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Sandra Jednak
University of Belgrade

Dragana Kragulj
University of Belgrad

THE RELATIONSHIP BETWEEN ECONOMIC GROWTH AND INFLATION: THE CASE OF POLAND AND SERBIA

WZROST EKONOMICZNY A INFLACJA: NA PODSTAWIE POLSKI I SERBII

Summary

Obtaining stability, output growth and full employment are the goals of economy. Inflation affects both economy and society. The aim of the paper is to give theoretical overview of the relationship between economic growth and inflation. There is a positive, negative and neutral correlation between inflation and economic growth. During high inflation there is negative influence on economic growth. During the low level of inflation, the relationship is not so prominent. Furthermore, the focus is given to the connection and correlation between these

Streszczenie

Podstawowymi celami gospodarki jest uzyskanie stabilności, wzrostu gospodarczego oraz pełnego zatrudnienia. Inflacja wpływa nie tylko na gospodarkę, ale i na społeczeństwo. Celem artykułu jest przedstawienie teoretycznych związków pomiędzy wzrostem gospodarczym a inflacją. Istnieją pozytywne, negatywne i neutralne korelacje pomiędzy inflacją a wzrostem ekonomicznym. Wysoka inflacja wpływa negatywnie na wzrost gospodarczy, podczas gdy niska inflacja nie ma tak wyraźnego wpływu. Artykuł zwraca szczególną uwagę na związki

two indicators in Poland, Serbia and the EU from 1990s to 2016. The results show that there is no significant correlation between the two indictors in these countries. Further research would be run with more complex analysis.

Key words: economic growth, inflation, Poland, Serbia

pomiędzy wysoką, niską inflacją a wzrostem gospodarczym w Polsce, w Serbii i w UE w okresie od lat 90tych do roku 2016. Wyniki analiz nie wskazują na znaczący związek pomiędzy wskaźnikami w badanych krajach. Stąd, dalsze badania będą prowadzone w kierunku pogłębionej analizy.

Słowa kluczowe: wzrost gospodarczy, inflacja, Polska, Serbia

Introduction

Through its instruments and measures, economic policy should stimulate economic subjects to act efficiently to obtain macroeconomic stability and thus gain full employment, price stability and output increase. There is a relationship between these goals, but it is not always possible to fulfil all of them. For this reason, there is theoretical research into that relationship. There are different opinions on the relationship between inflation and economic growth. The aim of this paper is to provide a theoretical overview of different opinions on the relationship between inflation and economic growth. Furthermore, the paper focuses on these indicators in Poland, Serbia and the EU. According to graphic illustration for the period from 1990s to 2016 and the correlation, we can say that there is no significant correlation between the two indicators in the observed economies. However, it must be noted that the effect of inflation on the economic growth and vice versa, depends on economic development. The countries that were undergoing transition and economic reforms faced inflation at the beginning of the processes, but the implemented economic policies reduced the inflation to single-digit and gained positive rates of economic growth at the same time.

Overview of effects of inflation and economic growth

Inflation affects both economy and society. High inflation is an obstacle towards economic growth and stability. East European countries and South American countries alike, encountered this problem at the beginning of their transition processes. Some of the common economic effects of high inflation are: 1) increasing price level, 2) decreasing monetary value 4) decreasing

purchasing power, 5) seigniorage (government raise revenue from printing money in order to spend more without tax increases or selling bonds, but it causes an inflation, and introduces inflation tax on persons who hold money), 6) redistribution of income and riches (the rich have income increase since their income is flexible, so they can adapt it to price growth, while the income of the middle and poor class decreases, since their income is fixed, so their real income decreases with price growth), 7) debtors gain and creditors lose during the rise of inflation (negative real interest rates), 8) cost of borrowing rises (interest rate rises and should be higher than inflation rate, that boosts inflation) 9) increased business uncertainty and loss of confidence and decrease of competitiveness and export due to high prices, 10) production rises if the prices of goods are higher [Kragulj, 2016; Mankiw, 2003; Smriti, 2018; Inflation - Consequences of Inflation, 2018] unemployment decreases (Phillips curve – the inverse correlation between inflation and unemployment), and 12) reduces employment and growth (during high inflation, costs of production increase and push up prices, production decreases and stagnation occurs) [Investopedia, 2018].

According to quantity theory of money, monetary increase defines the rate of inflation. The causes of inflation can be found both on the side of supply and demand. Inflation rate can be reduced by affecting aggregate demand or aggregate supply. When government needs to finance spending, i.e. government budget deficit, since there is a lack of bond selling and tax increase, it prints money, which increases inflation even more. In theory, government needs to stop printing money in order to decrease inflation rate, but in practice it has to impose fiscal restraint (Mankiw, 2003). In addition, stabilisation plan can be conducted through money supply and exchange rate. Stabilisation of economy, decreasing high inflation rate and keeping it under control can be achieved through inflation targeting (New Zealand, Brazil, Chile, Mexico, Poland, Serbia). The implementation of inflation targeting gives possibility to forecast the inflation and other macroeconomic variables [Martínez, 2008]. Adoption of inflation targeting implies gains in economic growth [e Souza et al., 2015] and helps stabilize income velocity in developing countries [Soe & Kakinaka, 2017] .

It is the best for an economy to keep a low, single-digit, but positive inflation since price growth cannot cause significantly negative effects. Increase in productivity, production, employment and income enables economic growth. The increase in GDP increases the standard of living, disposable income and

spending, which influences productivity increase in return. Economic growth influences growth in the standard of living, but in can also cause inflation.

The Relationship between Inflation and Economic Growth

Economic activities are directed according to the recommendations of economic experts which differ depending on the economic school they belong to. Over time, new schools have been developed and economic theory and policies have changed and adjusted to the conditions of economic movements. Certain global economic crises and imbalances have caused the change in economic policy instruments in order to solve problems efficiently. There are some schools of economy that advocate laissez-faire principle, while others think that governments should intervene in order to solve certain problems or achieve the goal that has been set. Furthermore, some schools put emphasis on some economic polices (fiscal and/or monetary policy) that can solve the problem of unemployment or economic growth. Some economists and theories have different opinions concerning the relationship between inflation and economic growth.

Different solutions are provided depending on whether unemployment should be reduced, or production increased, or inflation decreased. For example, in order to solve the problem of unemployment, Keyns put forward the idea that the increase in government expenditure and decrease in household taxes should be used. That way disposable income is increased, and thus the expenditure that influences the increase in aggregate demand, production, employment, but it does not influence inflation. In the case of high inflation Keyns recommends decrease in aggregate demand [Jednak and Kragulj,2016]. According to Balassa-Samuelson effect [1963] emerging economies have high productivity growth in tradeable sector that will increase wages and lead to rise of wages and prices in the non-tradeable sectors. One of the consequences is the inflation. The monetarists promote price stability, because they focus on decreasing inflation. The Taylor rule is implemented with two goals: short-term price stability and long-term full employment. That is achieved by adjusting exchange rate to the inflation and growth (Sims, 2012). Although the two goals are in conflict on a short term, price stability is a necessary condition for sustainable income growth and employment on a long term. Such goals indicate that monetary policy is an instrument for reducing cyclic fluctuations [Ceccheti, 2000]. Friedman, who belongs to monetarists, researched into theoretical and empirical relationship between inflation and output growth

introducing inflation uncertainty and real/growth uncertainty. On his research and hypotheses many studies have been done that deal with the influence of inflation and uncertainty on economic growth, and vice versa.

In developing countries, inflation is double-digit or even more, while in developed countries it is less than 2 per cent. During economic progress, inflation rate drops. According to the studies, the correlation between inflation and economic growth is not prominent when inflation rate is low. Therefore, monetary policy has no big influence on the long-run growth, and the theory supports neoclassical and endogenous models that observe the effects of inflation through its impact on investment and capital accumulation [Arawatari et al., 2017].

The following studies explore inflation effects on economic growth. Apergis [2004] shows that inflation affects output growth in G7 countries. Momcilovic et al. [2017] explore the effects of inflation on sustainable growth. Darko [2013] shows that inflation and interest rate are important determinants of real economic activity growth, while real economic activity does not significantly determine inflation and interest rate in developing countries. According to [Mazumder, 2017] output gains from accelerating inflation appear to be beneficial for OECD countries that start with a low level of GDP, but not for the countries that start with a high level of GDP. Ghosh & Phillips [1998] find a statistically and economically significant negative relationship between inflation and growth. Berument et al. [2008] show negative relations between inflation and economic growth in Turkey. The inflation above two per cent negatively affects growth, and high or very low levels of inflation are undesirable and are associated with lower growth [Balcilar et al., 2017]. According to Gokal & Hanif [2004] there is "weak negative correlation between inflation and GDP growth and the causality between the two variables ran one-way from GDP growth to inflation".

The relationship between inflation and economic growth is investigated by applying the concept of threshold level of inflation [Khan & Ssnhadji, 2001; López-Villavicencio & Mignon, 2011; Yabu & Kessy, 2015; Rouksar-Dussoyea et al., 2017; Baharumshah et al., 2016]. The acceptable, or threshold level of inflation is not defined and should be estimated for each country. There are some findings that the threshold for industrialized countries is 1-3 %, for developing around 12%, and for emerging around 17% [Khan & Ssnhadji, 2001; Miller, 2013]. Threshold level of inflation is the turning point beyond which inflation has a negative influence on economic growth [Yabu & Kessy,

2015] i.e. the output is not optimal [Rediff, 2007]. Studies show that "there exists a statistically significant negative relationship between inflation and growth [Gillman et al, 2001] for the inflation rates above the threshold level impeding growth" [Semlali & Khan, 2000 ; Yabu & Kessy, 2015; Rouksar-Dussoyea et al., 2017].

According to the abovementioned studies, the correlation between inflation and economic growth can be positive, negative or neutral. The influence of one of the variables to the other depends on the threshold level of inflation. High rate of inflation negatively affects output growth and inflation rate above threshold level also has a negative effect on economic growth.

Economic growth and inflation in Poland, Serbia and EU

In 1990s, Central European countries, and East European countries later on, began the process of transition. A uniform model that ensures that both the set goals would be attained and economic growth achieved does not exist. Different ways and rules have different effects in different economies. However, what is common for all the countries is that at the beginning there are disadvantageous economic results and different levels of success in achieving recovery and good economic performances. Undergoing the process of transition and implementing reforms have certain consequences that generate new problems, like unemployment, reducing highly qualified human resources due to brain drain and big gaps in earned income. Over time, economic growth was achieved, which lead to increased economic activities. However, in SEE countries, the increased output did not increase enough the standard of living and decreased poverty rate due to improper macroeconomic policy, disadvantageous initial conditions and conflict situations in the region. Nonetheless, in most countries, especially CEE countries, stable political environment, willingness to achieve a quick and efficient implementation of economic reforms and convergence with European standards, enabled certain economic benefits: larger market, more opportunities for export of goods and services and for investment, access to modern equipment, new technology and education. According to some economic results, they have come closer to the developed countries, and Poland achieved the best results and became European emerging economy.

Economic growth

Macroeconomic stability was of crucial importance for all the countries. The implementation of a suitable, usually firm fiscal and monetary, i.e. economic policy, influenced inflation decrease. Constant SDI growth, using of EU funds, domestic demand, growth strategy oriented towards export and EU countries as main trade partners, contributed to the increase in trading operations and GDP in East European countries (Poland and Serbia). Productivity and economic growth rate increased. Poland has shown constant economic growth. It is the only country that showed positive economic growth rate during the global economic crisis due to the well-established macroeconomic basis, stable domestic demand and fiscal policy. The European Union had a drop in GDP during the global economic crisis. Serbia had a drop of GDP prior to the beginning of the economic changes (1999), and during the global economic crisis (2009) and due to heavy floods [2014]. Trends of GDP growth (annual %) in the observed countries, for the period 1991-2016 is shown in Figure 1.

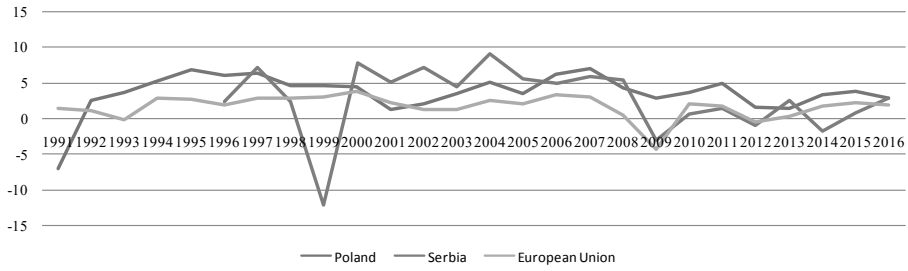

Figure 1. GDP growth (annual %), Poland, Serbia and EU, 1991-2016. Note: Data for Serbia are for the period 1996-2016

Source: The World Bank data

Although they have a stable rate of economic growth, the goals of the observed countries are the increase in competitiveness and achieving economic and other European Union and/or eurozone requirements, increased employment, investing in education and knowledge and improving economic conditions for efficient business operations.

Inflation

Price and trade liberalisation increased inflation rates in the countries of both regions. High investments and relatively slow productivity growth are also related

to high inflation and current account deficit. Inflow of foreign capital, along with domestic saving can increase investment and growth, induce monetary expansion and increased competitiveness on one hand, but it can also increase inflation on the other. Inflation used to be a big problem in these countries in the past. For example, in 1989 Poland had inflation rate of 639.5%, and in 1991 it reduced the rate to 60.4%. In 2005 the inflation rate was 2.1%, only to be reduced to 0.42 % in 2016.

At the beginning of 1990s Serbia suffered hyperinflation. Price growth of 50% on a monthly basis ended up at the rate of 2,650% on the annual basis (Pavlovic and Lazic, 2006). The highest inflation was marked in 1994. Therefore, that was the year when stabilisation programme was introduced, that relied on foreign exchange and commodity reserves. The inflation rate decreased, and in 2003 it was put under control, but in 2004 it increased up to 14.1%. Orthodox stabilisation programme was implemented and it was based on monetaristic restraint of inflation through eliminating fiscal and current account deficits that caused the demand pull inflation. In 2006, the inflation rate was 6.6%, and in 2014 1.7%. Today inflation rate is 2.53%. Inflation rate is low due to restrictive policies that are being implemented. Macroeconomic stability has been achieved, and the source of economic growth lies in increasing investment and export. There is still the problem of unemployment and underdeveloped economic activity.

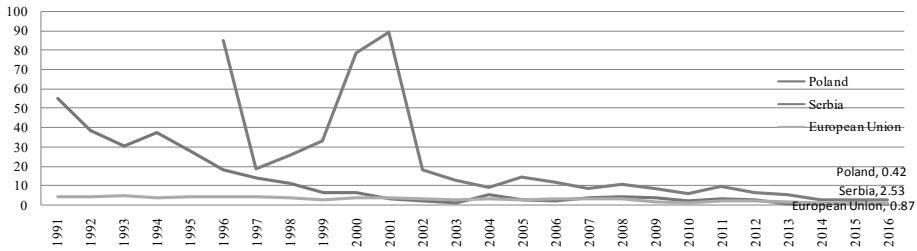

Figure 2. Inflation, GDP deflator (annual %), Poland, Serbia and EU, 1991-2016. Note: Data for Serbia are for the period 1996-2016

Source: The World Bank data

Economic growth and inflation in observed countries

Even there are more complex models, correlation analysis is taken to show the relationship between inflation and economic growth. The aim of this paper is to calculate the correlation between GDP growth (annual %) and Inflation,

GDP deflator (annual %) in Poland, Serbia and EU. The available data were taken from the World Bank data, for the period from 1990s to 2016.

The correlation coefficient, denoted by *r*, is a measure of the strength of the straight-line or linear relationship between the two variables. If *r* is close to 0, it means there is no relationship between the variables. Values between 0 and 0.3 (0 and -0.3) indicate a weak positive (negative) linear relationship.

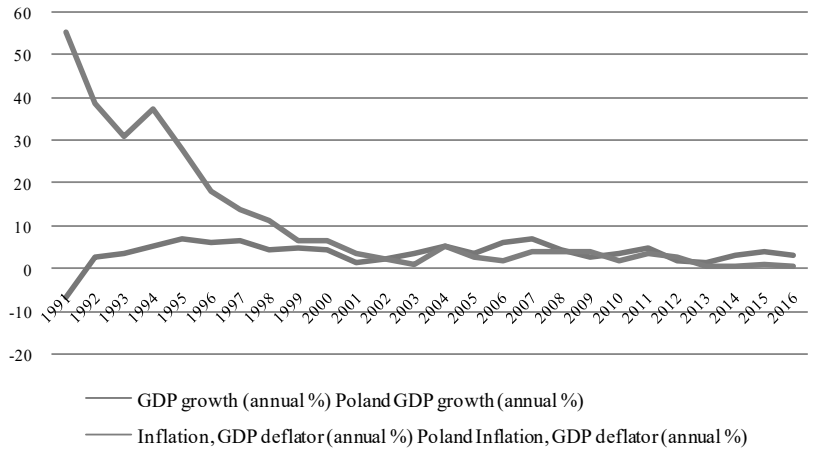

Figure 3. GDP growth and Inflation, Poland, 1991-2016

Source: The World Bank data

Table 1. Correlation between GDP growth (annual %) and Inflation, GDP deflator (annual %), Poland

	GDP growth (annual %)	**Inflation, GDP deflator (annual %)**
GDP growth (annual %)	1	
Inflation, GDP deflator (annual %)	-0.3677	1

Table 1 provides the correlation between GDP growth (annual %) and Inflation, GDP deflator (annual %), Poland. Pearson correlation coefficient, r = -0.36 which means there is weak negative linear relationship. Also, it could be said that the results are not statistically significant. These results are associated with the research of Munyeka (2014).

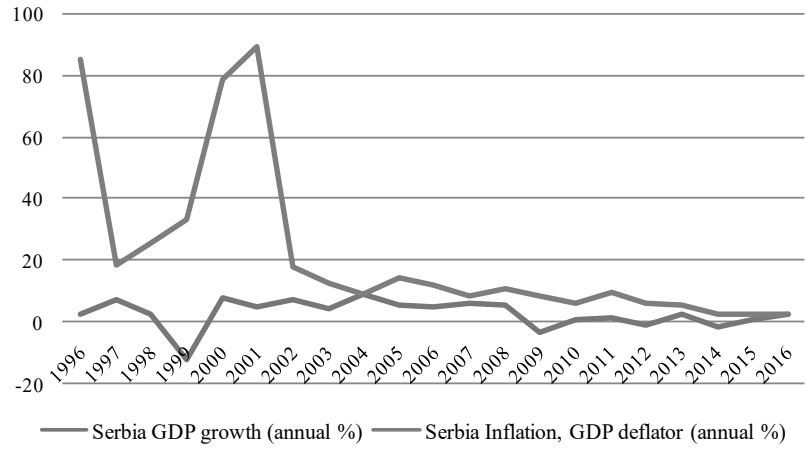

Figure 4. GDP growth and Inflation, Serbia, 1996-2016

Source: The World Bank data

Table 2. Correlation between GDP growth (annual %) and Inflation, GDP deflator (annual %), Serbia

	GDP growth (annual %)	Inflation, GDP deflator (annual %)
GDP growth (annual %)	1	
Inflation, GDP deflator (annual %)	0.1243	1

Table 2 provides the correlation between GDP growth (annual %) and Inflation, GDP deflator (annual %), Serbia. Pearson correlation coefficient, r = 0.12 which means there is a weak positive linear relationship. Also, it could be said that the results are not statistically significant. These results are associated with the research of Munyeka (2014) and Švigir & Miloš (2017).

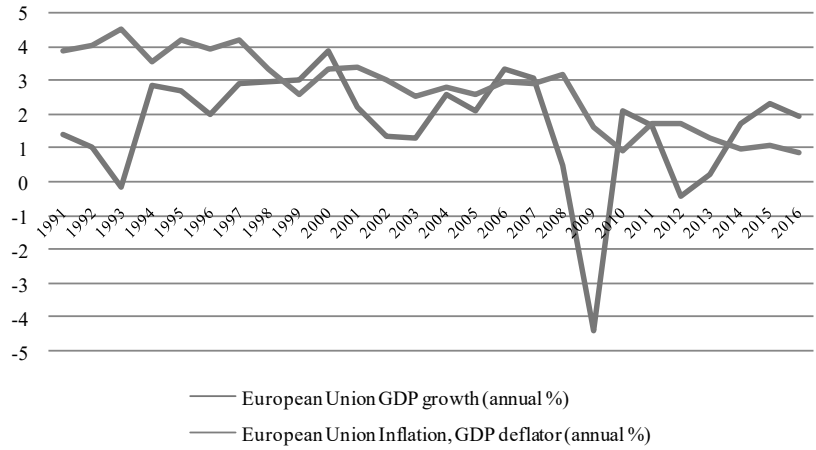

Figure 5. GDP growth and Inflation, EU, 1991-2016

Source: The World Bank data

Table 3. Correlation between GDP growth (annual %) and Inflation, GDP deflator (annual %), EU

	GDP growth (annual %)	Inflation, GDP deflator (annual %)
GDP growth (annual %)	1	
Inflation, GDP deflator (annual %)	0.2020	1

Table 3 provides the correlation between GDP growth (annual %) and Inflation, GDP deflator (annual %), EU. Pearson correlation coefficient, r = 0.20 which means there is weak positive linear relationship.

The results show that there is weak correlation between inflation and economic growth in the observed economies. At the beginning of the transitions there was high inflation in both countries. However, carrying out the reform put down the inflation rate and stabilisation has been obtained with stable economic growth rate.

Conclusion

The relationship between inflation and economic growth is the subject of many studies. There are different opinions stating that the relationship between the two variables can be positive, negative and neutral. The theories of different economic schools show the influence of economic growth on

inflation. Depending on the observed countries, empirical research shows that there is a negative effect of high inflation on economic growth and that there is also a negative effect on economic growth when inflation is above threshold level. Threshold level of inflation is estimated for each country respectively, and it differs depending on the level of development. Poland and Serbia used to have high inflation rates, but now their inflation rates are single-digit. During the time of high inflation, hyperinflation, there was no economic growth. However, after economic reforms and adjustments to EU requirements took place, inflation rate decreased, and economic growth rate increased. Still, there seems to be no significant correlation between these indicators in the observed economies.

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