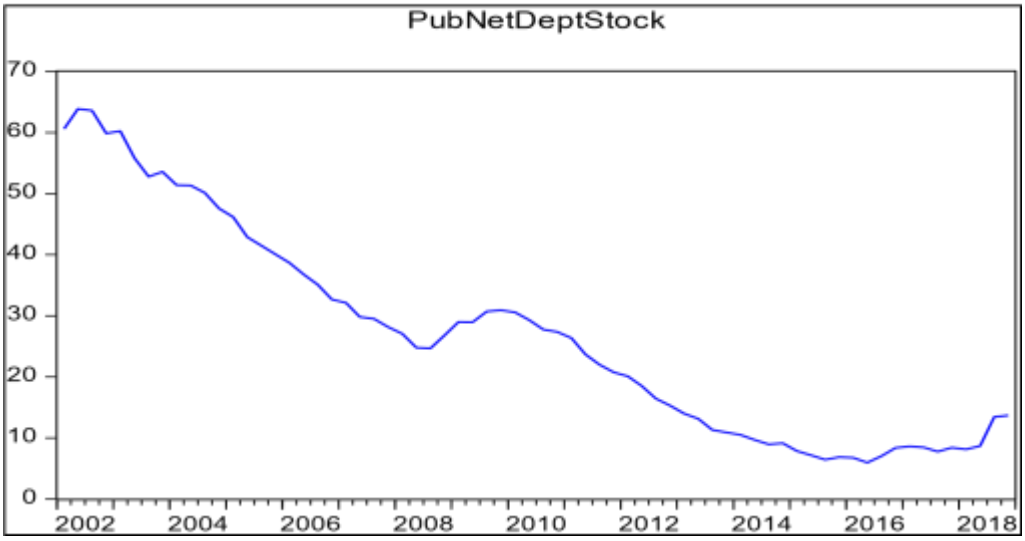
Graph 2. EUDefinedGovDeptStock



Graph 3. PubNetDeptStock



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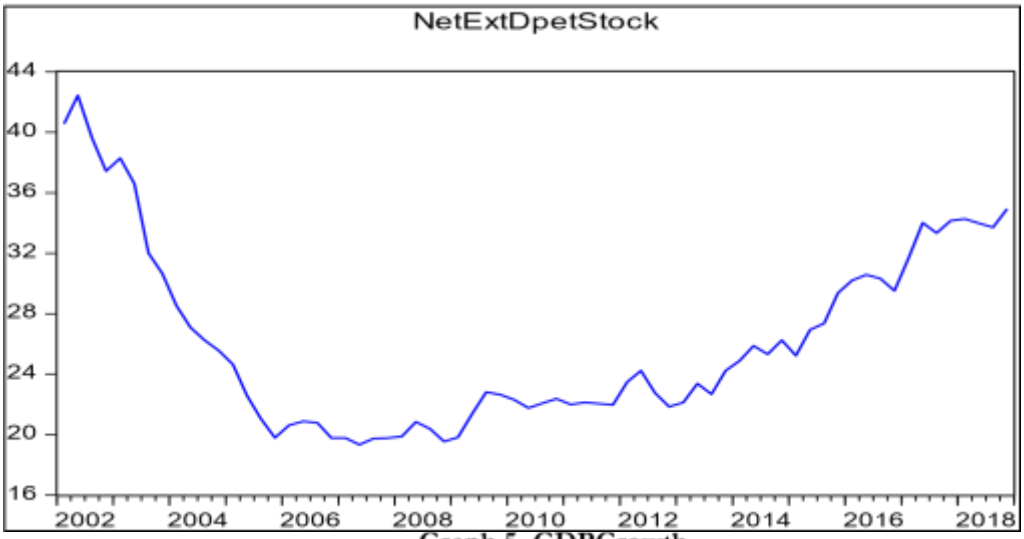
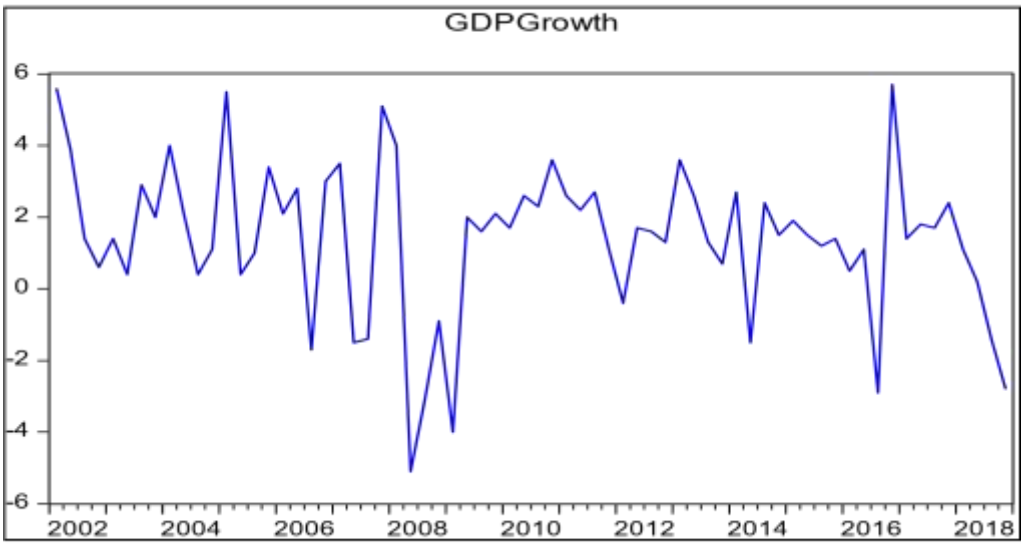
Graph 4. NetExtDpetStock



Graph 5. GDPGrowth



Graph 6. RIRComCredits

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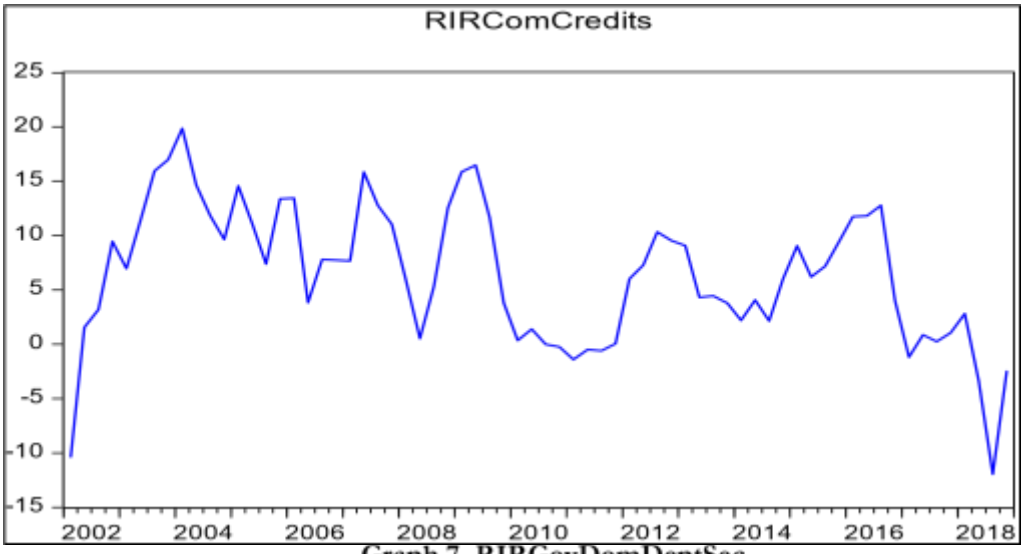
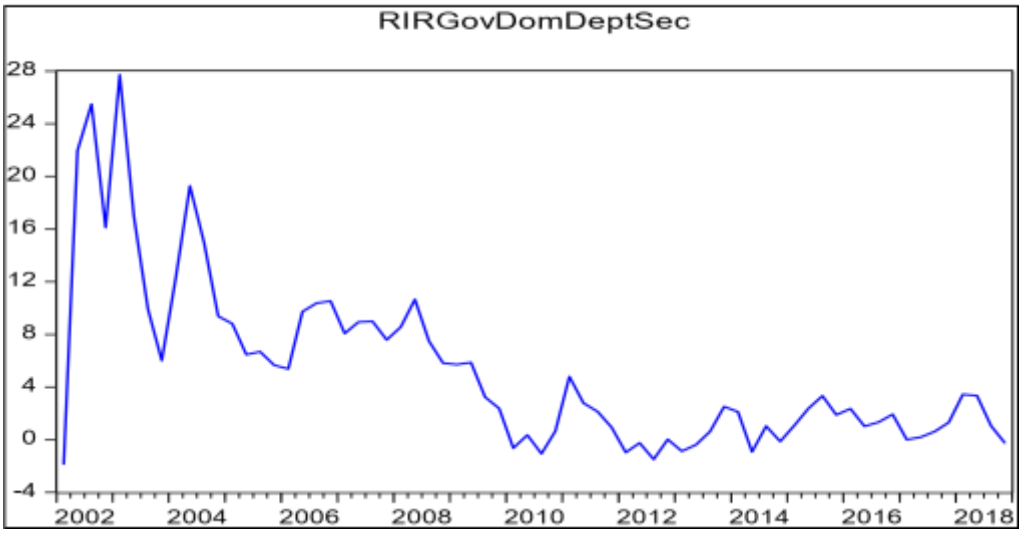


Graph 7. RIRGovDomDeptSec



4. Results and Discussion

First, ADF unit root tests were carried out on variables in this study and the results were recorded. Stationary levels of the variables were evaluated with 5% significance in the ADF tests. The Schwarz information criterion was used to determine lag length in unit root tests.

According to the ADF unit root test results, the variables of GDP Growth, Real Interest Rate of Commercial Credits, and Real Interest Rate of Government Domestic Debt Securities are stationary. Non-financial Private Sector Loan Usage/GDP is not stationary in the intercept model, while it is stationary in the trend and intercept model. EUDefined General Government Debt Stock/GDP is not stationary in the intercept and trend and intercept models. Public Net Debt Stock/GDP is stationary in the intercept model, while it is not stationary in the trend and intercept model. Finally, the variable of Net External Debt Stock/GDP is not stationary in either the intercept or the trend and intercept model. Table 2 shows the ADF unit root test results of the variables.

Table 2. ADF Unit Root Test Results

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Unit Root Test	Variable	Test Statistic	MacKinnon %5 Test Critical Value	Result
ADF (Intercept)	NFPrivateSectorLoan	0,278969	-2,905519	Non-stationary
	EUDefinedGovDeptStock	-2,369767	-2,919952	Non-stationary
	PubNetDeptStock	-3,408658	-2,90621	Stationary
	NetExtDeptStock	-1,954706	-2,905519	Non-stationary
	GDPGrowth	-7,053619	-2,905519	Stationary
	RIRComCredits	-3,512247	-2,905519	Stationary
	RIRGovDomDeptSec	-2,963208	-2,905519	Stationary
ADF (Trend and Intercept)	NFPrivateSectorLoan	-3,852173	-3,478305	Stationary
	EUDefinedGovDeptStock	-2,251045	-3,502373	Non-stationary
	PubNetDeptStock	-0,520477	-3,479367	Non-stationary
	NetExtDeptStock	-2,330987	-3,478305	Non-stationary
	GDPGrowth	-7,112413	-3,478305	Stationary
	RIRComCredits	-4,045669	-3,479367	Stationary
	RIRGovDomDeptSec	-5,687251	-3,478305	Stationary

However, as mentioned before, carrying out unit root tests without taking the structural breaks of the variables into account may cause faulty results. Therefore, Zivot-Andrews unit root tests that take the structural breaks of the variables into account were employed. Table 3 shows the Zivot-Andrews unit root test results.

Table 3. Zivot-Andrews Unit Root Test Results

Unit Root Test	Variable	Test Statistic	ZA %5 Test Critical Value	Result
ZA (Intercept)	NFPrivateSectorLoan	-4,487321	-4,93	Non-stationary
	EUDefinedGovDeptStock	-3,272866	-4,93	Non-stationary
	PubNetDeptStock	-1,494329	-4,93	Non-stationary
	NetExtDeptStock	-3,867323	-4,93	Non-stationary
	GDPGrowth	-7,86777	-4,93	Stationary
	RIRComCredits	-4,454673	-4,93	Non-stationary
	RIRGovDomDeptSec	-5,446295	-4,93	Stationary
ZA (Trend)	NFPrivateSectorLoan	-4,508125	-4,42	Stationary
	EUDefinedGovDeptStock	-3,048714	-4,42	Non-stationary

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	PubNetDeptStock	-2,459687	-4,42	Non-stationary
	NetExtDeptStock	none	none	
	GDPGrowth	-7,14999	-4,42	Stationary
	RIRComCredits	-4,221672	-4,42	Non-stationary
	RIRGovDomDeptSec	-4,876577	-4,42	Stationary
ZA (Intercept and Trend)	NFPrivateSectorLoan	-4,510362	-5,08	Non-stationary
	EUDefinedGovDeptStock	-3,242678	-5,08	Non-stationary
	PubNetDeptStock	-2,448594	-5,08	Non-stationary
	NetExtDeptStock	-3,398871	-5,08	Non-stationary
	GDPGrowth	-8,029259	-5,08	Stationary
	RIRComCredits	-4,630437	-5,08	Non-stationary
	RIRGovDomDeptSec	-5,620651	-5,08	Stationary

According to the Zivot-Andrews unit root test results, the variables of GDP Growth and Real Interest Rate of Government Domestic Debt Securities are stationary in all three models. Non-financial Private Sector Loan Usage/GDP is not stationary in the intercept model and trend and intercept model, while it is stationary in the trend model. EU-Defined General Government Debt Stock/GDP is not stationary in all three models. Public Net Debt Stock/GDP is not stationary in all three models. The results of Net External Debt Stock/GDP are not stationary in the intercept and trend and intercept models (an error was obtained in the test results of the trend model). Finally, the variable of Real Interest Rate of Commercial Credits is not stationary in all three models.

According to the results of both unit root tests, the variables of EU-Defined General Government Debt Stock/GDP and Net External Debt Stock/GDP are not stationary. In particular, the Net External Debt Stock/GDP variable is not stationary in all tests and this shows that the external debt stock is not sustainable. EU-Defined General Government Debt Stock/GDP is also not stationary in the tests. However, when we examine the graph for this variable, we can see that it has a downward trend.

The variable of Public Net Debt Stock/GDP is not stationary in many of the test results. When we examine the graph related to this variable, it is seen that it has a decreasing tendency, except for the increases in 2008 and 2018. The variable of Non-financial Private Sector Loan Usage/GDP is not stationary in either of the Zivot-Andrews test results. When we examine the graph related to this variable, non-financial private sector loan usage has had an increasing tendency ever since 2005.

According to the results of both unit root tests, GDP Growth and Real Interest Rate of Government Domestic Debt Securities are stationary. Real Interest Rate of Commercial Credits is stationary in the ADF tests while it is not so in the Zivot-Andrews tests. As mentioned above, the levels of differences between real interest rates and GDP growth are vital in the examination of financial sustainability.

When we examine the level of difference between GDP Growth and Real Interest Rate of Government
Domestic Debt Securities in Graph 8, we can see that Real Interest Rate of Government Domestic Debt Securities was higher than the growth rates between 2002 and the end of 2009, but the difference was balanced in 2010. When we examine Graph 3, we can see that the public net debt stock had a decreasing tendency until 2008; similarly, in Graph 4, the Net External Debt Stock variable has a decreasing tendency until 2006 and it is balanced between the years of 2006 and 2008. In this period, high real interest rates were applied in public internal borrowing, decreasing the net debt stock. After 2010, balance was restored between Real Interest Rate of Government Domestic Debt Securities and the growth rate.

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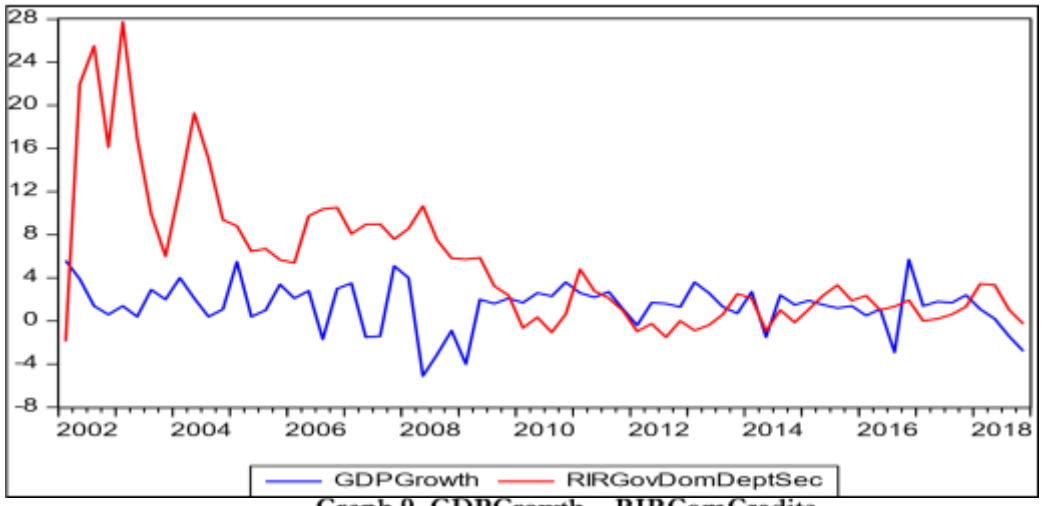
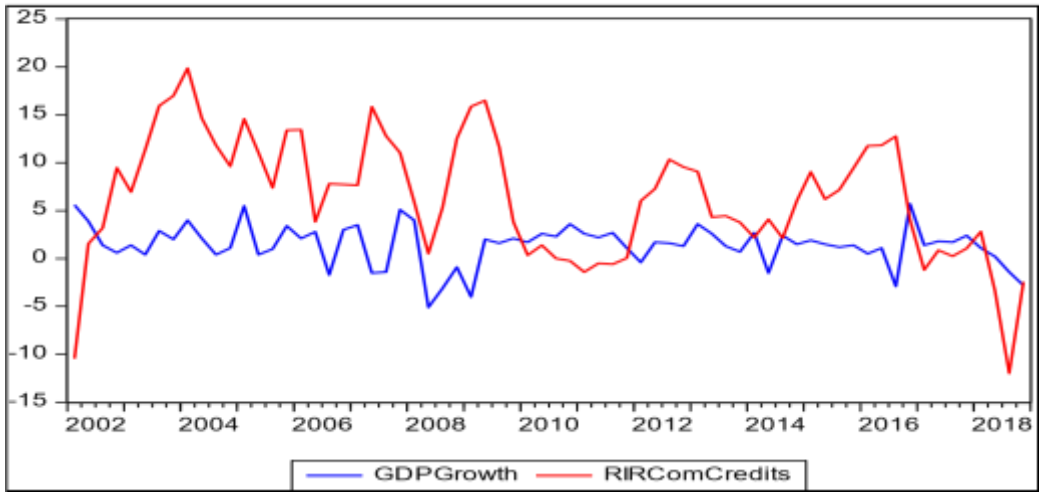
Graph 8. GDPGrowth – RIRGovDomDeptSec



Graph 9. GDPGrowth – RIRComCredits



When we examine the level of difference between the variables of GDP Growth and Real Interest Rate of Commercial Credits in Graph 9, we can see that the real interest rate of commercial credit is higher than the growth rate and there is no balance, except in some periods. After 2005 (Graph 1), the non-financial private sector's loan usage increased, while net external debt stock increased after 2008 (Graph 4).

5. Conclusion

Discussions on sustainability in Turkey became especially prominent after the 2001 economic crisis. Resource requirements of the private sector became as important as the resource requirements of the public sector. This period not only raised the importance of fiscal sustainability but also brought up the issue of the sustainability of the debts of the private sector. The loan usage of both the public and private sectors and the sustainability of these loans lead us to the concept of financial sustainability. This study examines the concept of sustainability not only as fiscal sustainability but also as financial while previous studies focused solely on fiscal sustainability. This study has used the quarterly data from the years of 2002-2018, analyzed the stationarity of the variables with ADF and Zivot-Andrews unit root tests, and examined the interactions between the variables with graphs. In many studies conducted on fiscal sustainability in Turkey, it was seen that fiscal sustainability is not ensured. According to the

findings of the analysis and examinations of this study, there is no clear positive or negative result on fiscal sustainability, while financial sustainability cannot be ensured.

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