Relationship between the basic interest rate and the economic growth of the OECD

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Abstract: This study aims to examine the relationship between economic growth, measured by GDP, and the key interest rate of OECD countries 15 for the period 2001-2017. Proving such a relationship would be useful in making decisions affecting the variables in question, as well as in predicting them. Detecting (or not) the relationship between the studied variables would be important in the analysis of a number of economies that, far more than ten years after the financial crisis, remain far from their pre-crisis potential.;

Keywords: economic growth, base interest rate, Granger causality

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1. LITERATURE REVIEW

Monetary policy and the role of central banks received a serious boost in the last century. Through their monetary policy, central banks are able to control money supply, interest rates and economic growth. Effective central bank policies play a significant role in economic stability.

Interest rates are a key element in the transfer of monetary policy to economic activity [1]. The key interest rate is one of the most important instruments of the Central Bank for conducting monetary policy. This is the interest rate at which the Central Bank lends to commercial banks. The latter has a direct and immediate impact on the levels at which commercial banks lend to citizens and businesses. With the help of the KIR, the Central Bank could transform and redirect the growth of the economy. The key interest rate is an economic variable that plays an important role at both the macroeconomic and microeconomic levels. Interest rates play a crucial role in the efficient allocation of resources, are aimed at facilitating the growth and development of the economy, as well as, as a technique for managing demand. They help to achieve internal and external balance with a special focus on mobilizing the deposit and creating credit to boost economic development [2].

Theoretically, the relationship between interest rates and economic growth is not unambiguously defined. In the literature and research on the topic we found results and statements such as: the key interest rate affects economic growth, economic growth affects the key interest rate, the two variables affect each other, and that the latter do not affect

each other. In principle, the interest rate is determined as the price of capital paid for its use over a period of time. According to macroeconomic theory, interest rates and economic growth are negatively related [3]. A number of scholars argue that there is a relationship between interest rates and economic growth and it is negative. Low interest rates encourage business, investment and consumption, while high interest rates lead to savings and shrink consumption.

According to (Moazzami 1991), in theory, the relationship between the key interest rate and economic growth is inversely proportional. The direct effects of changes in interest rates are related to the level of investment and accumulated capital, which allow the economy to realize its growth potential and maintain the renewal of productive assets in line with technical progress [4]. D'Adda and Scorcu (2001) conducted an empirical study of the relationship between real interest rates and economic growth by constructing regressions using data from 20 industrialized economies for the period 1965-1994. The empirical data observed by researchers support the traditional view of a positive relationship between growth and capital accumulation, and a negative relationship between accumulation and real interest rates. Researchers estimate that a 1% increase in the real interest rate has led to a fifth of the percentage decrease in the average growth rate [5].

Krueger at all (2003) argues that an increase in interest rates will lead to a decline in investment, which would lead to a decline in economic growth. They construct a least squares model to test hypotheses and describe the relationship between dependent and independent variables. They found a significant negative relationship between interest rates and GDP [6]. An increase in interest rates could result in a refusal to consume credit or a refusal to invest, which would reduce GDP growth. The high interest rate, reflecting the anti-inflationary position of monetary policy, is one of the factors slowing growth.

Rising interest rates raise the price of money, especially when investments show significant sensitivity to interest rate fluctuations. This could lead to a decline in aggregate demand, on the one hand directly through investment and on the other hand indirectly through a lower effect of wealth in the private sector and lower consumption. Higher interest rates could lead to increased savings and attract foreign cash flow, which would make the national currency more expensive. The latter is especially true in a relatively small open economy, with a flexible exchange rate and relatively mobile capital [7]. According to the Economic Web Institute, if interest rates rise too fast, they could cut GDP, causing damage to the economy. The reason for this is the unavailability of credit, which would prevent new goods and services from reaching the market [8].

Evans Agalega & Samuel Antwi (2013) found that there is a positive relationship between GDP and inflation, and interest rates and GDP are inversely proportional [9]. Di Giovanni et all (2009) found that the interest rate moderately reduced quarterly real growth. Their results obtained with the least squares model (OLS) show that a one percent increase in the interest rate in the Netherlands would lead to a decline of 0.094 percent in real growth. Such an increase in interest rates in France would lead to a decline of 0.015 percent in real growth. The researchers' results show an average interest rate effect of -0.043 on real growth in twelve European countries [7]. Danquah, M. (2006) found that debt interest rates have a significant impact on GDP, finding that there is an inverse long-term relationship [10].

Hassan. M at all. argue that the budget deficit increases the interest rate, which can lead to a reduction in investment. This in turn can have a negative effect on economic growth and exports [11]. According to the Federal Reserve Bank of Dallas, in the short term, lower interest rates reduce the dollar's exchange rate, which increases the competitiveness of US exports. This leads to higher costs for goods and services exported from the United States, increasing GDP. Some authors argue that there is a dependence in the direction of economic growth - the basic interest rate. There are several reasons why an increase in GDP could lead to higher interest rates. On the one hand, when the economy thrives, more investors will invest money in it. This increased demand for funds can lead to demand for credit and higher interest rates. Second, as the economy grows rapidly, inflation as a whole will rise. This will lead to an increase in the interest rate managed by creditors in order to keep up with inflation [12].

According to StevenM.Suranovic, the effect of real GDP on interest rates is essentially equivalent to the effect of domestic economic growth on interest rates. According to scientists, an increase in GDP would lead to an increase in interest rates as well as an increase in demand for funds [13]. Other authors do not find a relationship between the key interest rate and economic growth. In his article, Tomas Araujo discusses the relationship between GDP growth and the economic variables that could affect it, such as interest rates, unemployment, labor force participation rates, stock market performance and bond market performance. It does not find a statistically significant relationship between interest rates and GDP growth [14]. Other studies show that government deficit spending has a negative effect on GDP. Inflation and interest rates have no effect on GDP. Unemployment alone has a negative impact on GDP in the presence of deficit spending [15].

2. DEPENDENCE BETWEEN ECONOMIC GROWTH AND THE BASE INTEREST RATE

We conducted a study on the existence of causality between economic growth - measured by Gross Domestic Product and the key interest rate of OECD countries 15. The data for the study are taken from the website of the World Bank and refer to the period 2001 - 2017. For this purpose, we used Granger's model, looking for dependences in both directions of the considered variables with a time interval of one to four years. According to the model used, causality is present when the value obtained is less than 0.1. The results are shown in Table 1.

Table 1. Depedencies between economic growth and the base interest rate

	GDP/Int 1:4	GDP/Int 1:3	GDP/Int 1:2	Int/GDP 1:4	Int/GDP 1:3	Int/GDP 1:2
AUT	0.7321	0.5442	0.9814	0.1388	0.05978	0.5154
BEL	0.508	0.6458	0.8999	0.003721	0.006762	0.5551
DNK	0.9156	0.6305	0.5922	0.3255	0.1286	0.8465
FIN	0.8989	0.7079	0.9659	0.3551	0.14	0.6443
DEU	0.8996	0.7598	0.8728	0.3674	0.134	0.6657
GRC	0.962	0.7746	0.72	0.3372	0.3913	0.8689
IRL	0.5883	0.2847	0.1928	0.04247	0.02937	0.6925
ITA	0.61	0.3814	0.9203	0.2004	0.1204	0.7559
LUX	0.6888	0.3965	0.9183	0.4419	0.1152	0.6675
NLD	0.5456	0.3571	0.9379	0.2973	0.1331	0.7016
PRT	0.4116	0.3556	0.6401	0.1387	0.06007	0.9589
ESP	0.8468	0.6961	0.8166	0.0322	0.3472	0.9773
SWE	0.7929	0.5449	0.3153	0.5059	0.2868	0.9196
FRA	0.3091	0.2694	0.9884	0.07517	0.02334	0.5765
GBR	0.4175	0.226	0.08832	0.003024	0.004528	0.3792

Source: Own research

3. ANALYSIS OF THE OBTAINED RESULTS

According to Granger's model, causality is present when the coefficient obtained from the model has a correlation below 0.1. Accordingly, from the obtained results we could conclude that causality is present in both directions of the considered variables.

The obtained results could be divided into two main categories.

The first category is that with the presence of dependence in the direction of the main interest rate - economic growth. This includes seven of the fifteen countries surveyed. These are: Austria, Belgium, Ireland, Portugal, Spain, France and the United Kingdom.

In Austria, the KIR has an impact on GDP after three years and the coefficient obtained is 0.06. The same dependence is observed in Portugal again with the same coefficient of 0.06. In Spain, the dependence occurs in the fourth year and the value is 0.032.

In Belgium, dependence occurs between the first and third year with a coefficient of 0.007 and between the first and fourth with a coefficient of 0.004. In Ireland, dependence occurs between the first and third year with a coefficient of 0.029 and between the first and fourth with a coefficient of 0.042. In France, dependence occurs between the first and third year with a coefficient of 0.023 and between the first and fourth with a coefficient of 0.075. In the United Kingdom, dependence occurs between the first and third years with a coefficient of 0.005 and between the first and fourth with a coefficient of 0.003.

The second category is that with the presence of dependence in the direction of economic growth - the main interest rate. Only the United Kingdom falls into this category, with GDP influencing the BIR next year and the value of the coefficient being 0.088. Britain in and the only country where there is dependence in both directions.

None of the studied dependencies were observed in Denmark, Finland, Germany, Greece, Italy, Luxembourg, the Netherlands and Sweden.

In conclusion from the study, it could be concluded that in seven of the fifteen countries surveyed, there is evidence of dependence in the direction of interest rate - economic growth. In the other eight countries, there is no dependence in either direction. Dependence in the direction of economic growth - the main interest rate found in the UK we find as an exception.

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