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# The Impact of Fiscal Deficit on Economic Growth: Evidence from Europe

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**ABSTRACT**

The purpose of this paper is to determine the impact of fiscal deficit on economic growth to find out whether it is possible to promote economic growth through reduction of the gap between government revenue and expenditures. The sample for empirical analysis consists of thirty-seven European countries according to United Nations approach. We used panel regression to test stated hypothesis. The findings demonstrate that in the case of developed countries the fiscal deficit reduction could be one of the tools of accelerating economic growth. For developing countries, this method should not be used, as the deficit has no significant impact on GDP per capita.

## 1. Introduction

The purpose of this paper is to determine the impact of fiscal deficits on economic growth to understand whether it is possible to stimulate economic growth by reducing the gap between government revenues and expenditures.

The global financial and economic downturn following the COVID19 pandemic has been a major cause of the rapid growth of fiscal deficits and public debt in most countries (Augustin et al., 2021). Consequently, there has been a surge of interest in the possible effects of fiscal deficits on national economies, primarily on the rate of economic growth and positions of a country in the world rankings.

Some economists have argued that the relationship between fiscal deficits and economic growth is positive and that fiscal deficits promote economic growth if expenditure is directed towards investment, including investments in human capital (Ang & Longst, 2013). The other group of scholars hold the opposite view (Brender and Drazen, 2015). They believe that fiscal deficits and economic growth have a negative relationship.

Considering that there is considerable debate about the impact of economic growth rates and the position of countries in the world economic development rankings, we have formulated two hypotheses:

H1: Fiscal deficit has negative impact on GDP per capita.
H2: Fiscal deficit has negative impact on the Index of Economic Freedom.

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Since most empirical studies are based on a sample of OECD or European Union countries, we decided to expand the sample to include countries with different levels of not only economic but also institutional development.

The analysis was based on thirty-seven European countries according to United Nations approach. The results of the analysis showed that in developed countries fiscal deficits have a positive impact on economic growth. In developing countries, no positive impact of fiscal deficits on economic growth was found. These findings are useful for professionals who are responsible for fiscal policy development.

The article is organised as follows: the second section contains a literature review, the third section describes the research methodology, the fourth section presents the research results, and the last section presents conclusions and prospects for further research.

## 2. Literature review

The impact of fiscal deficits on GDP dynamics, as a key indicator of economic development, is one of the most discussed topics among researchers as well as among government officials responsible for macroeconomic policy making. The interest in this impact is primarily due to the ambiguity of the effects of permanent fiscal deficits on the main macroeconomic indicators. Some economists assess the impact of fiscal deficits as sharply negative, others as rather positive, and there are economists who see the impact of fiscal deficit as completely neutral. Many researchers argue that the effects of fiscal deficits depend on the time horizon: in the short, medium, and long term, fiscal deficits affect the dynamics of macroeconomic indicators differently, and before studying their effects, the time horizon of the study should be precisely defined.

According to Keynesian theory, government spending is an important component of aggregate demand (AD) in the economy. If there is a shortage of AD, the government can increase spending, which in turn increases AD and thus stimulates the economy (Keynes, 1936). This government stimulus solution worked well to increase output, employment, and income, which lifted the US economy out of the Great Depression of 1929-1933 and during the financial crisis in 2007-2009.

The Ricardian equivalence paradigm espouses that increases in fiscal deficits (for instance, through government spending) must be paid for either today or in the future with the total present value of receipts fixed by the total present value of spending (Bernheim, 1989). This implies that a reduction in today's tax receipts must be matched by corresponding increases in future taxes, leaving interest rates, and private investment unchanged.

Recent publications provide a wide range of empirical evidence of fiscal deficit impact on different economic indicators. Haider et al. (2016) provided empirical evidence regarding the corrosive effect of fiscal deficit to economic growth in the case of Bangladesh. Earlier Cinar et al (2014) provided evidence confirming of a negative relationship between fiscal deficit and economic growth in the short run though the relationship turned out to be positive in the long run. The result of studies by Funlayo et al (2014), Arjomanda et al (2016), Mohanty (2017) and Nazari et al (2019) also indicated the negative relationship between fiscal deficit and economic growth.

Several studies provided evidence to support the Keynesian ideas about fiscal deficit. Eminer (2015), Osoro (2016), Mohamed Aslam (2016), Dritsakiset al (2016), Despotovic & Durkalic (2017) confirmed of a positive relationship between fiscal deficit and economic growth.

In turn, Vien Bui Van (2015) demonstrates that in the case of Vietnam, government deficits

had no direct effects on the country's economic productivity between 1989 and 2011. Farahbakhsh & Farzinvash (2010) state that there is not a significant relationship between the fiscal deficit, private consumption, and economic growth in high income countries. But the results from the middle- and low-income countries confirm the significant relationship.

An analysis of recent publications shows that trends in the impact of fiscal deficits are mixed. Much depends on the causes of the deficit, and hence on the fiscal policy of the particular government. In addition, there is a large literature on empirical studies of fiscal deficits in African and Asian countries, while the European countries are not sufficiently covered, although fiscal deficits are also a common problem in these countries. Consequently, we have identified the research gap as a lack of research on the effects of fiscal deficits on economic development and the position of European countries in the economic development rankings in the medium term.

## 3. Methodology

Our empirical assessment of the impact of fiscal deficits on economic growth was conducted on a sample of thirty-seven countries according to the United Nations GeoScheme for Europe (UN geo-scheme). The UN geo-scheme is a system that divides the countries of the world into regional and sub-regional groups. The designers of the mentioned above approach states that "the assignment of countries or territories to particular groups is made for statistical convenience and does not imply any assumption as to the political or other affiliation of countries or territories" (United Nations geoscheme). It means that we can work with panel data from different countries located in the same geographical region, but which have a different level of economic and institutional development. The UN geo-scheme was created for statistical analysis and consists of macro-geographical regions arranged, as far as possible, according to the continents. The countries included in our sample are Albania, Austria, Belarus, Belgium, Bosnia and Herzegovina, Bulgaria, Croatia, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Netherlands, North Macedonia, Norway, Poland, Portugal, Republic of Moldova, Romania, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Ukraine, United Kingdom of Great Britain and Northern Ireland. The statistical information was obtained from the World Bank website (all variables except of Index of Economic freedom) and the information about Index of Economic Freedom was obtained from the website of Heritage Foundation. The period of analysis covers period from 2001 till 2019. The data are organized into panels.

### 3.1. The test of the first hypothesis

The general description of the model is provided below (1):

$$\mathrm{GDP_{p.c.}} = \beta_0 + \beta_1 \mathrm{FD}_t + \beta_2 \mathrm{NX}_t + \beta_3 \mathrm{GCF}_t + \varepsilon_t \quad (1)$$

Where:

$\mathrm{GDP}_{\mathrm{p.c.}}$ is Gross Domestic Product per capita,

$\mathrm{FD}_t$ is fiscal deficit as a percentage of GDP,

$\mathrm{NX}_t$ is net exports,

$\mathrm{GCF}_t$ is gross capital formation,

$\beta_0$ is the drift component,

$\beta_1$ is correlation coefficient for FD,

$\beta_2$ is correlation coefficient for NX,

$\beta_3$ is correlation coefficient for GCF,

$\varepsilon_t$ is the error term.

GDP per capita is an important indicator of economic performance and a useful unit to make cross-country comparisons of average living standards and economic wellbeing. Therefore, we choose this indicator as endogenous variable.

Fiscal deficit is exogenous variable, but it is not only variable which has impact on GDP per capita. Since net export and capital formation according to literature review have significant impact on the GDP per capita we define those indicators as control variables.

Net exports have been chosen as a control variable because it serves as an indicator of the financial health of a country. A country with a trade surplus receives more money from the external market than it spends. A negative net export figure is a trade deficit for that country. This means that the total value of the country's imports is greater than the total value of its exports. A country with a trade deficit spends more money on the external market than it earns. The net exports variable is particularly important in calculating a country's GDP. A country with a high export value receives income from other countries. This strengthens the financial position of the country and contributes to GDP growth.

Ensuring sustainable economic growth closely correlates with the actual modes of capital accumulation. The relevant process not only creates the preconditions for the continuous renewal of the production system and the increase in the volume of products and services supplied by the economies of different countries, but also influences the behavior of economic agents. The process of capital accumulation is the result of complex interrelationships established within the various components of the economic mechanism, the characteristics of the social model, the state of the production system, the direction of technological change and the degree of openness of national economies. De Long & Summers (1991, 1993) studied this issue in more detail.

### 3.2. The test of the second hypothesis

Currently there are number of different rankings which can be used to measure economic success of a country. To test second hypothesis, we choose the Index of Economic Freedom (IEF). The IEF that has been calculated annually by the Wall Street Journal and the Heritage Foundation for most countries since 1995. Economic freedom is the fundamental right of every human to control their own labor and property. In economically free societies, governments allow labor, capital, and goods to move freely, and refrain from coercion or constraint of liberty beyond the extent necessary to protect and maintain liberty itself. The Index of Economic Freedom (IEF) documents the positive relationship between economic freedom and a variety of positive social and economic goals. The measure economic freedom is based on 12 quantitative and qualitative factors, which include fiscal health, investment freedom, government integrity etc (Index of Economic Freedom). Basically, the IEF let us to test how fiscal deficit influence institutional environment and at the same time economic development. It is an important test because some countries can use fiscal deficit to achieve a short-term economic growth but at the same time it can affect badly institutional freedom and demotivate further economic growth.

The general description of the model for second hypothesis is provided below (2):

$$\mathrm{IEF} = \beta_0 + \beta_1 \mathrm{FD}_t + \beta_2 GE_t + \beta_3 \mathrm{GCF}_t + \varepsilon_t \quad (2)$$

Where:
IEF is the Index of Economic Freedom,
$\mathrm{FD}_t$ is fiscal deficit as a percentage of GDP,
$\mathrm{GE}_t$ is the Government effectiveness index,
$\mathrm{GCF}_t$ is gross capital formation,
$\beta_0$ is the drift component,

$\beta_1$ is correlation coefficient for FD,
$\beta_2$ is correlation coefficient for NX,
$\beta_3$ is correlation coefficient for GCF,
$\varepsilon_t$ is the error term.

Since we test relationship between fiscal deficit and institutional changes, it is important to test how government effectiveness affects exogenous variable. Therefore, we add to our model as a control variable the Government effectiveness index. The Government effectiveness index is elaborated by the World Bank Group and measures the quality of public services, civil service, policy formulation, policy implementation and credibility of the government's commitment to raise these qualities or keeping them high. This index includes 193 countries ranked from -2.5 (less effective) to 2.5 (more effective). It is one in a broad set of government quality indicators (The Worldwide Governance Indicators).

Calculations have been made for all European countries as well as separately for developed and developing countries. We performed separate calculations because fiscal deficits can vary, given the historical and geographical characteristics of a country.

The data set was tested for missing variables, the variables were tested for multicollinearity. All variables were logged. The regression results are described in the next section.

## 4. Results and Discussion

The regression results for the first hypothesis are presented in the Table 1.

Table 1.
*Regression results for the first hypothesis*

| | **Full sample** | | **Developed countries** | | **Developing countries** | |
|---|---|---|---|---|---|---|
| | **Pooling** | **Fixed effects** | **Pooling** | **Fixed effects** | **Pooling** | **Fixed effects** |
| Fiscal deficit | -1.2***<br>(0.4) | -1.3***<br>(0.4) | -1.4***<br>(0.4) | -1.5***<br>(0.4) | 2.3<br>(1.6) | 2.4<br>(1.9) |
| Net export | 0.1**<br>(0.02) | 0.1***<br>(0.02) | 0.2***<br>(0.02) | 0.2***<br>(0.02) | -0.01<br>(0.04) | -0.01<br>(0.04) |
| Gross capital formation | 0.7**<br>(0.01) | 0.9***<br>(0.01) | 0.8**<br>(0.1) | 1.0***<br>(0.1) | 0.6<br>(0.4) | 0.7*<br>(0.4) |
| Observations | 713 | 338 | 476 | 304 | 229 | 34 |
| F statistic | 28.7*** | 29.8*** | 36.4*** | 36.2*** | 2.1 | 2.5* |

Note: *p<0.1, **p<0.05, ***p<0.01
Source: Authors' calculations

As can be seeing from the Table 1, a correlation between fiscal deficit and GDP per capita for the full sample is negative and significant: $\beta_1$ = -1.2 for pooling regression and $\beta_1$ = -1.3 for regression with fixed effects. It means that in 2001-2019 one percentage point increase in the fiscal deficit leads to a 1.2 percentage point decrease in GDP per capita in European countries according to pooling regression and to 1.3 percentage point decrease in GDP per capita according to regression with fixed effects. The impact of net exports in pooling regression and regression with fixed effects is quite significant (0.1), and it shows that the influence of net exports depends on policy of a particular country.

Fiscal deficit influence is also negative for developed countries $\beta_1$ = -1.4 for pooling regression and $\beta_1$ = -1.5 for regression with fixed effects. The difference in effects shown by pooling regression and regression with fixed effects is significant, it means that governments of developed countries actively use fiscal deficit as a regulatory instrument.

The negative effect of fiscal deficit is compensated by positive effect of net export and gross capital formation. The net export and gross capital formation have a positive and significant correlation with GDP per capita ($\beta_2$= 0.1, $\beta_3$= 0.9) for the full sample. It is also positive for developed countries ($\beta_2$ = 0.2, $\beta_3$ = 1). The effect of next export does not change in pooling regression and regression with fixed effects, but β for gross capital formation in pooling regression differ significantly from regression with fixed effects. The value and the significance are higher for the model with fixed effects. We can conclude, that developed European can use fiscal deficit as a regulatory instrument until its negative effect is balanced by net export and gross capital formation. It means, that until country has positive net export the negative impact of fiscal deficit on GDP in short run is limited. We did not find multicollinearity between gross capital formation and fiscal deficit, it means that there is no direct correlation between fiscal deficit and gross capital formation, but these two indicators should be studied further. It could be the case for developed countries that debt funding obtained to cover fiscal deficit is used as active investment, therefore, increase gross capital formation.

As can be seeing from the Table 1, fiscal deficit does not have any effect on GDP per capita in developing countries. For developing countries net export has almost no effect on GDP per capita, and gross capital formation has positive per capita at low significance level. This situation requires further investigation because each developing country included in sample has fiscal deficit. The absence of any effect during the studied period does not exclude cumulative effect for the long run. Absence of net export effect can be caused by on-going trade balance deficit in the developing countries. The fact that gross capital formation does not have any effect on GDP per capita requires further studies which shall consider institutional conditions of developing countries.

To summarize, the hypothesis 1 is confirmed for developed countries and rejected for the developing countries.

The regression results for the second hypothesis are presented in the Table 2.

Table 2.
*Regression results for the second hypothesis*

| | **Full sample** | | **Developed countries** | | **Developing countries** | |
|---|---|---|---|---|---|---|
| | **Pooling** | **Fixed effects** | **Pooling** | **Fixed effects** | **Pooling** | **Fixed effects** |
| Fiscal deficit | 0.3***<br>(0.1) | -0.01<br>(0.05) | 0.01<br>(0.1) | -0.05<br>(0.05) | 0.03<br>(0.3) | 0.2<br>(0.2) |
| Government effectiveness | 0.1***<br>(0.004) | 0.04***<br>(0.01) | 0.1***<br>(0.01) | 0.1***<br>(0.01) | -0.002<br>(0.01) | 0.03***<br>(0.01) |
| Gross capital formation | 0.04**<br>(0.02) | 0.01<br>(0.01) | 0.04***<br>(0.02) | 0.02**<br>(0.01) | 0.01<br>(0.1) | -0.1***<br>(0.04) |
| Observations | 554 | 554 | 475 | 475 | 79 | 79 |
| F statistic | 97.2*** | 22.0*** | 109.6*** | 23.7*** | 0.03 | 6.7*** |

Note: *p<0.1, **p<0.05, ***p<0.01
Source: Authors' calculations

The information presented in the Table 2 indicates significant positive effect of fiscal deficit on the Index of Economic Freedom (IEF) — $\beta_1$ is 0.3 according only to pooling regression for the full sample. Two other models indicate the absence of significant impact of fiscal deficit on the IEF.

The influence of government effectiveness for the full sample is significant and positive: $\beta_2$ = 0.1 according to pooling regression and 0.04 according to regression with fixed effects. It is also positive for developed countries according to both regressions ($\beta_2$ = 0.1). In case with

developing countries only regression with fixed effects confirms of a positive relationship between government effectiveness and the IEF ($\beta_2 = 0.03$). It means that positive changes in government efficiency increase positions of European countries in the IEF ranking. Meanwhile fiscal policy of European countries regarding fiscal deficit is not harmful for the economic environment in developed and developing countries.

There is significant and positive impact of gross capital formation ($\beta_3 = 0.04$) according to pooling regression for all studied countries, the same result show both regressions in developed countries. In developing countries, this impact is significant but negative ($\beta_2 = - 0.1$). We can conclude that hypothesis 2 is rejected for all three samples. It means that fiscal policy regarding fiscal policy does not affect the institutional environment, which means that conditions for business are not becoming worse. Therefore, in the studied case, the positive impact of fiscal deficit for developed countries does not contribute to the change of a country position in the economic freedom ranking. For developing countries, the effect is ambiguous because the impact of fiscal deficit on economic development is not significant.

## 5. Conclusion

We investigated the relationship between fiscal deficits and economic growth to determine whether it is possible to stimulate economic growth by reducing the gap between government revenues and expenditures. The results support the Ricardian equivalence paradigm as well as the idea that fiscal deficits have a negative impact on economic growth. The results of the tests for both hypotheses showed that fiscal deficit reduction can be a tool for accelerating economic growth only in developed countries. For developing countries, this method should not be used because deficits have no significant impact on GDP per capita. For developing countries, other methods, and techniques to stimulate economic growth and development in the long term are recommended. As the study shows, part of the potential for economic growth lies in the stimulation of gross capital formation.

The article has several limitations. First, the sample size is limited. We plan to increase it for the next stage of research. Second, the number of control variables is small, due to the current sample size. For the next stage of the study, the number of variables will be increased. The results of the study also point to the need to include institutional factors describing government effectiveness in the list of control variables. This would reveal the relationship between the impact of fiscal deficit and GDP per capita growth, considering the institutional characteristics of individual countries.

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