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Discussions on the Growth Efficiency of Expansionary Fiscal Policy via Monetary Policy in Shrinking Periods: Wide Range of Country Analysis

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Abstract

There are many different opinions in the literature that expansionary fiscal policies can be effective on growth during periods of economic contraction. In this study, different approaches to expansionary fiscal policies are examined in terms of the effects and tradeoffs between fiscal expenditures-growth, expansionary tax policies-growth and inflation-growth. The short-term and long-term effects of fiscal policies on growth in 110 countries for the period of 2007-2016 were analyzed, taking into account the expansionary policies of the 2007-2009 period, the effect of the main growth dynamics and the interaction of monetary-fiscal policies. The results show the holistic view and effectiveness.

Keywords

Expansionary Fiscal Policy, Monetary Policy, Growth, Shrinking Period

1. Introduction

There are many different approaches and views in the literature on the effectiveness of expansionary fiscal policies applied in times of economic recession on growth. The aim of this study is to analyze the effectiveness of the implementation of fiscal policy, while bringing up different views on the effectiveness of fiscal policy practices. When examining fiscal policies and their effectiveness, we come across three different issues. These are the effect of fiscal expenditures on growth, the effect of expansionary tax policies on growth, and the effect of emerging or initial inflation on growth with policies. For this reason, in a part of

the study, discussions in the literature on expenditures and growth, tax policies and growth, inflation and growth are included. Within the scope of the analysis, expenditure items, taxes and inflation variables are also included.

In addition to these, it is a fact that the growth efficiency of fiscal policy cannot be evaluated only in terms of policies. The impact of monetary policy becomes as important as fiscal policies. For this reason, within the scope of the analysis, only the effectiveness of the fiscal policy is examined, but in another model, the effectiveness of monetary and fiscal policies is examined together. Although it focuses on the effectiveness of expansionary policies, another fundamental factor is that the state of the structural and main variables that determine the growth of countries also determines policy effectiveness. For this reason, a consolidated analysis was made by including not only expansionary policies but also other main variables such as investment, capital stock, and savings that determine growth in all analyses.

In this study, while determining the variables and scope of analysis, a comprehensive observation was tried to be made by including the main points that came to the fore and discussed in the literature. For this reason, the main points in the literature have also been the subject of the analysis.

The article is organized as follows, in the first part of the article; an extensive literature study was conducted. However, the aim here is to see the relationship between basic expansionary fiscal policies and growth. For this reason, the relationship between tax-growth, fiscal expenditure-growth and inflation-growth is included with discussions in the literature. In the second part, detailed information is given about the research method, methodology and data used. In the third part, it was aimed to find the growth efficiency by examining different models including basic expansionary fiscal policy variables, growth dynamics and monetary policy effects with a comprehensive data set consisting of 110 developed and developing countries.

The main question of the study is to investigate whether fiscal policy expenditures and tax cuts made in times of economic contraction are really effective, under the influence of inflation and basic growth dynamics, and taking into account the interaction with monetary policy. For this reason, the study seeks to answer a detailed question.

In order to reach a comprehensive analysis result, the data set of 110 countries consisting of 55 developed and 55 developing countries was studied. Within the scope of the analysis, basic growth variables, selected financial expenditures, income and corporate tax items, inflation variables are included. In the analyses that include monetary policy, money supply items and policy rates are also used. Within the scope of the analysis, the period of 2007-2016 was taken and while the basic growth dynamics reflect the whole of this period, the period of 2007-2009, which is common to all countries, was determined for expansionary fiscal and monetary variables in order to see the effectiveness of the policies of the shrinking period. The results also synthesize the perspectives in the literature and reflect policy effectiveness in the aggregated country set.

Looking at the results of the analysis, it has been observed that fiscal policy expenditures for 110 countries are not pro-growth in the aggregated effect. The main expenditure items used here are employee expenditures, social expenditures and incentives. This result is considered as an indication that the composition of these expenditure items of countries is not uniform enough to encourage investment and growth. On the other hand, the fact that the expansionary interest policy was the same in all countries supported the growth. The inflationary effect, on the other hand, is seen to be limited. Although it is observed that the capital stock supports growth in all countries, the fact that the growth stemming from the previous period's growth supports other periods shows that the structural soundness of the countries is also effective.

Based on the results of the study, it is evaluated that the composition of expenditures and the level of joint action in resource transfer of countries may be pro-growth as much as expenditures in the growth efficiency of fiscal policies. For this reason, it is considered that resources that can be directly transferred to investment and consumption may be more pro-growth.

2. Discussions on the Growth Efficiency of Expansionary Fiscal Policies

In addition to the views advocating the effectiveness of expansionary fiscal policy on growth, there are also approaches suggesting that it has a limited effect. Almost the majority of the views supporting that growth will be achieved through fiscal policies argue that efficiency will increase if certain conditions are met. On the other hand, it is seen that the approaches with limited effect stand on the growth trade-off that the resulting inflation and budget deficit will cause in the long run. When it is considered in terms of policies, it is thought that examining the subject in terms of tax policy-growth, fiscal expenditure-growth and inflation-growth will shed light on the discussions in terms of policy effectiveness.

2.1. Views on the Relationship between Tax and Growth

In this section, different views on the effectiveness of tax policies, especially expansionary tax policies, on growth will be given. In the literature, besides the approaches that advocate the growth efficiency of expansionary tax policies, there are also opinions that argue they are not effective.

In the Keynesian point of view, expansionary tax policies are given importance because they increase the consumption tendency. According to Keynesians fiscal policy causes a higher change, especially on expectations, rather than the effect that will occur through the interest rate channel. Keynes argues that taxes such as income tax, inheritance tax, capital gains directly affect the consumption tendency. Similarly, increases in taxation for the payment of debts directly affect the consumption channel. For this reason, fiscal policy becomes determinant in the increase of effective demand and thus in supporting growth through

taxes. (Keynes, 2010: p. 89) It is also considered important that the state supports the taxation system in a way that will increase consumption (Keynes, 2010: p. 319).

Post Keynesians gave importance to taxation policy that would not suppress consumption as well as expansionary policies made with public expenditures. Post Keynesians criticize the collection of indirect or direct taxes from the working population as it will limit the purchase of consumer products and create problems in these sectors. For this reason, they advocate collecting taxes from high-income people. Since taxes on profits will limit luxury consumption expenditures, they prevent both imports and inflation in these products. On the other hand, it is argued that making income tax exemptions to the lower income group with a higher consumption tendency would be more pro-growth (Kalecki, 1946: p. 82). According to Kalecki, although taxed profits limit employment growth to some extent, it also prevents inflation due to excessive consumption as it will provide balanced growth. However, while providing the development of necessary industries with expansionary taxation, he also suggested that the increase in demand for some non-essential consumer goods and the increasing inflation should be balanced with taxes that would limit consumption. It is also emphasized that in cases where the sector does not produce by remaining liquid and waits for speculative purposes, taxation for public investments will prevent inflation caused by product scarcity (Kalecki, 1955: pp. 13, 19).

It can be said that the classical point of view does not include the view that expansionary tax policies will be effective. The basic point of view is budget deficits that will be caused by expansionary tax policies like tax incentives and reductions will have to be eliminated through taxation, so it will not have a positive effect on growth in the long run. Due to the fact that the taxes taken from the capital affect production and the taxes taken from the labor force negatively affect consumption after budget deficit, it is argued that the expansionary policy effect will not be pro-growth (Smith, 2015: pp. 767-1085; Ricardo, 2008: p. 165).

The prominent issue within the scope of the monetarist view is the control of expenditures and taxes and the provision of a balanced budget. For this reason, expansionary tax policies were not favored since it was important to provide tax revenue as much as expenditures. On the other hand, the necessity for the progressive income tax system to be well established was also taken into consideration (Friedman, 1948: pp. 2, 3).

In the New Classical approach, it is emphasized that expenditures should be balanced with tax revenues. Since they argued that public expenditures would be pro-growth if they were permanent, they emphasized that taxes should be used as a policy tool that balances expenditures. But here, too, they did not take kindly to the taxation that narrowed consumption, as they were not pro-growth (Baxter & King, 1993).

New Keynesians argued that a change in income and indirect tax composition with the differentiation of tax burden can directly affect economic activity and be pro-growth. They mentioned the studies that reducing indirect taxes and in-

creasing direct taxes can support growth by providing a better balance between inflation and employment (Greenwald et al., 1988: pp. 217-218).

2.2. Views on the Relationship between Fiscal Expenditure and Growth

Narrow debates on the effectiveness of fiscal expenditures on growth differ. The views advocating that expenditures are pro-growth say that the growth that will come through the demand and supply channels is permanent in the presence of certain conditions. On the other hand, when looking at the views that attribute limited impact, it is seen that they emphasize budget deficits and inflation caused by expenditures are not pro-growth in the long run.

From the Keynesian point of view, it is argued that effective demand should also be supported through expenditures in periods when economies shrink. In times of contraction in which employment decreases, investments and growth slowdown, as consumption through incomes also decreases. Keynes argues that in this period, the state's unemployment benefit by giving budget deficits or borrowing should cover the loss in consumption by providing consumption above the income. Thus, investments and employment levels are protected before the process gets worse (Keynes, 2010: pp. 91-92). According to Keynes, it is not very possible to reach the investment level that will provide full employment through the interest rate channel of monetary policy. For this reason, it is necessary to fix the level of interest that will provide investments and to use other ways. Keynes advocates increasing public investment as well (Keynes, 2010: p. 319). For this reason, from a Keynesian point of view, expansionary fiscal policy affects the effective demand through taxes, investments and other regulations (especially in the periods when the marginal efficiency of capital is low and investments stop) while it supports new investments, and in case of achieving full employment level, it supports permanent growth. In the Keynesian perspective, the internal dynamics of the countries have also been defined as a determinant in the policy impact (Keynes, 2010: p. 37).

It is seen that the Post Keynesian perspective gives priority to public expenditures and a larger state structure. In cases where economies shrink, especially due to the spiral of high public and household indebtedness, it is considered necessary to increase public expenditures at the expense of the budget deficit. It is argued that supporting the falling private sector profitability and consumption with public expenditures, especially in periods of payment crises, will provide a faster recovery and prevent the deepening of the contraction (Minsky, 1995). When public expenditures increase, growth is supported through two channels. These are the direct effect of public procurement and indirectly the income-driven increase in the consumption of the labor force. It is assumed that profits and wages increase as output increases (Lopez & Assous, 2010: p. 131). In order for expenditures to support public investments, it has been suggested that tax revenues be provided in a way that does not suppress consumption (Kalecki, 1955: pp. 13, 19). However, according to Post Keynesians, the effects of a growth rate

below or above the natural growth rate that a country can achieve in current technology, population density and capital also differ. It is emphasized that when a growth point above the natural growth rate is reached, the deflation process is entered before the full employment level is reached, while it narrows the current growth more rapidly and brings unemployment along with it. Trying to increase growth after this point brings along the inflationary effect along with the increase in profitability. The inflationary effect, on the other hand, has a contractionary effect on growth since it also limits the consumption and savings of fixed incomes. When a growth rate below the natural growth rate is encouraged, growth occurs with successive increases in profitability (Harrod et al., 2015: pp. 364, 374). For this reason, if the current growth rate is below the natural growth rate, growth is supported by public expenditures. However, it is argued that in cases where the growth rate is above natural growth, it is necessary to keep the effect under control with interest rates and coordinated public policies (Harrod et al., 2015: p. 376).

The arguments of the classics on growth are more about inclusive growth and the need to support not only certain sectors but the entire economy. When we look at the classics in terms of fiscal policies, the jobs expected to be done by the state are defined as defense, justice, public works and education. Government entry into trade was considered unproductive. The focus is on a cycle where high taxation, after periods of high spending with an expansionary fiscal policy, reduces the productivity of productive labor and shifts resources to unproductive labor. In other words, the long-term effectiveness of the expansionary fiscal policy due to the budget and taxation channel is a matter of debate. In addition, if taxation is made on capital, it is expected to have a negative impact on growth because it narrows production directly, and if it is made on income, consumption. This effect is felt more clearly when the high indebtedness caused by the continuation of high expenditures is tried to be compensated especially through the tax channel. Considering that the classical point of view sees productive labor as the main dynamic of growth, the reflection of high expenditures that come with the expansionary policy on the indebtedness and taxes of the labor force also negatively affects production and growth. (Smith, 2015: pp. 767-1085; Ricardo, 2008: p. 165) In particular, the indebtedness brought by non-productive expenditures (war expenditures, etc.) in fiscal policies is defined as the withdrawal of resources from the productive area. Three types of productive areas are excluded here. First, the capital is used in a non-productive area, secondly, if the money received from the country through indebtedness is taken from productive capital, possible production is excluded (Mill, 2009: pp. 96-98).

The pioneers of monetarism, on the other hand, while drawing a more limited and controlled area to fiscal policy, also emphasized the concept of balanced budget. In fiscal policy, the most limited expenditure possible, which equates expenditures with revenues, is advocated. For this reason, approaches that balance the budget come to the fore rather than proposing expansionary policies in shrinking periods. For example, Meltzer argued that behind the successful poli-

cies of the 1950s, the balanced budget applied rather than monetary policy (Bordo, 2018: p. 21). Considering Friedman's views, it is suggested that expenditures should be made within these revenues, together with the determination of tax policy and revenues. Except for the expenditures necessary for public service and private consumption, expenditures depending on the will of the society and changing should not be made. A similar view prevails in transfer expenditures and periodic changes are not desired. In the case of a compulsory expenditure, it is aimed to create an income and to provide it through taxes (Friedman, 1948: pp. 2, 3).

According to the New Classics, the effects of public expenditures (product and service purchases) on economic growth in shrinking periods are determined by the sources of taxation and whether the application is permanent or temporary. They focused on the findings that a permanent application rather than a temporary application would increase growth more. The negative impact of permanent public expenditure on the welfare of individuals through taxes and this not only reduces consumption, but also leads to an increase in labor supply. Here they found results that the need to regain lost income increases production and ultimately output. In such a case, growth is also supported by the increase in production in the long run. In taxation, it is emphasized that the lump-sum tax will increase the public expenditure effect on growth, instead of an income tax increase, which will not reduce consumption for a long time. In cases where public investments do not have a crowding out effect, it is thought to support growth as long as it increases the productivity of the private sector and labor force (Baxter & King, 1993).

The New-Keynesians have looked at the effectiveness of expansionary policies, especially with the trade-offs of inflation, employment and growth. Fiscal policy, on the other hand, should be used when monetary policy is ineffective. Likewise, in order to talk about successful growth, they set out with a perspective that takes not only expansionary periods but also long-term growth averages. They tried to explain the more successful policies in some countries not only by the inflation level over the years, but also by structural factors. However, since the reason for every crisis or every contraction period is not the same, they have gained a new perspective by examining that the expansionary policy will not be pro-growth in all cases, on the contrary, it may be necessary to implement contractionary policies to ensure growth in the long run. The New Keynesians examined the factors causing the contraction in the economy and the source of the crisis by highlighting it in the policy component. For example, the implementation of expansionary monetary and fiscal policies may be riskier in an economy where capital outflows are intense and contracting due to financial crisis. Especially in countries that are sensitive to capital flows, policy sets that try to prevent capital outflow by closing budget deficits with high interest policy and tight fiscal policy come to the fore. As much as the high interest rate policy provides time for expansionary policies by providing revaluation of money for long-term growth; It may have no effect in cases where the economic trust environment

and infrastructure cannot be provided. For this reason, as much as the contraction in the economies, the factors that cause it and the state of the economies become important (Stiglitz et al., 1998: pp. 1-28, 73-82). The expansionary policy set is not expected to support growth in countries where economies are fragile without overcoming these and similar vulnerabilities. Structural factors that determine growth and vary between countries, as well as the impact of expansionary policies on growth, have been the focus of new Keynesians. It is known that especially expansionary policies accelerate investments by supporting them in shrinking periods. In this context, the main reasons for the expansionary policies implemented in some countries to contribute more to growth, while in others less, are determined by the stable and reliable policy environment, open and competitive economy and areas where the public sector is concentrated. Factors such as monetary and fiscal policy coherence, sound exchange rate management, reliability of economic policies, and sound legal infrastructure determine the level of reliability of countries. Open competition, providing access to information, physical and human capital factor also determine the competitive level. Countries where investments and expenditures of public policies are concentrated in areas where the private sector cannot be successful are more support growth. It is suggested that areas such as education, health, communication, defense, justice, regulation of financial markets should remain as public policy (Stiglitz & Square, 1998).

2.3. Views on the Relationship between Inflation and Growth

The inflationary effect of expansionary fiscal policies and long-term growth trade-offs are included in almost all approaches. However, some views argue that if certain conditions and policy components occur, the inflationary effect will be less decisive. For this reason, while some approaches put more emphasis on inflation, others focused on the fact that growth can be supported by expansionary policies.

Although it is accepted from the Keynesian point of view that expansionary policies will cause price and wage increases, it is thought that this effect will be limited in cases where the economic conditions are not met and below the full employment level (Keynes, 2010: pp. 251-259). On the other hand, it is emphasized that the price increase that occurs when the increase in demand does not affect the output is chronic and permanent (Keynes, 2010: pp. 251-259).

In the post-Keynesian perspective, it is seen that the effectiveness of policies on growth is considered within the cyclicity discussions. According to this point of view, since the natural course of growth is cyclical, the effect of expansionary monetary or fiscal policies varies according to which growth cycle the countries are in. Accordingly, there is a maximum growth point that countries can reach, which they defined as the natural growth rate. For this reason, it is emphasized that no matter how much production and investment are, after a while, there will be a slowdown tendency due to insufficient effective demand. Even if investments are supported by technological innovations, the maximum point that

growth will reach is certain. After this point, the intensity of the technology will not be effective as it will not provide the same amount of benefit. For this reason, even the technology that is thought to increase growth causes only an increase in inflation after the effective point (Kalecki, 1962). It is possible to meet with high public debt during the exit periods from the shrinking economies. It has been observed that interest rates and inflation increase in cases where the need to keep interest rates low by using expansionary monetary policy and the accompanying expansionary fiscal policy support rapidly increase investments. It also focuses on a cycle followed by contractionary policies for the resulting crises (Minsky, 1972). It is thought that it would be appropriate to run a budget surplus and increase taxes in periods when this structuring accelerates the inflationary effect (Minsky, 1992: pp. 11-12). In order to reduce the inflationary effect of growth, reducing public administration expenses is among the suggestions (Kalecki, 1955: p. 13).

The classical point of view looked at the expansionary policies in terms of the budget deficits they caused and emphasized that they were not pro-growth in the long run. It is seen that especially the pioneers of classics mentioned that budget deficits and compensation will also have an inflationary effect.

According to monetarists, the inflationary and even hyperinflationary effect of compensating the budget deficits that increased as a result of expansionary policies by printing money is emphasized (Friedman, 1969: p. 2). Although it is known that trying to close the deficit by increasing the taxes collected from the households reduces the total demand, it is emphasized that the government prevents the increase in interest rates by borrowing. However, it is emphasized that, contrary to the effect of taxes on domestic demand, low interest rates will be used for borrowing by those whose expenditures are cut by taxes and will have an indirect inflationary effect. In other words, the effect of indebtedness and slowing demand coming from the budget is transformed into demand by means of public borrowing through taxes. In this case, while the interest rates increase more limitedly, the inflationary effect continues. From this point of view, although it is seen that both fiscal and monetary expansion have an inflationary effect, it is also possible that the effect of fiscal expansion will be slower and more indirect than the borrowing strategy implemented after budget deficits (Friedman, 1969: p. 4).

The advocates of the new classical approach evaluated the effect of expansionary fiscal policy on growth through its coordination with monetary policy, indebtedness and inflationary results. The results of the policy component are determined according to the dominant monetary or dominant fiscal policy. For example, in economies where tight monetary policy is implemented, monetary base is determined and seigniorage incomes are limited, the expansion area of fiscal policy is also limited. In such a case, excessive increase in the budget deficits is not allowed through the domestic export channel with high volumes and high interest rates, there is no need for seigniorage income afterwards, and the inflationary effect that will come from this channel is also limited. In cases where

fiscal policy is dominant, budget deficits increase rapidly and deficits are tried to be closed with high domestic issuances, the tight stance of monetary policy results in a higher inflationary effect with the need for seigniorage income after a while. Here, it is emphasized that the increasing cost of domestic export and borrowing and the fact that domestic demand has a limit will bring expansionary monetary policy and higher inflation compared to the first situation in the long run. For this reason, the opinion that the dominant and uncontrolled expansionary fiscal policy will have a negative effect on growth through the inflation channel comes to the fore (Sargent & Wallas, 1981).

In the New Consensus approach, since the greatest negative effect on growth in expansionary policy periods is due to inflation, policies and interest rate rules are determined over inflation. For this reason, they oppose the expansionary policies of the fiscal policy because of their disinflationary effect. They care about a balanced fiscal policy over a balanced budget. In addition, they set a policy priority for monetary policy that will not cause excessive indebtedness in the budget and will prevent the inflationary effect of taxes increased due to the indebtedness effect. They argue that the way to control the increases in firm product prices, not only in demand but also in the supply channel, is through an environment of trust, manageable expectations and inflation. For this reason, they prioritize controlled and balanced inflation in order for expansionary policies to result in successful growth. They emphasized that the demand-increasing effects of the fiscal policy, on the other hand, will increase inflation by causing deviations, therefore a balanced budget should be put forward. The functioning of rational expectations, on the other hand, manifests itself as monetary expansion and differentiation in the market on prices. For this reason, they find the change in prices relative. In such a case, it is thought that expansionary policies may affect growth (King, 1982).

3. Analysis of Expansionary Fiscal Policy Effect on Growth in Shrinking Period

In order to measure the effect of fiscal policies implemented during periods of shrinking economies on growth, data from 110 countries covering the period of 2007-2016 were collected. In addition to the GDP growth within the scope of the analysis; 4 main growth variables and 6 fiscal policy variables are used in the model. In order to analyze the fiscal policy effect with monetary policy together one more model is also produced with additional 4 more monetary policy variables. Models also include the inflation variable to understand the net effect of growth-inflation tradeoff. In order to find the effect of the policy applied in the periods when the economies shrank, a general impact analysis was tried to be made by taking into account the policies of the 2007-2009 period, which are common to all countries.

3.1. Research Method

Within the scope of the analysis, the dynamic panel method was used to see both

the effects of the variables in the previous year and the effects of the past and present variables with each other. In order to provide a better analysis of independent variables that are not completely exogenous, analyzes were made with the system GMM (generalized method of moments) estimator developed by Arellano and Bond. There are many reasons why the Arellano and Bond dynamic panel estimator is preferred. In studies that are likely to have an effect on the lags of the dependent variable in the panel data, putting these data as explanatory variables create an endogeneity problem since it will cause the correlation of these variables with the error terms. For this reason, using OLS-ordinary least square estimators causes inconsistent results. In this case, the Arellano Bond estimator is recommended as a solution for panels with high N variables and short time dimension. On the other hand, for long panels, mean group estimator, pool mean group estimator and common correlated effects mean group estimator which also includes panel unit root and cointegration tests estimators are suggested. For this reason, the Arellano Bond estimator, which is used as a dynamic panel method, is suitable for models where the time dimension t does not exceed 10 periods and the number of n observations is at least 55. On the other hand, the relationship of dynamic variables with past realizations can be examined. It takes into account that the independent variables may also be related to the error terms of their past and present realizations, that is, they can also observe the case of not being completely exogenous. In addition, in case of heterogeneity in the data, the GMM method is an ideal method. It provides the most efficient estimation by using orthogonality conditions in case of heterogeneity, that is, changing variance. In addition to the heterogeneity problem, it is a preferred method because it provides a solution to the autocorrelation situation (Roodman, 2009). It is recommended to add dummy variables including time variables to the model in order to provide the assumption that there is no autocorrelation between cross-sections in the coefficients of the standard errors of the autocorrelation test and the robust estimators. For this reason, time dummy variables were added to the analysis for each year.

It is recommended that Sargan and Hansen tests be performed together to check the model and estimator accuracy of GMM model. These tests are used in case the established model excludes explanatory variables or to test how valid the model is. Sargan tests the validity of the variables used in the model and evaluates the model as a whole. The Ho hypothesis of the Sargan test accepts that all variables in the model are valid. If the probability value in the model result is greater than 0.05, the Ho hypothesis is accepted and the variables used in the model are valid. In the opposite case, it is thought that there is over-identification in the model and the variables are not valid. The fact that the probability value is very close to 1 in the Sargan test causes the rejection of the Ho hypothesis, since it shows that asymptotic features are revealed. The Ho hypothesis of the Hansen test accepts that all variables are valid. It is recommended that the optimum probability value is between 0.1 and 0.25. It is stated that it will not be consi-

dered very valid between 0.4 and 0.9, and if it is above 0.9, the model should be completely rejected (Roodman, 2009).

Another point to check in GMM estimators is that there is no autocorrelation in the error terms. As a result of the test, it is possible to measure whether there is AR (1) and AR (2) type autocorrelation. If the probability values are greater than 0.05, the validity of the Ho hypothesis, which accepts that there is no autocorrelation, is confirmed. The possibility of AR (1) type autocorrelation is predictable in the models, and the absence of AR (2) type autocorrelation is required for validity (Roodman, 2009; Roodman, 2014; Labra & Torrecillas, 2018).

Another advantage of Arrellano-Bond GMM estimators is that they allow variables to be defined as endogenous, exogenous, fully exogenous, or predetermined. If the past period realizations of the data have an effect at t time, the data are considered endogenous. In this study, previous period growth data, basic growth variables (investment, savings, capital stock, human capital) and inflation are taken as endogenous variables. If the realizations at time t are thought to be effective only in the next period, the data are taken as predetermined. All policy variables with a dummy variable assigned in the model are defined in this way. On the other hand, time dummy variables were defined as completely exogenous.

It is possible to summarize the general structure of 3 different models defined according to each group and collective country data with model-1. Here, Y_{it} is the GDP growth at time t for country i, $\sum_1^n Y_{i(t-n)}$ is the sum of different periods of growth up to $t - n$ time for each country, x_{it} is the vector of different lags of each explanatory variable $\beta(L)$, γ_t denotes the time effect for all countries, ε_{it} the error term for each country and time dimension.

$$Y_{it} = \alpha_1 \sum_1^n Y_{i(t-n)} + \beta(L)x_{it} + \gamma_t + \varepsilon_{it} \tag{1}$$

In this context, each model is designed to see the effects of the variables, either together or separately, in the policy sets. In some models, the effects were tried to be observed by adding the variables gradually. All models were subjected to both Sargan and Hansen tests and both were significant. The models also passed autocorrelation tests.

3.2. Data Set Used in the Research

Within the scope of the research, 12 different variables were used. Of these, 4 are basic growth variables, 4 are monetary realization data, and 3 are fiscal policy variables. Table 1 shows the variables.

3.3. Results

Within the scope of the analysis, the effect of expansionary fiscal policy in addition to the basic growth dynamics for 110 countries was examined in the first model and the effect of monetary policy in the second model.

Table 1. Data set and definitions.

Dependent Variable	Definition
Growth	Growth is calculated using real GDP data defined at constant national prices.

Independent Variables	Definition
Growth	Previous period realizations of growth
Capitalstock/GDP	Share of capital stock in GDP
Investment/GDP	The ratio of investments to GDP is expressed as a ratio of total investment in current local currency and GDP in current local currency. Investment or gross capital formation is measured as the total value of the gross fixed capital formation for a unit or industry and changes in inventories and acquisitions less the disposal of valuable assets.
Human Capital	Human capital index based on duration of education and return to education
Saving/GDP	Gross national saving, gross disposable income, minus final consumption expenditures, after taking into account an adjustment for pension funds, as a ratio of GDP
General Expenditure/GDP	Sum of employee expenditures, subsidies and social expenditures. Employee expenditure; Payments to employees; (cash wages and salaries, wages and salaries in kind, and employers' social contributions). Subvansion; subsidies, grants and other social benefits, all unrequited, non-refundable transfers to private and public institutions on current accounts; grants to foreign governments, international organizations and other government agencies, and social security, social benefits and employer benefits in cash and in kind. Social expenditure; social contributions to households, employers and the self-employed, actual or accrued contributions to social insurance programs run by governments are also in this group
Income Tax	Effective income tax ratio
Corporation Tax	Announced corporate tax rates
Inflation	Change of consumer price index compared to the previous year (2010)
Interest	Central banks main policy interest rates
M1/GDP	Total money in circulation and demand deposits
M3/GDP	M1 + time deposits, funds from repo, money market funds, securities issued

In order to see the effect of fiscal policy more clearly in the first model; growth variables, inflation and only fiscal policy variables are included in the model. The model shows that in addition to the positive contribution from the capital stock, the growth is supported by the previous growth and a negative impact from inflation and general expenditures is also observed. As a result of the analysis, although the long-term growth effect is evident, it can be explained that this growth originates from the previous period growth and comes from other variables within the growth. At the same time, a positive contribution from the capital stock could be observed. In the first model, although it is evident that inflation-growth tradeoff is clear both in the short and long run, the previous growth dynamics are more supportive to the growth. This situation may be the reflection of the structural soundness in the growth dynamics of the countries on the growth as well as the effect of other variables (Table 2).

Table 2. Model-1 results.

Variables	Total Growth	L. Growth	L2. Growth	L3. Growth	1. Investment	L2. Investment	L3. Investment	L. Human Capital	L2. Human Capital	L3. Human Capital
Short Term	0.39	0.28***	0.022	0.169***	0.0838	−0.114	−0.003	19.24	−0.695	−21.2
	(0.05)**	(0.00)	(0.724)	(0.004)	(0.409)	(0.124)	(0.95)	(0.582)	(0.990)	(0.380)
Long Term			0.65 (0.0)			-			-	

Variables	L. Saving	L2. Saving	L3. Saving	1. Capital Stock	L2. Capital Stock	L3. Capital Stock	1. Inflation	L2. Inflation	L3. Inflation
Short Term	−0.021	0.012	−0.03	−0.0058	0.0140*	0.0019	−0.127*	0.0025	0.0952
	(0.748)	(0.747)	(0.376)	(0.365)	(0.016)	(0.707)	(0.029)	(0.967)	(0.172)
Long Term		-			0.02 (0.02)			−0.18 (0.03)	

Variables	L. Income Tax	L2. Income Tax	L. Corporate Tax	L2. Corporate Tax	L. General Expenditure	L2. General Expenditure	L3. General Expenditure	Dum2009	Dum2010	Dum2011
Short Term	−0.089	0.0795	−0.037	0.0575	0.052	−0.053	−0.0534	−5.88	2.113	−2.244
	(0.58)	(0.625)	(0.8)	(0.68)	(0.4)	(0.881)	(0.09)	(0.06)	(0.23)	(0.693)
Long Term		-		-		−0.1 (0.06)				

Variables	Dum2012	Dum2013	Dum2014	Dum2015	Dum2016	−cons	Sargan	Hansen	N. of Ins/N	AR1	AR2
Result	1.769*	0.243	−2.6	0.256	−0.04	5.39	0.604	0.218	65/770	0.0	0.47
	(0.031)	(0.38)	(0.2)	(0.3)	(0.9)	(0.5)	(29.30)	(37.91)			

Values in brackets are p values. $^*p < 0.05$, $^{**}p < 0.01$, $^{***}p < 0.001$.

Table 3. Model-2 results.

Variables	Total Growth	L. Growth	L2. Growth	l. Investment	L2. Investment	L. Human Capital	L2. Human Capital	L. Saving	L2. Saving	l. Capital Stock	L2. Capital Stock
Short Term	−0.27	0.0949	−0.014	0.321*	0.102	6.158	−4.047	0.0502	−0.061	0.0084	0.002
	(0.08)	(0.638)	(0.958)	(0.029)	(0.523)	(0.871)	(0.918)	(0.556)	(0.293)	(0.657)	(0.81)
Long Term	-			0.34 (0.07)		-		-		-	

Variables	l. Inflation	L2. Inflation	L. Interest	L2. Interest	M1	L. M1	M3	L. M3	Social Expenditure	L. Social Expenditure	L2. Social Expenditure
Short Term	−0.23*	−0.053	0.41***	0.463*	−0.04	−0.023	−0.002	0.0188	−0.222	−1.63	1.585
	(0.026)	(0.517)	(0.00)	(0.011)	(0.137)	(0.333)	(0.875)	(0.059)	(0.152)	(0.157)	(0.19)
Long Term	−0.2 (0.02)		0.59 (0.04)		-		0.02 (0.21)		-		

Variables	Employee Expenditures	l. Employee Expenditures	Subsidies	L. Subsdies	Income Tax	L. Income Tax	L2. Income Tax	Corporate Tax	L. Corporate Tax	Dum2009	Dum2010
Short Term	0.0052	−0.282	−0.169	−0.037	0.0496	0.588	−0.658	0.0885	0.0097	−4.101	−1.26
	(0.978)	(0.215)	(0.078)	(0.652)	(0.307)	(0.112)	(0.082)	(0.242)	(0.920)	(0.140)	(0.59)
Long Term	-		−0.18 (0.21)		−0.7 (0.2)			-		-	

Variables	Dum2011	Dum2012	Dum2013	Dum2014	Dum2015	Dum2016	-cons	Sargan	Hansen	N. of Ins/N	AR1/AR2
Result	6.772	−3.213	−3.272	−3.569	−3.868	−4.302	−14.13	0.15	0.193	51/880	AR1 0.047
	(0.525)	(0.237)	(0.217)	(0.199)	(0.172)	(0.143)	(0.209)	(16.99)	(15.96)		AR2 0.322

Values in brackets are p values. *$p < 0.05$, **$p < 0.01$, ***$p < 0.001$.

Table 4. Summary of model results.

	Main Growth Dynamics					Monetary Policy				Fiscal Policy					
Time Period	Previous Growth	Investment	Saving	Capital Stock	Human Capital	Inflation	Interest	M1	M3	General Expenditure	Employee Expenditure	Subsidies	Social Expenditure	Income Tax	Corporate Tax
Short Term	√ (+)	√ (+)	.	√ (+)	.	√ (−)	√ (+)	.	√ (+)	√ (−)	.	√ (−)	.	.	.
Long Term	√ (+)	√ (+)	.	√ (+)	.	√ (−)	√ (+)	.	.	√ (−)	.	.	.	.	.

In the second model, the effect of fiscal policy is examined together with monetary policy. Growth variables, inflation, monetary and fiscal policy variables are considered together. In the short run, the model has the effect of investment, inflation, interest, M3 money supply, incentives and income tax. Although the short-term effects reflect a certain situation, a model calculation is also made to see the long-term effect. Accordingly, the effect of investments in the long run with a low probability is evident. When looking at the fiscal policies, only subsidies were found to be significant among the expenditure items in the short term with a low probability, but no positive relationship was found with growth. It has been revealed that the subsidies given during the contraction period do not directly reflect growth and are meaningless in the long run. It can be thought that the subsidies are not reflected in growth due to the fact that the subsidies given do not go to direct investments and are mostly used to protect the income-expenditure balance during the contraction period. In this item, it can be said that the area to increase investment and support growth is limited. There is also a negative outlook on the income tax item in the short run with a low probability, and its relationship with growth is meaningless in the long run. The second model also shows that even when looking at the expansionary fiscal policies with the data consisting of sub-fractions of fiscal expenditures and monetary variables, are not pro-growth both in the short and long run. When the monetary expansion policies are examined, it is seen that the growth stemming from the interest and M3 money supply disappears in the long term, while the inflationary effect is permanent. When the two policies are examined collectively, it has been revealed that the fiscal policy is not pro-growth. On the other hand, it is seen that the monetary policy supports the growth stemming from the expansionary interest rate policy (Table 3).

The results of the models are summarized in Table 3. According to the models for all countries perspective it is evident that expansionary fiscal policies between the analysis period is not enough to pro-growth both in the short and long run. This result also shows that these expenditure items (employee expenditures, subsidies and social expenditures) do not create enough demand to increase growth. On the other hand, countries seem to act together to decrease interest rate which support growth more actively. Despite all the controversial views, it is observed that the negative effect of inflation on growth is limited compared to the contribution of expansionary policies to growth (Table 4).

4. Conclusion

Within the scope of this study, the effect of expansionary fiscal policies on growth in the periods when economies contracted was not only analyzed but also the main points were determined by examining the discussions in the literature. When the discussions in the literature are examined, it is argued that the effectiveness of expenditures and tax policies may be pro-growth under certain conditions. For this reason, policy recommendations have come to the fore in

many perspectives. On the other hand, due to the inflationary effect that emerged after the expenditures and the budget deficit, there are also cautious views regarding growth.

When the comments in the literature are examined, it is possible to say that the effectiveness of fiscal policies is discussed in terms of tax expansion, growth in fiscal expenditures, and inflation-growth trade-off. For this reason, within the scope of this analysis, the main extender items and the inflation variable are especially included. On the other hand, the basic growth variables, namely the structural conditions of the economies, are as effective as the policies. In order to see the policy effectiveness, the contribution of the growth variables is also examined. In addition, it is a fact that expansionary fiscal policies act and interact with monetary policies. For this reason, the combined effect of monetary and fiscal policies was also examined in a different model in the analysis.

In the analysis, two models were studied to see the effect of expansionary fiscal policies on growth. In the first model, basic growth variables, fiscal policy variables and inflation were examined. In the second model, in addition to these, it was desired to look at the monetary policy and its collective effects. While the expansionary policies were determined by assigning dummy to the policies of the 2007-2009 period, the growth variables and the growth effect of the 2007-2016 period were examined in the short and long term.

From the results of the analysis, it has been revealed that the effects of fiscal policy are not pro-growth at a level that will increase aggregate demand and investments. It is seen that the expenditure items that consist of social expenditures, incentives and employee expenditures are insufficient in the aggregate analysis of all countries. A similar outlook emerged in income and corporate tax reductions. This situation reveals the importance of expenditure composition. It can be said that financial expenditures are insufficient to shift to direct investment and consumption. On the other hand, it is seen that monetary policy supports growth with common interest rate cuts. On the other hand, money supply increases did not have a growth effect in the long run. Here, it can be said that the more joint action of countries in monetary policy also supports growth. When the basic growth variables are examined, it is revealed that investments are insufficient and in the short term, and the capital stock supports growth. Looking at the inflation-growth trade-off in terms of variables, it was also reflected in the results that there was no inflation trade-off to such an extent that it would impair the effectiveness of policies.

In summary, the aggregated country analysis shows that countries can support their growth through interest rate cuts and investments, provided that their growth dynamics are also sound during periods of shrinkage. While the stable growth structure of the countries reflects positively on the growth in the next period; growth is also less affected by inflation trade-offs. For this reason, expansionary interest rate policies, supported by long-term and sustainable growth and investments, emerged as an effective policy tool. It is seen that the effectiveness of fiscal policies can only increase with common policies that will increase

direct investment and support demand more. For this reason, it is considered that acting jointly in fiscal policy as well as monetary policy among all countries may be more pro-growth. In the processes where growth was supported, inflation was reflected in the results where the trade-off was more limited.

Conflicts of Interest

The author declares no conflicts of interest regarding the publication of this paper.

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