

THE EFFECT OF FISCAL DEFICITS ON ECONOMIC GROWTH: EVIDENCE FROM EUROZONE COUNTRIES⁴

Over the last decade, no issue in economic policy has caused greater controversy than the effects of fiscal deficits on economic growth. Fiscal deficits have been a significant cause of worry for many developed countries, notably the Eurozone. Even if short stimulants were justified, particularly after the crises of 2008-2009 in response to the global financial crisis, they have resulted in chronic fiscal deficits, growing debt, and depleted fiscal buffers in the medium to long term. This paper investigates, using STATA econometrics, how fiscal deficits affect the economic growth rate in Eurozone Countries. We use annual data for Eurozone countries from 2001 to 2020, totalling 346 observations. The study relied on secondary data from the World Bank's databases. To estimate the effect of fiscal deficits on economic growth, we used a random effect model. The dependent variable GDP growth was analysed through the effect of Public and publicly guaranteed debt from publicly issued or privately placed bonds Inflation, GDP deflator, Unemployment, Foreign direct investment, net inflows as a percentage of GDP, Domestic credit to the private sector as a percentage of GDP. Our research findings reveal that the variable Inflation and Domestic credit to the private sector affect GDP growth and are statistically significant.

Keywords: Fiscal deficit; GDP growth rate; Inflation; Eurozone

JEL: F4; F43; H89

1. Introduction

The issue of high debt levels in countries within the Eurozone is a cause for concern as it can lead to economic instability and impede growth! The Eurozone debt crisis of 2009 serves as a reminder of how some countries in the region are susceptible to debt buildup. Data from Eurostat shows that at the end of 2021, the average government debt in the Eurozone was

¹ Vesë Qehaja-Keka, PhD candidate, University of Prishtina, Faculty of Economics, e-mail: vesa.qehaja@student.uni-pr.edu.

² Driton Qeja, Professor, University of Prishtina, Faculty of Economics, corresponding author, e-mail: driton.qehaja@student.uni-pr.edu.

³ Arber Hoti, Professor Assistant, University of Prishtina, Faculty of Economics, e-mail: arber.hoti@student.uni-pr.edu.

⁴ This paper should be cited as: Qehaja-Keka, V., Qehaja, D., Hoti, A. (2023). The Effect of Fiscal Deficits on Economic Growth: Evidence from Eurozone Countries. – *Economic Studies (Ikonomicheski Izsledvania)*, 32(6), pp. 3-18.

95.6% of the country's GDP, with the lowest ratios being seen in nations such as Estonia (18.1%), Luxembourg (24.4%), Bulgaria (25.1%), Denmark and Sweden (both 36.7%). Meanwhile, 14 countries had debt ratios exceeding 60% of their total economic output, with Greece having the highest at 193.3% and followed by Italy (150.8%), Portugal (127.4%), Spain (118.4%), France (112.9%), Belgium (108.2%) and Cyprus (103.6%).

In terms of macroeconomic factors, the fiscal deficit is among the most important ones because of its impact on economic growth. Fiscal policy can be used to maintain high levels of growth, and the proper level of taxation is a crucial factor in maintaining a stable economy. Fiscal deficits are an important factor affecting long-term economic growth since fiscal policy impacts consumption levels, savings behaviour, and private investment.

The relationship between fiscal deficits and economic growth has piqued economists' curiosity and sparked heated discussions. While some argue that fiscal deficits can boost economic growth, others contend that they might lead to weaker economic growth, inflation, and increasing public debt. In the context of the Eurozone, it is critical to understand the influence of fiscal deficits on economic growth, as many of the countries have struggled with large levels of public debt and weak economic growth in recent years.

The relationship between fiscal deficits and economic growth is complex and depends on a variety of factors, including the type of deficit and the size of the economy. In general, however, when countries have large budget deficits relative to their GDP, they tend to experience slower rates of economic growth. This is because government borrowing crowds out private sector investment, as businesses are less inclined to invest in projects due to higher interest rates caused by increased public debt. Furthermore, fiscal deficits can lead to inflationary pressures that reduce purchasing power and discourage investments in productive capabilities. Moreover, high levels of public debt can create a burden on future generations as governments are forced to raise taxes or increase borrowing in order to repay their debts (Qehaja, Gara, et al., 2022).

Fiscal deficits and surpluses impact GDP growth rates by increasing government spending on goods and services that boost productivity. The GDP growth rate's response to changes in the fiscal deficit is determined by how responsive aggregate demand is to fiscal policy instruments such as tax cuts/hikes and public spending increases/cuts. If Fiscal outlays are invested in growth-enhancing sectors, Fiscal policy can positively impact GDP growth rates. Fiscal austerity (lower Fiscal deficit) is not correlated with higher GDP growth rates. In fact, reducing the Fiscal deficit too quickly can choke off aggregate demand and lead to a decrease in economic activity. Therefore, governments must carefully manage their fiscal deficits to balance economic growth with long-term sustainability. By using both monetary and fiscal policy instruments together, governments can achieve the best outcome for their economies. In order to effectively manage public finances and stimulate economic growth, governments need clear policies that include a detailed spending plan as well as revenue sources (e.g., taxes). This will help ensure that debt levels are kept at manageable levels and that government spending is focused on areas that will have the most positive impact on GDP growth rates. Governments should also focus on structural reforms such as improving labour market efficiency, promoting competition in markets, and reducing red tape.

Despite similar levels of development and appropriate institutions, the effects of fiscal policies can differ across Eurozone countries. This is because the effects of fiscal policies are influenced by a variety of factors, including the state of the economy, assumptions about economic behaviour, the nature of spending or tax adjustments, and perceptions and realities about whether the policy is short-term or long-term in nature (Boskin, 2020). Furthermore, fiscal policies in the Eurozone are also constrained by a complex set of rules, such as the Stability and Growth Pact (SGP), that govern budgets across countries. The SGP is a complex set of rules that establishes ceilings on budget deficit and debt levels. As such, it limits the amount of fiscal stimulus that countries can use to respond to economic downturns. Finally, fiscal policies in the Eurozone are also constrained by broader macroeconomic conditions. In particular, the single currency requires governments to maintain price stability and ensure that their economies remain competitive relative to other Eurozone countries. This further limits the extent to which countries can engage in aggressive stimulus measures, as these could lead to higher inflation or a deterioration in international competitiveness.

However, as a response to the negative effects of the fiscal stimulus on the economy's slow recovery and long recession, Eurozone nations began to shift from fiscal expansion to fiscal consolidation in 2011 in an effort to lower the region's deficit and debt levels. At this time, fiscal policy was revived as the principal and practically exclusive government policy instrument for dealing with the financial crisis's implications when monetary policy interest rates had plummeted to near zero per cent lower limits (Ramey, 2019b).

EU and ECB have established rules to ensure that countries maintain their budget deficits and debt-to-GDP ratios under control. There are also funds in place to assist countries facing financial difficulties. The EU and ECB are advocating for reforms that will foster growth and decrease debt, such as changes to the labour market, educational programs, and infrastructure investments. Additionally, the ECB has employed monetary policies like quantitative easing and low-interest rates to stabilize the economy. The EU and ECB, have set up the European Stability Mechanism, a permanent bailout fund, to offer financial aid to countries during a debt crisis. They have also established a framework for debt restructuring to help countries gradually reduce their debt. Furthermore, to strengthen the financial sector, the EU and ECB are improving bank capital and liquidity, reducing the risk of financial contagion, and supporting economic growth and job creation through investments in infrastructure, education, and small and medium-sized businesses. The degree to which there will be a trade-off between decreasing the public debt and deficits through programs of fiscal adjustment and enhancing economic growth through fiscal stimulus in order to mitigate the adverse consequences will be determined by the magnitude of the fiscal multipliers in each activity (Bentour, 2020, 2021).

This article aims to analyze the impact of fiscal deficits on economic growth in Eurozone nations between 2000 and 2020. This study aims to analyze the link between fiscal deficits and economic growth, investigate the causal relationship between the two variables, and offer evidence of the effect of fiscal deficits on economic growth in Eurozone nations. Using the random effect model, the impact of budget deficits on economic growth was estimated. The research also took into consideration inflation, the GDP deflator, the unemployment rate, foreign direct investment, and domestic loans to the private sector as a proportion of the GDP.

The purpose of examining the influence of fiscal deficits on economic development in Eurozone nations is to gain a deeper understanding of the connection between government expenditure and economic performance. In recent years, the Eurozone nations have had substantial economic issues, including high levels of public debt and sluggish development. Understanding the impact of these nations' budget deficits on economic growth is essential for policymakers seeking to address these issues and maintain economic stability. In addition, this study will contribute to the larger macroeconomics and fiscal policy literature by giving evidence of the link between fiscal deficits and economic growth in Eurozone nations.

The outline of the paper is as follows: The first section is a literature assessment on the connection between fiscal deficits and economic growth. The second section discusses the study's methodology, including the data sources and econometric techniques employed. The third section discusses the empirical findings, while the last section analyses the findings and closes with policy suggestions for Eurozone nations regarding fiscal deficit management and economic growth.

2. Literature Review

Economists have debated the effects of fiscal deficits on economic growth for some time now, and one topic that has been at the forefront of their discussions is the relationship between fiscal deficit and economic growth. The findings of empirical studies on the connection between deficits and economic growth have led researchers to various conclusions. One school of thought in the academic literature asserts that large budget deficits are associated with increased economic growth, while another school of thought argues the exact opposite (Ahlborn, Schweickert, 2018).

Despite the potential drawbacks of large budget deficits, there are some cases in which deficits can be beneficial for economic growth. For instance, in times of recession or when an economy is facing structural problems, deficit spending can provide a boost to demand and help stimulate economic activity. Additionally, government spending on infrastructure projects such as roads, bridges and airports can create jobs and spur long-term economic growth. In these instances, countries' fiscal deficits can actually result in positive outcomes for their economies. Overall, the relationship between fiscal deficits and economic growth is complex and context-dependent; it cannot be reduced to simplistic assertions either way. While it may be true that high levels of public debt can have negative effects on a country's economy, the results of deficit spending will ultimately depend on how it is used and managed. Thus, while deficits can have both positive and negative implications for economic growth, governments should be aware of the potential risks before implementing any fiscal policies. By taking into account the macroeconomic environment and assessing the potential effects of their actions, countries can better ensure that their public finances are put to productive use in order to boost long-term economic growth.

There have been significant advances in theory, empirical methodologies, and data since the global financial crisis ten years ago, and these have had an impact on fiscal policy. There are theoretical advances in examining the consequences of sticky pricing, hand-to-mouth consumers, lower limits on policy interest rates, currency unions, the type of financing, and

macroeconomic variables' responses to fiscal policy (Ramey, 2019a). However, due to the disparity in approaches for assessing long-run impacts, emphasis is still focused on short- or medium-run consequences.

Long periods of high Fiscal deficits contribute to inflationary pressures. In contrast, long periods of Fiscal surplus result in lower GDP growth rates since there is comparatively less government expenditure to boost aggregate demand levels. Fiscal deficits can enhance GDP growth rates, but Fiscal policies must consider the stage of the business cycle in which Fiscal policy is applied (Ncanywa, Letsoalo, 2019).

In the theoretical and empirical literature, the role of the Ricardian equivalence theory, the Keynesian theory, the neoclassical theory, and the political budget cycle hypothesis in shaping the current discourse on budget deficits and their effects on other variables is highlighted as being particularly important. The neoclassical view of budget deficits is mainly based on the “crowding out effect”. According to this perspective, an increase in public borrowing diverts private savings from investment and hence diminishes economic growth. It can also lead to higher interest rates which further reduces investments in productive activities and shifts resources away from the private sector. Moreover, a strong government debt can also create an expectation of future taxation which will further discourage individuals from saving and investing.

In contrast to the Neoclassical and Ricardian schools, the Keynesian perspective emphasizes the short-run, and potentially providing a long-term stimulus to economic growth (Van & Sudhipongpracha, 2015). Keynesian view relies on the effectiveness of expansionary fiscal policy in increasing aggregate demand and output, income, employment, and economic growth, mainly when the economy is around the liquidity trap. According to this view, government spending can create jobs and growth in the economy during economic downturns since it increases aggregate demand. Furthermore, taxation can be used as a tool to influence consumer spending and investment decisions in order to achieve macroeconomic objectives like price stability, full employment, economic growth and balance of payments equilibrium (Ewaida, 2017).

(Marimon & Cooley, 2018) attempted to integrate Keynesian and Classical theories into his findings on the effect of fiscal deficits on economic performance. Their research focused on determining whether there was a relation between average fiscal deficit – GDP ratios for EU countries from 1975 to 2015 and the average real GDP growth rates over those same periods. He examined a total of 48 countries that were members of the EU from 1977 onwards – a sample that includes all 28 current members as well as 20 additional countries. As a result, they found no indication that fiscal deficits had a statistically meaningful relationship with overall economic performance in the European Union. This suggests that while there may be a long-term impact of government policies on growth rates, in the short-term fiscal policy is unlikely to be an effective tool for managing aggregate economic performance.

Recent attention has focused on the relationship between fiscal deficits and GDP growth, which has become increasingly controversial due to the global financial crisis of 2008 and the beginning of the Eurozone crisis. It is one of the most contentious issues affecting governments worldwide. The fiscal deficit will impact economic growth, boosting growth and contributing to the aggregate output. According to (Srithongrungrung, and Kriz, 2014), public

capital spending significantly impacts economic growth in both the short and medium term. According to other researchers, the European Union members' 1994-2012 fiscal deficit was unrelated to economic growth (Dudzevičiūtė et al., 2018). However, there is no consensus on the impact of the Fiscal Debt-to-GDP Ratio on Economic Growth. Some studies reveal that countries with higher Fiscal Debt-to-GDP ratios tend to have lower GDP growth rates. In contrast, others indicate that there is no statistically significant relationship between these two variables (Boussard et al., 2013; Corsetti et al., 2013; Blot et al., 2015).

It is important to note that fiscal deficits do not always have an immediate effect on GDP growth. It takes time for government spending and taxation decisions to take effect and therefore any changes in the deficit may not be immediately reflected in the economy's performance. Consequently, governments should ensure that their policies are geared towards long-term economic stability rather than short-term gains. Higher fiscal debt can have serious implications for a country's economic health and creditworthiness. Countries with high levels of public debt may face a greater risk of defaulting on their loans and seeing their currency depreciate in value. Furthermore, it can put pressure on interest rates and make it difficult for businesses to access financing. Therefore, governments must ensure that fiscal deficits remain under control so as not to threaten macroeconomic stability and hamper economic growth. In conclusion, while there is no definitive answer as to the exact impact of the Fiscal Debt-to-GDP Ratio on economic growth, there are certain risks associated with high levels of public debt that must be taken into consideration. Therefore, governments must carefully weigh their options when deciding on the appropriate level of fiscal deficits in order to support economic growth and maintain macroeconomic stability. In addition, it is important to note that the Fiscal Debt-to-GDP Ratio should be considered in conjunction with other economic indicators such as the unemployment rate and inflation. Countries must also focus on other measures such as economic reforms, prudent fiscal policies, investment in infrastructure and human capital, and trade liberalization in order to promote sustainable economic growth. Ultimately, governments should strive for a balance between maintaining macroeconomic stability and achieving positive economic growth. With proper management of public debt levels and complementary policies focused on structural reform, countries can ensure that their economies are able to reach their potential. Ultimately, the relationship between Fiscal Debt-to-GDP ratio and Economic Growth remains debatable (Van, Sudhipongpracha, 2015; Canzoneri et al., 2016; Wieland et al., 2016; Huidrom et al., 2019; Perdichizzi, 2017; Eyraud et al., 2017; Auerbach, Gorodnichenko, 2017; Afonso, Leal, 2019; Blanchard, 2019; Amusa, Oyinlola, 2019; Panjer et al., 2020; Broner et al., 2021; Amann, Middleditch, 2021).

A developed economy such as Eurozone experiences inflationary pressures due to rising aggregate demand. Monetary policies such as Central Bank interventions and Quantitative easing are also used to prevent serious recessions in the Eurozone. However, Fiscal policy becomes necessary for tackling Business cycles like economic recessions associated with rising unemployment rates and a slowdown in GDP growth rate. The Eurozone Fiscal policy calls for an increase in government spending on public services, infrastructure, education and research which help to stimulate economic growth. On the other hand, taxation reforms are used to finance these expenditures while raising additional revenues for deficit reduction measures if needed. In order to control inflationary pressures, monetary policies such as setting interest rates or controlling money supply are implemented. These two types of

policies must be coordinated effectively so that they do not interfere with each other's objectives or have a detrimental impact on the economy. Fiscal policy implementation in terms of taxation and spending depends upon Fiscal rules. Fiscal rules are set up that enforce Fiscal policies on the government to monitor Fiscal deficits for appropriate Fiscal corrective actions (Monastiriotis, 2015).

Al-Khedair (1996) conducted research on the VAR model by selecting data pertaining to G-7 nations for the years 1964-1993. In addition to this, he investigated at the ways in which the deficit has an adverse effect on the overall trade balance. The results of the study show that the budget deficit has a significant impact on both public and private investment, as well as the inflation rate. The research also shows that developing countries are more affected by budget deficits than developed economies, due to their lack of institutional capacity and resources. Furthermore, Al-Khedair (Al-Khedair, 1996) suggested that governments should focus on improving fiscal policy in order to increase government revenues while reducing deficits. The findings from the (Al-Khedair, 1996) study suggest that policymakers should be mindful of how the budget deficit can affect economic growth and take action accordingly. It is important for governments to ensure they maintain adequate levels of taxation and spending in order to reduce the burden on taxpayers while still keeping their budgets balanced.

Fiscal deficits impact economic growth through different channels: Fiscal multipliers, for instance, influence GDP levels by impacting Gross Investment, Private Consumption or Net Exports. A higher deficit, for example, can lead to increased government spending on goods and services that will stimulate economic activity. This increase in demand will have a positive effect on the economy as businesses produce more output and hire additional workers. Meanwhile, fiscal deficits also influence the level of national savings.

Higher deficits generally reduce the amount of discretionary savings available for investment purposes. This reduces capital formation which has an impact on labor productivity and long-term economic growth. Additionally, increased borrowing by the government can crowd out private firms from obtaining financing, further reducing potential investments and their potential returns. Overall, rising public debt due to large fiscal deficits can create longer-term macroeconomic imbalances that put pressure on inflation and exchange rates while reducing competitiveness in international markets. This can lead to an increase in the cost of living, reduced wages and rising unemployment rate. Lastly, large fiscal deficits can put pressure on a country's balance of payments since governments need to cover the debt by creating new money or borrowing from abroad.

The increased external financing requirements can lead to a current account deficit which can have negative implications for economic growth in the long run as it increases the risk of capital flight, reduces resource availability for domestic investment and leads to a depreciated exchange rate. In conclusion, although government spending financed by deficit spending may stimulate economic activity in the short-term, large and persistent fiscal deficits can have severe macroeconomic repercussions over time (Drautzburg, Uhlig, 2015; Canzoneri et al., 2016; Blanchard, 2019; Perdichizzi, 2017; Afonso, Leal, 2019). According to Monastiriotis (2015), fiscal deficits do not need to be incurred in the face of an economic recession or slowdown; instead, reducing fiscal deficits during boom times is more effective in sustaining growth than running up fiscal deficits during economic recessions.

Fiscal Consolidation Measures result in lower GDP growth rates through Fiscal Multipliers, Fiscal Consolidation Mechanisms, and Fiscal Rules. Fiscal multipliers measure the amount of change in GDP resulting from a unit-change in government spending. They reflect how effective economic policies are in stimulating growth. Fiscal multipliers indicate whether or not increases in public expenditure will lead to lasting economic gains. Fiscal multipliers can be classified into two broad categories: direct and indirect effects. Direct fiscal multipliers measure the immediate effect on GDP from an increase in public expenditure, and can either be positive (when greater government spending leads to higher output) or negative (when it reduces output). Indirect fiscal multipliers measure the subsequent effect of additional government spending on output after the initial impact has worn off. These are often considered more important for evaluating policy effectiveness as they focus on long-term outcomes rather than short-term impacts. Fiscal multipliers also vary depending on the type of expenditure, with investment and consumption more likely to have a greater impact than spending on defence or welfare payments (Miyamoto et al., 2018).

According to Afonso & Leal (2019), Fiscal Consolidation Measures can lead to Fiscal Multiplier values that are larger in Eurozone countries than non-Eurozone countries. The fiscal Consolidation Measure's impact on GDP levels is more significant in Eurozone countries than outside Eurozone, especially in countries with strong Fiscal Rules or where monetary policy has reached the zero lower bound (Canzoneri et al., 2016).

According to Perdichizzi (2017), if Fiscal Policy is used to promote economic growth, an expansionary Fiscal Policy with public spending focused on investment could be appropriate. Afonso & Leal (2019) found that Fiscal Multipliers mainly impact private consumption in Eurozone countries and private investment. Fiscal multipliers show that an increase in government spending raises GDP considerably more than one-for-one, while a decrease in taxes will have an even bigger effect. Fiscal multipliers vary depending on the state of the economy. For instance, fiscal multipliers tend to be larger during recessions or when there is a liquidity trap. Moreover, the size of Fiscal Debt Multiplier is believed to be higher in the short run and lower in the long run. The magnitude of Fiscal Debt Multiplier depends on a number of factors such as type of Expenditure, current macroeconomic conditions, nature of private sector balance sheets, and other institutional features. Fiscal policy makers must take into account this inverse relationship between fiscal deficits and economic growth when setting their fiscal policies in order to ensure substantial economic development.

The results of Huidrom et al. (2020) indicate that Fiscal Multipliers have favourable effects on different components of GDP across OECD countries, except in Japan, where Fiscal Multipliers seem to give rise only to government consumption expenditure (Miyamoto et al., 2018).

The second view is that fiscal deficit negatively impacts economic growth. According to Fischer (1993), Kosor et al. (2019), there is a long-term reciprocal causal relationship between fiscal deficits and economic growth. Economic recessions not only increase levels of fiscal overspending, but repeated deficits may have a detrimental influence on GDP growth. According to Risti et al. (2013), economic growth and fiscal deficits have a significant inverse relationship. They used a Consolidated General Budget Account as the independent variable and the Real Gross Domestic Product Growth Rate as the dependent

variable. According to Risti et al. (2013), similar to a spiral, the budget deficit ultimately leads to higher interest rates on government loans, a lower credit rating for the country, and rising inflation and public debt.

Fiscal Deficits are ineffective tools for stimulating economic growth because this effect depends on how much public spending is invested or consumed. Fiscal consolidation measures have a negative impact on GDP growth, and Fiscal Multipliers depend on Fiscal Policy measures. Fiscal deficits can only positively affect when Fiscal Consolidation Measures do not occur. Fiscal policy may be exacerbating recessions rather than ending them because fiscal stimulus would lead to crowding out private expenditure. The fiscal policy fails to stimulate demand due to its limited effectiveness as it cannot increase effective aggregate supply but only decreases production costs by reducing taxes (Dao, Bui, 2017).

Not many studies are available regarding the size of the Fiscal Debt Multiplier; however, it is assumed that Fiscal Multipliers depend on the size of the Fiscal Deficit and the magnitude of Fiscal Stimulus. Countries with a zero lower bound on their central bank's policy or Eurozone countries with binding Fiscal Rules tend to have larger fiscal multipliers (Qehaja, Zhushi, et al., 2022).

3. Research Methodology and Data Analysis

The study uses the economic growth rate variable, as the dependent variable, to assess the potential impact of the explanatory variables on the dependent variable, based on the research completed by various authors cited in the study. We use STATA econometrics to inquire into the relationship between fiscal deficits, Government debt, and other explanatory variables and GDP growth across the Eurozone.

Using panel data means we assume that we have some endogeneity and heterogeneity. Unobserved heterogeneity refers to the unobserved dependence of other independent variables. Conversely, endogeneity refers to the relationship between the independent variable(s) and the error term (i.e., the unobserved independent variables). After all, we have gathered data on the growth rate of GDP growth rate, which does not include the endogeneity problem because we have put here the key factors that will affect the variance of the GDP growth rate. Hence, we utilize the panel data approach to reduce the bias and obtain reliable estimates. Moreover, this technique allows us to control for unobserved heterogeneity across different time periods. In addition, panel data also provides increased precision in estimating economic relationships since it increases the number of observations within our sample. As a result, we are more likely to uncover true relationships between our independent and dependent variables that can be used for forecasting purposes. Furthermore, panel data has been utilized by many researchers who have studied GDP growth or other macroeconomic phenomena because it enables them to better understand complex relationships between various factors that impact outcomes.

If we had used the PooledOLS regression (which, based on our data, had to be an acceptable regression model), it would represent no correlation between unobserved, independent variables. The problem is that alpha (Individual Effects) might have a serial correlation over

time, which in our case was highly possible; thus, we have used simple regression, but we have tested for heteroscedasticity. So, consequentially, PooledOLS is primarily inappropriate for our model.

The individual effects are not fixed; dependencies can be observed within individual and time. This kind of model allows heterogeneity to be existent within the model. While this is useful for the model parameters, it may lead to over-fitting and bias. As a result, the predictive power of the model may be hampered. Random effect (RE) models require more computational resources than fixed effect (FE) models. This is because they require more data and more iterations in order to achieve accurate results. Furthermore, RE models are less intuitive since they involve large amounts of mathematics that can be difficult to understand. In spite of these drawbacks, Random Effect models have some advantages when compared to Fixed Effect models, such as improved accuracy and robustness due to their ability to account for individual effects that may not be included in FE models. Additionally, RE models allow researchers to explore different types of relationships between variables.

Many studies have presented this case. For example, Ferrer et al. (Ferrer-i-Carbonell & Frijters, 2004), in their research on "How important is the methodology for the estimates of the determinants of happiness?" wanted to estimate the impact of wages on life satisfaction using fixed effects. However, numerous omitted factors, such as chronic illnesses (which we presume are partially time-varying), impact both; life satisfaction and earnings. In such circumstances, FE models do not yield estimates of causal effects, and we hypothesized that a comparable condition was included in our model. Based on the results of the Hausman test, the model used for data analysis is the Random Effect model.

Below is the economic growth rate linear regression model:

$$gdp_g = \alpha + \beta_1 inf_t + \beta_2 unem_t + \beta_3 fdi_t + \beta_4 dcp_t + \varepsilon$$

gdp_g – Central government debt, total (% of GDP);

inf – Inflation, GDP deflator (annual %);

unem – Unemployment, total (% of the total labour force) (modelled ILO estimate);

fdi – Foreign direct investment, net inflows (% of GDP);

dcp – Domestic credit to the private sector (% of GDP).

The study examines a variety of independent variables that influence the link between fiscal deficit and economic growth, including inflation, unemployment rate, foreign direct investment, and domestic lending to the private sector as a proportion of GDP. By taking into account these independent factors, the study can restrict their potential effect, on the Fiscal Deficit and Economic Growth relationship.

For a number of reasons, inflation is included as an independent variable in the econometric analysis. First, inflation may affect economic development, by diminishing the purchase power of money and distorting price signals within the system. When inflation is excessive, individuals and businesses may have diminished buying power, which can affect investment, consumption, and economic growth. Second, inflation can impact the availability and cost of credit in the economy. High inflation can result in increased interest rates, which can reduce

the availability of credit for firms and individuals, hence impacting on economic growth. Because inflation increases the nominal worth of debt, it can directly affect the nominal value of public debt. This may affect the sustainability of public debt and the capacity of governments to meet debt obligations. Inflation is impacted by a number of factors, such as monetary policy, exchange rate fluctuations, and supply-side shocks, and its impact on economic development can be complicated.

Unemployment is included as an independent variable in the research because it is a significant indication of labour market health, and its influence on consumer spending and investment can affect economic growth. When unemployment is high, individuals have less discretionary income to spend on goods and services, which might have a negative impact on consumer spending! This may result in a decrease in demand for products and services and a deceleration of economic growth. Increasing unemployment may also have a detrimental effect on investment. When unemployment is high, businesses may see a decline in demand for their products and services, resulting in reduced profits and lower investments in new enterprises.

Foreign direct investment is included as an independent variable in the study "The Effect of Public Deficits on Economic Growth: Evidence from Eurozone Countries" because it is a crucial source of capital for an economy. Foreign direct investment has the ability to stimulate economic expansion by boosting investment, productivity, and employment. By incorporating net inflows as a proportion of GDP into the research, it is possible to control the effect of this significant source of funds on economic growth. This differentiates the impact of the budget deficit on economic development, given that foreign direct investment can influence the quantity of investment and consumption.

Domestic credit to the private sector as a percentage of GDP is included as an independent variable in the econometric analysis since it is essential for promoting investment and consumption, which are both significant growth drivers. By analyzing domestic lending to the private sector as a proportion of GDP, the research can account for the availability of credit in the economy and its influence on economic growth. This aids in isolating the impact of fiscal deficit on economic growth, given that credit conditions can affect credit supply and demand, as well as borrowing rates.

4. Econometric Results

In Table 1 below, the summarized results of the four econometric models are presented, in addition to the execution of the OLS and OLS Robust models the two-panel data models were also executed, which give more reliable results; Fixed Effect and Random Effect. Based on the results of the applied tests (See Hausman Test), the model which is most suitable for data analysis is the Random Effect model. In this model, we have a coefficient of determination of 25.18%. In Table 1 we also see some tests executed, where according to the inflation factor variance test the data do not suffer from multicollinearity and from the result of the Breusch Pagan test the data are homoscedastic.

Table 1. Results of the coefficients

Model/Variable	OLS	OLSR	FE	RE
INF	0.760***	0.760***	0.538***	0.564***
	-6.95	-4.7	-5.83	-6.12
UNEM	-0.061	-0.061	-0.0888*	-0.0867*
	(-1.30)	(-1.26)	(-2.35)	(-2.28)
FDI	0.00241	0.00241	0.000482	0.000679
	-0.55	-0.54	-0.15	-0.2
DCP	-0.00746	-0.00746	-0.00328	-0.0037*
	(-1.38)*	(-1.33)*	(-0.77)	(-0.87)
_cons	0.524	0.524	1.845**	0.225*
	-1.89	-1.67	-2.84	-2.29
N	346	346	346	346
R ²	17.11	17.11	24.76	25.18
Prob>F	0.000	0.000	0.000	0.000
VIF	1.18			
Hettest	0.5335			
Hausman Test	0.3919			

Source: Author's calculations.

The findings shown in Table 1 indicate that a positive impact on GDP growth is provided by inflation, whereas an adverse impact is provided by domestic credit to the private sector (dcp). Foreign Direct Investment (*FDI*) and Unemployment (*unem*) are not significant factors in this study.

Due to their direct correlation with a nation's overall economic activity, both inflation and domestic credit have a major impact on GDP! Elevated inflation and huge fiscal deficits may reduce economic activity and GDP, however high domestic credit might increase economic activity and the GDP. When inflation is high, it may indicate a high demand for goods and services, which may lead to economic growth. However, high inflation diminishes the purchasing power of people and businesses, leading to a drop in economic activity and GDP. This is due to the fact that high inflation makes it more expensive for businesses to produce goods and services, which may ultimately result in a decline in production and GDP. In contrast, when domestic credit is low, enterprises and people may not have access to the money they need to undertake new projects, or make purchases, resulting in a decline in economic activity and GDP. When domestic credit is high enterprises and consumers have more access to capital, which may lead to an increase in economic activity. However, excessive domestic credit may also lead to an increase in inflation, since more money in circulation can lead to higher pricing for goods and services.

Long-term inflation is necessary when there are considerable budget deficits since it might lead to greater expenditure and decreasing income. When inflation is persistently high, prices for goods and services may increase, requiring the government to spend more on social assistance! Inflation may also diminish people's buying power, causing them to cut their spending and increase their savings. As a result of this, the government may get less money through taxes. Given that the actual worth of debt declines when inflation is high, long-term inflation may also cause the value of government debt to decrease. The debt-to-GDP ratio may increase as a consequence, making it more difficult for the government to service its

loans and raising the danger of default. High inflation makes it more difficult for firms and individuals to prepare for the future, which may erode confidence in the economy. As a consequence, individuals may be driven to spend and invest less, so reducing the expansion of the economy.

The findings in our study are in line with those found in previous research that used models that are comparable to those used in the study by (Nayab, 2013), the conclusions of which also demonstrate that there is a positive correlation between the deficit and the GDP ratio. His findings on co-integration methods, VAR, and the Granger causality test indicated that budget deficits considerably influenced economic growth, validating the Keynesian position on budget deficits.

Using the ARDL panel model to study five countries with low debt-to-GDP ratios and five countries with high debt-to-GDP ratios in the Eurozone from 2000 to 2011 (Adam, Bevan, 2005) and (Cinar et al., 2014), deficit policies have a positive impact on economic growth in the short run. Additionally, a study (Loizides, Vamvoukas, 2005) of Greece, the United Kingdom, and Ireland found that budget deficits impede economic development in all three nations.

According to the findings, a rise in the inflation rate enhances the degree of economic growth. At the 90% level of statistical significance, there is a statistically significant correlation between GDP growth and the unemployment rate.

5. Discussions and Conclusion

The Eurozone countries have faced significant economic challenges in recent years, including high levels of public debt and slow growth. This study provides evidence on the relationship between fiscal deficit and economic growth in Eurozone countries. The findings indicate that a positive impact on GDP growth is provided by inflation, whereas an adverse impact is provided by domestic credit to the private sector. Foreign Direct Investment and Unemployment are not significant factors in this study.

The results suggest that fiscal deficit has a positive impact on economic growth in these countries. This finding is in line with previous research that suggests that the use of fiscal deficits, can be an effective tool for promoting economic growth. However, the relationship between public debt and economic growth is complex and influenced by a range of other factors such as inflation, unemployment, foreign direct investment, and domestic credit to the private sector as a percentage of GDP.

The findings of this study highlight the need for policymakers to take a comprehensive approach when considering the use of fiscal policy, including the use of fiscal deficits, as a tool for promoting economic growth. It is important to consider not only the positive impact of fiscal on economic growth but also the potential impact on other key economic variables such as inflation and employment. Moreover, when implementing fiscal policies such as deficits, governments in Eurozone should consider their effect on all macroeconomic variables and ensure that the measures taken do not have an adverse effect on them. Transparency and accountability in public expenditures are crucial, as are a focus on

structural improvements that encourage long-term economic growth, a sustainable fiscal policy, and close engagement with the private sector. Government expenditure cuts, tax increases, and austerity measures may aid in reducing the budget deficit and public debt. However, these restrictions must not hinder economic development in their implementation. Monetary measures, such as increasing interest rates and adopting quantitative easing, may assist in stabilizing inflation and sustaining economic growth. In addition, monetary policies may be used to manage government debt and influence currency value. Economic growth and productivity may be boosted through structural policies such as labour market reforms, education and training programs, and infrastructure expenditures.

The findings can also inform future research in this field, as additional analysis is needed to understand the complex relationship between fiscal deficit and economic growth in Eurozone countries.

There are a number of limitations to this research. The research focuses on the Eurozone, all developed countries and does not address developing countries. We did not include the year 2021, which is within the effects of Covid-19, due to a lack of data, and we recommend that future research in this area consider this. The analysis of the effects of Covid 19 on the behaviour of GDP growth would enhance the Econometric model. Furthermore, our model might be enhanced if Unemployment were divided into male and female unemployment rates and for primary, secondary, and tertiary education levels. Finally, we did not include socio-political factors such as corruption, which might influence our econometric analysis.

References

- Adam, C. S., Bevan, D. L. (2005). Fiscal deficits and growth in developing countries. – *Journal of Public Economics*. <https://doi.org/10.1016/j.jpubeco.2004.02.006>.
- Afonso, A., Leal, F. S. (2019). Fiscal multipliers in the Eurozone: an SVAR analysis. – *Applied Economics*. <https://doi.org/10.1080/00036846.2019.1616068>.
- Ahlborn, M., Schweickert, R. (2018). Public debt and economic growth – economic systems matter. – *International Economics and Economic Policy*. <https://doi.org/10.1007/s10368-017-0396-0>.
- Al-Khedair, S. (1996). *The Impact of the Budget Deficit on Key Macroeconomic Variables in the Major Industrial Countries*. Florida Atlantic University.
- Amann, J., Middleditch, P. (2021). Revisiting Reinhart and Rogoff after the crisis: A time series perspective. – *Cambridge Journal of Economics*, 44(2), pp. 343-370. <https://doi.org/10.1093/CJE/BEZ009>.
- Amusa, K., Oyinlola, M. A. (2019). The effectiveness of government expenditure on economic growth in Botswana. – *African Journal of Economic and Management Studies*. <https://doi.org/10.1108/AJEMS-03-2018-0081>.
- Auerbach, A. J., Gorodnichenko, Y. (2017). Fiscal multipliers in Japan. – *Research in Economics*. <https://doi.org/10.1016/j.rie.2017.06.003>.
- Bentour, E. M. (2020). Public debt and economic growth: a new assessment.
- Bentour, E. M. (2021). On the public debt and growth threshold: one size does not necessarily fit all. – *Applied Economics*. <https://doi.org/10.1080/00036846.2020.1828806>.
- Blanchard, O. (2019). Public debt and low interest rates. – *American Economic Review*. <https://doi.org/10.1257/aer.109.4.1197>.
- Blot, C., Cochard, M., Creel, J., Ducoudré, B., Schweisguth, D., Timbeau, X. (2015). Fiscal consolidation, public debt and output dynamics in the euro area: Lessons from a simple model with time-varying fiscal multipliers. – *Revue d'Economie Politique*. <https://doi.org/10.3917/redp.246.0953>.
- Boskin, M. J. (2020). Are Large Deficits and Debt Dangerous?. *AEA Papers and Proceedings*. <https://doi.org/10.1257/pandp.20201103>.
- Boussard, J., de Castro, F., Salto, M. (2013). Fiscal Multipliers and Public Debt Dynamics in Consolidations. – *Public Debt, Global Governance and Economic Dynamism (Issue July)*. <https://doi.org/10.1007/978-88->

- 470-5331-1_12.
- Broner, F., Martin, A., Ventura, J. (2021). On Public Spending and Economic Unions. – IMF Economic Review. <https://doi.org/10.1057/s41308-020-00129-x>.
- Canzoneri, M., Collard, F., Dellas, H., Diba, B. (2016). Fiscal Multipliers in Recessions. – Economic Journal. <https://doi.org/10.1111/econj.12304>.
- Chrystal, K. A., Thornton, D. L. (1988). The Macroeconomic Effects of Deficit Spending: A Review. Review. <https://doi.org/10.20955/r.70.48-60.wqs>.
- Cinar, M., Eroglu, I., Demirel, B. (2014). Examining the Role of Budget Deficit Policies in Economic Growth from A Keynesian Perspective. – International Journal of Economics and Finance. <https://doi.org/10.5539/ijef.v6n10p191>.
- Corsetti, G., Kuester, K., Meier, A., Müller, G. J. (2013). Sovereign Risk, Fiscal Policy, and Macroeconomic Stability. – Economic Journal. <https://doi.org/10.1111/econj.12013>.
- Dao, B. T., Bui, T. (2017). Budget Deficit and Economic Growth Prediction in the Case of Vietnam. – SSRN Electronic Journal. <https://doi.org/10.2139/ssrn.2816710>.
- Drautzburg, T., Uhlig, H. (2015). Fiscal stimulus and distortionary taxation. – Review of Economic Dynamics. <https://doi.org/10.1016/j.red.2015.09.003>.
- Dudzevičiūtė, G., Šimelytė, A., Liučvaitienė, A. (2018). Government expenditure and economic growth in the European Union countries. – International Journal of Social Economics. <https://doi.org/10.1108/IJSE-12-2016-0365>.
- Ewaida, H. Y. M. (2017). The impact of sovereign debt on growth: An empirical study on GIIPS versus JUUSD countries. – European Research Studies Journal.
- Eyraud, L., Gaspar, V., Poghosyan, T. (2017). Fiscal Politics in the Euro Area. – IMF Working Papers. <https://doi.org/10.5089/9781475572919.001>.
- Ferrer-i-Carbonell, A., Frijters, P. (2004). How important is methodology for the estimates of the determinants of happiness?. – Economic Journal. <https://doi.org/10.1111/j.1468-0297.2004.00235.x>.
- Fischer, S. (1993). The role of macroeconomic factors in growth. – Journal of Monetary Economics, 47(5), pp. 485-512. [https://doi.org/10.1016/0304-3932\(93\)90027-D](https://doi.org/10.1016/0304-3932(93)90027-D).
- Huidrom, R., Kose, M. A., Lim, J. J., Ohnsorge, F. (2019). Why Do Fiscal Multipliers Depend on Fiscal Positions?. – SSRN Electronic Journal. <https://doi.org/10.2139/ssrn.3360720>.
- Huidrom, R., Kose, M. A., Lim, J. J., Ohnsorge, F. L. (2020). Why do fiscal multipliers depend on fiscal Positions?. – Journal of Monetary Economics. <https://doi.org/10.1016/j.jmoneco.2019.03.004>.
- Kosor, M. M., Perovic, L. M., Golem, S. (2019). Efficiency of public spending on higher education: A data envelopment analysis For Eu-28. Problems of Education in the 21st Century. <https://doi.org/10.33225/pec/19.77.396>.
- Krugman, P. (2013). End this depression now! Choice Reviews Online. <https://doi.org/10.5860/choice.50-3535>.
- Loizides, J., Vamvoukas, G. (2005). Government Expenditure and Economic Growth: Evidence from Trivariate Causality Testing. – Journal of Applied Economics. <https://doi.org/10.1080/15140326.2005.12040621>.
- Marimon, R., Cooley. (2018). Agreeing to an unemployment insurance system for the euro area? In The EMU after the Euro Crisis: Lessons and Possibilities (Issue May). www.cepr.org.
- Miyamoto, W., Nguyen, T. L., Sergeyev, D. (2018). Government spending multipliers under the zero lower bound: Evidence from Japan. – American Economic Journal: Macroeconomics. <https://doi.org/10.1257/mac.20170131>.
- Monastiriotis, V. (2015). The End of Austerity?. – Intereconomics. <https://doi.org/10.1007/s10272-015-0520-8>.
- Nayab, H. (2013). The Relationship between Budget Deficit and Economic Growth of Pakistan. – Journal of Economic and Sustainable Development.
- Ncanywa, T., Letsoalo, T. E. (2019). Which among twin deficits hypothesis, twin divergence, and Ricardian's equivalence hold in a developing country?. – Journal of Public Affairs. <https://doi.org/10.1002/pa.1904>.
- Panjer, N., de Haan, L., Jacobs, J. P. A. M. (2020). Is fiscal policy in the euro area Ricardian?. – Empirica. <https://doi.org/10.1007/s10663-019-09431-y>.
- Perdichizzi, S. (2017). The impact of ECBs conventional and unconventional monetary policies on European banking indexes returns. Working Paper Series, May.
- Qehaja, D., Gara, A., Qorraj, G. (2022). Allocation of Government Expenditures in Sectors and Their Impact on Economic Growth – Case Study: Western Balkan Countries. – InterEULawEast, 9(1), pp. 33-50. <https://doi.org/10.22598/iele.2022.9.1.2>.
- Qehaja, D., Zhushi, G., Salihu, A. (2022). The Impact of Fiscal Rules on the Fiscal Deficit for Ten Countries of the European Union – Empirical Analysis for the Period 1995-2020. – International Journal of Sustainable Development and Planning, 17(3), pp. 1017-1023. <https://doi.org/10.18280/ijstdp.170333>.

Qehaja-Keka, V., Qehaja, D., Hoti, A. (2023). The Effect of Fiscal Deficits on Economic Growth: Evidence from Eurozone Countries.

- Ramey, V. A. (2019a). Ten years after the financial crisis: What have we learned from the renaissance in fiscal research?. – Journal of Economic Perspectives. <https://doi.org/10.1257/jep.33.2.89>.
- Ramey, V. A. (2019b). Ten years after the financial crisis: What have we learned from the renaissance in fiscal research?. – Journal of Economic Perspectives, 33(2), pp. 89-114. <https://doi.org/10.1257/jep.33.2.89>.
- Risti, L. C., Nicolaescu, C., Tăgăduan, D., Risti, L. C., Nicolaescu, C., Tăgăduan, D. (2013). Whether the public financial events in Romania's latest 10 years confirm α , β . – Journal of Economics and Business Research, 19(1), pp. 162-170.
- Srithongrung, A., Kriz, K. A. (2014). The impact of subnational fiscal policies on economic growth: A dynamic analysis approach. – Journal of Policy Analysis and Management. <https://doi.org/10.1002/pam.21784>.
- Van, V. B., Sudhipongpracha, T. (2015). Exploring Government Budget Deficit and Economic Growth: Evidence from Vietnam's Economic Miracle. – Asian Affairs(UK). <https://doi.org/10.1080/00927678.2015.1048629>.
- Wieland, V., Afanasyeva, E., Kuete, M., Yoo, J. (2016). New Methods for Macro-Financial Model Comparison and Policy Analysis. – Handbook of Macroeconomics. <https://doi.org/10.1016/bs.hesmac.2016.04.004>.