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The impact of economic growth on inflation and unemployment in Bulgaria, 2006-2016

Abstract

This research presents the relationship between economic growth, unemployment and inflation in Bulgaria during 2006-2016. The theoretical literature shows that there is a positive relationship between economic growth and inflation whereas the relationship between economic growth and unemployment is negative. Our analysis of how this applied in Bulgaria during this period was conducted by means of econometric verification of information collected via quarterly indicators. When adding the lag effects, the results express three major trends. In the first place, there is a positive impact of growth on inflation in Bulgaria; this mostly finds expression in a lag of one and four quarters, as well as it is expressed in the current period. Secondly, there is a noticeable negative impact of growth on unemployment, a trend that mostly finds expression in a lag period of one or two quarters. In the third place, 'Okun's Law' is valid, although there is a tendency of a decreasing negative relationship between growth and unemployment in the course of the period as a whole.

Keywords: *economic growth, inflation, unemployment, Okun's Law, Bulgaria*

Research goals

The following research presents the relationship between economic growth, unemployment and inflation in Bulgaria during the 2006-2016 period. Many researchers have advanced the belief over the years that having control over unemployment and inflation is of great importance to the economic policy of different societies in terms of their response to economic growth (Cashell 2006; Cutler and Katz 1990; Ullah and Umair 2013). In this sense, the relationships which are the subject matter for this research study in this period are current and subject to future empirical verification.

The object of the study is, on the one hand, the impact of economic growth on unemployment and, on the other, the impact of inflation. The subject is the empirical relationship between unemployment and inflation with GDP growth in the specific period, as well as its dynamics. The main aim is to strive for verification of the extent to which economic relations among the selected indicators, which has been established in the theoretical literature, are valid as regards the Bulgarian economy during the period of survey.

Over the last decade, a number of pieces of evidence have appeared that the classical economic assumptions on the impact of economic growth on unemployment and inflation have undergone serious changes (Schmitt-Grohe and Uribe 2017;

Gokal and Hanif 2004; Eggertsson and Mehrotra 2014; Omoniyi *et al*. 2015). At this point, it is also evident that modern market systems are very dynamic in their development and that macroeconomic imbalances have become more intense. Meanwhile, and considering the need for new research in this area in the context of the dynamics of technological development and the constant creation of new growth factors, such a verification would be very helpful.

The main task of this article is a study of the impact of the rate of economic growth on the unemployment rate and inflation in Bulgaria over the past decade. The theoretical and empirical evidence in the literature which exert an influence on our pre-expectations – the research hypotheses – are:

1. the relationship between economic growth and unemployment is negative
2. the relationship between growth and inflation is positive.

Theoretical background

According to Gordon (2000), the potential output of the world economy increased at an average of 3.4 per cent annually between 1875 and 2000. This can mostly be attributed to the increased intensity of the production factors in use. According to him, however, in the following twenty years, this growth would be significantly lower as the gains on investment and the returns on innovation in information technologies decrease. This, in turn, would lead to a different type of dynamic between economic growth on the one hand, and the rates of inflation and unemployment on the other. The role of the labour force would also undergo major transformations in the context of changing markets.

Thomas Piketty (2014: 398-399) reached a similar argument in 2014. He claimed that the recapitalisation of profit has increased to a higher rate than added value in manufacturing industries in developed economies. In his book *Capital in the Twenty-First Century*, he devotes many of his basic arguments to this problem.

Both authors focus on different problems in their studies but, in practice, they come to similar conclusions regarding the potential for growth in developed economies in the Age of Information. If the growth potential of GDP drops, this would result in lower rates of inflation, even as the risk of deflation exists. On the other hand, the decrease in potential output would also increase unemployment when assuming that 'Okun's Law' is still valid in the current market situation. The disclosure of this relationship is important in terms of the final results which will be presented in this article.

In the long-term, the relationship between economic growth and the rate of unemployment may normally be unstable and very controversial. Here, there is an increased chance of the manifestation of a number of exogenous factors influencing the chances of it being correct, as well as an inverse relationship between growth and the change in the rate of unemployment. Unlike in the long term, in the short run a negative relationship is generally accepted.

It is not unusual for unemployment to record a steady decline for some time after then adoption of economic measures aimed at improving the macroeconomic situation. From this perspective, the unemployment rate could be classified as a lagging

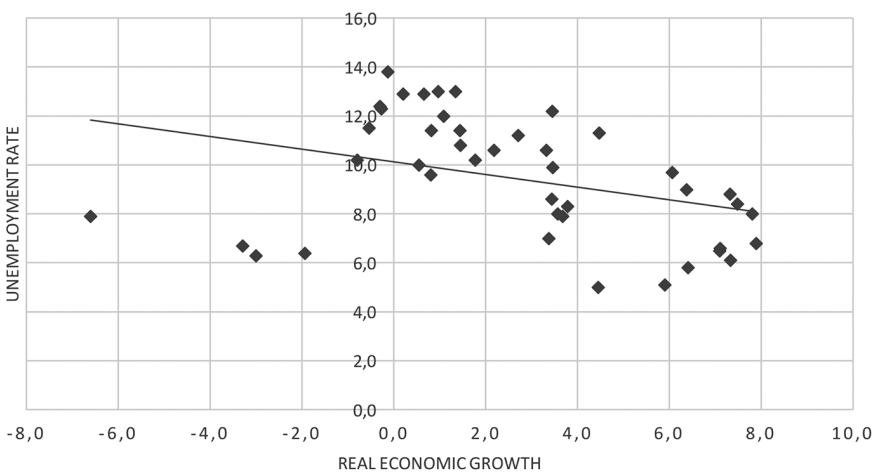
economic indicator that shows alternation as a result of another economic factor with a certain lag. This is the result of analysis of the number of lags conducted by several economists, representing various economic schools (Molho 1995; Smith 2009; Romer 2011). One of the recent studies of Kuczynski (2013) shows once more the lagged nature of unemployment.

It could be made a conclusion that the impact of economic growth on the rate of unemployment takes a late effect, in spite of the direction in which it finds expression, and therefore that setting the lag effects in empirical research into this relationship has objective prerequisites. Indeed, determining the optimal number of lags is subject to additional empirical procedures carried out by the author in this study for Bulgaria.

In the last few decades, more and more countries have recorded the phenomenon of so-called 'jobless recovery' (Groshen and Potter 2003). Smith (2016) and Toossi (2014) both claim and provide empirical evidence that there are economies that have registered increased economic growth with either no change or even an increase in the rate of unemployment. This different emphasis in the interaction between growth and unemployment may be due to two main factors – changes in technology lead to the existence of structural unemployment; while technological innovation may result in robotics and the digitalisation of activities that have been carried out by labour at a previous stage.

In Bulgaria, research into these issues is relatively outdated. For instance, Pirimova (2007) explores the relationship between economic growth and unemployment in Bulgaria in the period between 1990 and 2005. Her main conclusions are that feedback between economic growth and unemployment did occur during the period of her survey.

Figure 1 – Unemployment and economic growth in Bulgaria, 2006-2016 (quarterly data)



Source: National Statistical Institute of Bulgaria

Figure 1 shows the density, variance and correlation between the unemployment rate and economic growth in Bulgaria in the 2006-2016 period by quarter. Here becomes evident the negative relationship between economic growth and unemployment. We can see also that there is a quite substantial level of dispersal of the values, which presupposes a greater dynamism in terms of the changes in the context of the overall negative trend.

Turning to inflation, there are several international studies into the impact of economic growth on inflation. Most of these are constituted of panel samples and lengthy time series in a number of countries. For example, Datta and Kumar (2011), Bruno and Easterly (1996), Mallik (2001), and other economists, have all adopted a similar approach. This study, in contrast, is based on a reverse approach: it is made within a national economy and covers a period of almost ten years on the basis of quarterly data.

In the last several years, considerable fluctuations in world GDP and inflation rates may be seen, especially in integration-based alliances, such as the EU, in which deflationary levels are still difficult to overcome for many countries. Empirical evidence on the impact of economic growth on inflation could be found not only for developed economies but also for some Asian countries.

India's GDP, for instance, increased by 3.5 per cent per annum in the period before 1970. Thereafter, GDP reached an average growth rate of 5.5 per cent by the end of the century. During the same period, the rate of inflation has steadily risen from 1.7 per cent in the 1950s to 6.4 per cent in the 1960s and up to 9 per cent in the 1970s. In the period around 1980, average annual inflation decreased slightly, to 8 per cent, but the overall trend remains upward. A similar scenario could be found in other countries such as China and Vietnam as well as some African countries such as Kenya and Nigeria.

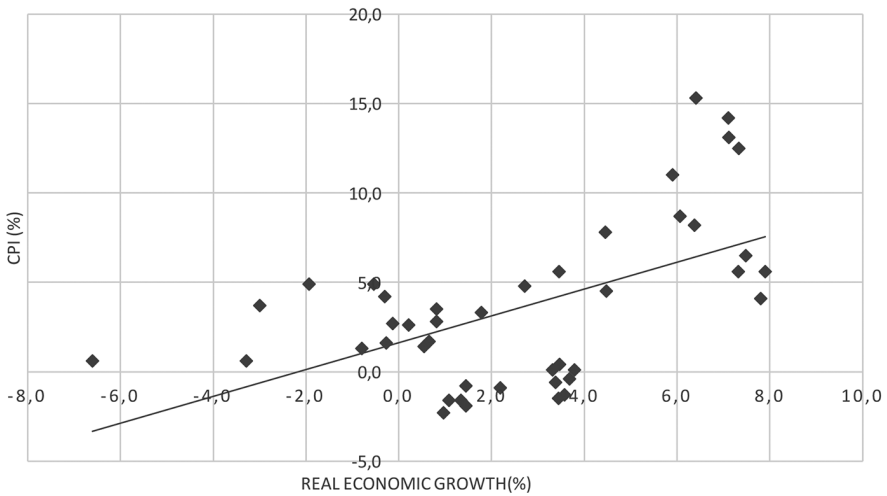
Fischer (1993) explores the interaction between growth and inflation, including in both developed and developing economies. He presumes the possibility of a non-linear relationship between economic growth and inflation in the long run. The final results show that a negative relationship between these two variables may even be present. He draws the conclusion that, when inflation exceeds a limit of 40 per cent and feedback is present, the relationship again becomes a straight-line one or, at times, is even zero. Therefore, if one could speak of an inverse relationship between growth and inflation, it is likely to be seen in inflation levels up to 40 per cent.

Regarding the dynamics of economic growth and inflation in the Bulgarian economy, several important factors that precede the time interval under our investigation may be identified. It should in particular be noted that Bulgaria initiated a 'currency board' arrangement in July 1997, with the national currency being pegged to the euro via the German Mark, inhibiting the central bank from conducting a fully independent monetary policy (Angelov and Chobanov 2004 (in Bulgarian)). The result was that mid-1997 marked the initiation of a trend towards a rapid decrease in the rate of inflation that, previously, had reached very high levels. Between the second half of 1998 and up to the middle of 1999, even a decrease in the overall level of consumer prices was typical. In the second half of 1999, however, inflation began to rise again (Dobrev 2000). In the period until 2006, inflation rates remained at moderate levels,

with the prices of goods and services being stabilised, allowing the current dataset in use here to rest on a sustainable basis. Despite the registered levels of deflation in our economy over the past two years, the forecasts are that inflation will again cross over into positive values and will register moderate growth in the medium term, particularly under the impact of the anticipated increase in GDP. These economic prospects have been adopted by the government on the basis of its medium term budget forecast for 2017 determined by the Ministry of Finance of the Republic of Bulgaria.

In this article, the interpretation of changes in the price level for the period under research will be analysed in terms of the consumer price index,[1] whose values are accepted here as a means of expressing the change in the price level in the economy.

Figure 2 – Inflation and economic growth in Bulgaria, 2006-2016 (quarterly data)



Source: National Statistical Institute of Bulgaria

Figure 2 expresses the density, variance and correlation between the values of CPI and economic growth in Bulgaria in the 2006-2016 period by quarter. Here, a positive relationship between the two variables may be seen. In addition, there is a considerable density in the expressed values for CPI and growth. This shows the lack of major changes between periods and points to a much more moderate and stable trend than in Figure 1 which expresses the relationship between unemployment and growth but where there is a much greater level of dispersal.

1 Decision 913 of the Council of Ministers of the Republic of Bulgaria of 31 October 2016, approving the draft Law on the State Budget for 2017 and an updated medium term budget forecast for the 2017-2019 period.

Methodology

Essentially, this study is an attempt to evaluate the effect of economic growth on inflation and on the rate of unemployment in Bulgaria in the 2006-2016 period by quarter. The latter may represent a function of economic growth / Inflation = F (growth), Unemployment = F (growth) /. The change in Gross Domestic Product is presented by the rate of economic growth for the respective period in real terms. The change in the unemployment rate is also presented in the pace of change. The concepts of the labour force and number of unemployed people correspond to the official definition adopted in Bulgaria by the National Statistical Institute.[23] Inflation is represented by the dynamics of CPI which has been legally adopted in terms of national statistics.

It is important to note that analysis of the unemployment rate and the rate of inflation, as a result of the change in economic growth, is performed independently without revealing the target relationship between inflation and unemployment although there is a proof that such a relationship exists (Gordon 2014; Qin 2011).

The basic empirical model looks as follows:

(1) $\Delta y_t = \Delta \beta_0 + \beta_1 \Delta x_{1t} + \beta_1 \Delta \boldsymbol{x}_{2(t-1)} + \boldsymbol{\beta}_1 \Delta \boldsymbol{x}_{3(t-2)} \ldots + \Delta \boldsymbol{\varepsilon}_t$

Δy_t – The real change in the level of the dependent variable at time *t*,

β_0 – Constant,

Δx_{1t} – The change in the independent variable in period *t*

$\Delta x_{1(t-1)}$ – The change in the independent variable in period: *t-1*

$\Delta \varepsilon_t$ – Standard error

After the substitutions made according to the researched questions in equation (1), equation (1) could be sub-divided into two equations acquired as follows:

(2) $\Delta \boldsymbol{CPI}_t = \boldsymbol{\beta}_0 + \boldsymbol{\beta}_1 \Delta \mathbf{G}_t + \boldsymbol{\beta}_1 \Delta \mathbf{G}_{t-1} + \boldsymbol{\beta}_1 \Delta \mathbf{G}_{t-2} + \boldsymbol{\beta}_1 \Delta \mathbf{G}_{t-3} + \boldsymbol{\beta}_1 \Delta \mathbf{G}_{t-4} + \boldsymbol{\varepsilon}_t$

ΔG_t – Change in the level of real GDP, measured by economic growth in period *t*.

ΔCPI_t – Change in the CPI in period *t*.

(3) $\Delta \mathbf{UNEMPL}_t = \boldsymbol{\beta}_0 + \boldsymbol{\beta}_1 \Delta \boldsymbol{G}_t + \boldsymbol{\beta}_1 \Delta \mathbf{G}_{t-1} + \boldsymbol{\beta}_1 \Delta \mathbf{G}_{t-2} + \boldsymbol{\beta}_1 \Delta \mathbf{G}_{t-3} + \boldsymbol{\beta}_1 \Delta \mathbf{G}_{t-4} + \boldsymbol{\varepsilon}_t$

ΔG_t – Change in the level of GDP, measured by economic growth in the period *t*,

$\Delta UNEMPL_t$ – Change in the unemployment rate in period *t*.

Our assumptions, as we know, are for a lag effect under the impact of economic growth on the rates of unemployment and inflation. Furthermore, we believe that the dependent variables in the models constructed in equations (2) and (3) are dynamic. This means that the previous values of a variable influence the climate variable in this period. This is the reason that they should be examined in conjunction with lag

2 Website NSI Labour Force Survey – Methodology.

3 ILO Resolution concerning statistics on the economically active population, employment, unemployment and under-employment, as adopted by the Thirteenth International Conference of Labour Statisticians, October 1982.

effects. In order to determine how many lags should be studied in the depicted relationships, the author has previously performed econometric verification of the number of lags of the dependent variable which would be possible to be used.

The optimal number of lags that might be included in a study on the impact of unemployment on unemployment itself is five (when using the BIC criterion); or the number could be between eight and nine (when using LR, FPE, AIC and HQIC criteria). This means that this relationship would be studied with eight periods back in time, or eight quarters (one period in this database corresponding to one quarter).

The optimal number of lags in terms of the impact of CPI on CPI itself is 1 (when using either HQIC and BIC criteria) or the number could be ten (when using FPE and AIC criteria). The chosen approach is a period of lags of ten quarters.

These examples would acquire as follows:

(4)

$$\Delta \mathbf{UNEMPL_t} = \beta_0 + \beta_1 \Delta \mathbf{unem_t} + \beta_2 \Delta \mathbf{unem_{t-1}} + \beta_3 \Delta \mathbf{unem_{t-2}} + \beta_4 \Delta \mathbf{Gunem_{t-3}} + \beta_5 \Delta \mathbf{unem_{t-4}} + \beta_6 \Delta \mathbf{unem_{t-5}} + \beta_7 \Delta \mathbf{unem_{t-6}} + \beta_8 \Delta \mathbf{unem_{t-7}} + \beta_9 \Delta \mathbf{unem_{t-8}} + \varepsilon_t$$

(5) $$\Delta \mathbf{\mathit{CPI}_t} = \beta_0 + \beta_1 \Delta \mathbf{cpi} + \beta_2 \Delta \mathbf{cpi_{t-1}} + \beta_3 \Delta \mathbf{cpi_{t-2}} + \beta_4 \Delta \mathbf{cpi_{t-3}} + \beta_5 \Delta \mathbf{cpi_{t-4}} + \beta_6 \Delta \mathbf{cpi_{t-5}} + \beta_7 \Delta \mathbf{cpi_{t-6}} + \beta_8 \Delta \mathbf{cpi_{t-7}} + \beta_9 \Delta \mathbf{cpi_{t-8}} + \beta_{10} \Delta \mathbf{cpi_{t-9}} + \beta_{11} \Delta \mathbf{cpi_{t-10}} + \varepsilon_t$$

Adding more lags on the rate of unemployment and to the inflation rate on the one hand was caused by econometric verification of the optimal number of lags; and, on the other, by the idea that the change which rises in the selected indicators of economic growth often exhibits a long-term trend. Such evidence can be seen in the first paragraph, in which we examine the theoretical grounds for dependencies.

Research results

The results of our econometric examination of the impact of economic growth on unemployment show that the influence of this in Bulgaria is negative after 2006. This means that, when economic growth increases, the unemployment rate tends to decrease, albeit with different intensities in different periods. However, it decreases relatively less compared to previous observations of this relationship in countries such as the US, for example. This actually confirms that 'Okun's Law' has been operational in Bulgaria over the last ten years, even though it has operated with much less impact.

In our view, of great importance here is the phase of the economic cycle in which the economy finds itself and other factors which are subject to market principles. This correlates positively with our assumptions, providing a verification of 'Okun's Law' through the years described in the literature. It can be assumed that it is characteristic in the relationship between growth and unemployment that each country has its own coefficient of correlation between the two variables.

It can be concluded that 'Okun's Law' is asymmetrical in Bulgaria. The essential point is that, when considering the relationship of the dependent variable with itself in lag period going back eight quarters in time, it can be concluded that there is a negative impact on the rate of unemployment in the prior period compared to the current one. It is most strongly expressed after two quarters and after five quarters in

three different models of the study. A reverse effect could also be seen with a lag going back seven quarters in time, even though its values are slightly lower. Generally, it could be said that the highest negative values of the dependent coefficients are noticed in a period of six months and over fifteen months back in time. It is there that the negative relationship finds its strongest expression. This confirms the statements of many researchers that unemployment exhibits a lagging effect as regards the economy. Our first hypothesis was similar.

The negative effect of growth on unemployment is weakest over a period of one quarter. In the current period and in a lag of four quarters, the influence is even positive, in which we might observe the so-called process of 'jobless recovery', described in the theoretical section of this work. The negative effects of growth on unemployment are most strongly expressed in a period of lags of two and three quarters.

In practice, a significant change in the pace of economic growth in a certain direction today will, in the first place, cause a serious change in the unemployment rate in the opposite direction after two quarters and, in the second, it will repeat this change after a period of three quarters. Here, the negative relationship finds its best expression. Furthermore, the values are statistically significant with an explanatory capacity of 84%. It may be observed that the negative relationship gradually decreases with each subsequent period back in time, reaching a positive position after a period of a lag of four quarters. The vector-autoregressive analysis performed in Model 3 shows in its results very similar rates to the original in the first two models in terms of lags of two and three quarters.

The main conclusion in this respect is that economic growth has had a negative impact on the unemployment rate in Bulgaria since 2006 and that its effects can be seen in the current period. However, it is also evident when we add lag periods to our survey, although a negative relationship is expressed to some extent in all periods. When comparing the results in Bulgaria and in the US, for example, it can be concluded that the impact of economic growth on the unemployment rate in our national economy is significantly less than it is in the US.

The results of the econometric verification of the impact of economic growth on inflation indicate that the relationship could be characterised as positive. We saw immediate confirmation of the direction of this relationship in Figure 2 above. The lagged effect of going back ten periods in time as regards the influence of the dependent variable on itself shows, mostly, a positive relationship among the dynamic values of the CPI indicator. This positive relationship finds its weakest expression in periods going back six and nine quarters, when expressed in equation (5). At certain points, however, the relationship becomes even more negative (with lags of eight and four months). This means that rises in CPI during previous periods tend to lead to inflation declining in the current one. The results from the opposite effects are statistically significant in both periods. The positive relationship is most powerful in a period going back in time by five quarters.

The impact of economic growth on CPI is mostly positive. It can be concluded that the impact of economic growth on unemployment, in the reverse direction, is less when compared to the impact of economic growth on the rate of inflation in a

positive direction. Recognising the positive correlation between growth and inflation, this fully corresponds to our expectations and to previous studies made on this issue; while the different intensity of the interaction between the two factors may be noted, in the context of adding lag periods into the study. This is mostly expressed in the current period and in a lag of one and four quarters in Models 2 and 3. The positive factor in Model 3 (vector autoregressive analysis) for a period of a one quarter lag is statistically significant.

Conclusion

In conclusion, it can be stated that the impact of economic growth on the unemployment rate continues to have a negative effect, although the relationship between the two variables has become weakened. Based on this result, and comparing it with research by authors who have verified 'Okun's Law' in recent years in different economies, we believe that there is a chance of a change in the relationship between growth and unemployment in the long-term. Under the influence of technological shocks and digitalisation, there is a risk that our economy moves towards a rate of growth which does not amend or positively correlates with unemployment. This would put serious amount of stress on the labour market.

The ultimate results confirm the existing feedback between economic growth and unemployment, as proven by Pirimova (2007) in her study of the immediately prior period. Despite the concerns we express here, it can be concluded that, in terms of the Bulgarian economy, this trend continues to remain valid. Besides this feedback, quite dispersed values of the unemployment rate during the period under study can be seen, as presented in Figure 1 and Table 1. The lack of intensity and common values shows great dynamism in the unemployment rate indicator.

Meanwhile, the positive relationship between economic growth and inflation presented in Figure 2 is characterised by quite a strong level of intensity of the values for CPI. This means that deviations are very slight and that change is taking place more slowly and moderately than that for unemployment.

The positive impact of economic growth on inflation corresponded to our various assumptions drawn from the existing literature of a correct relationship between the variables. The assumptions made by Fisher (1993), of a non-linear relationship between growth and inflation, are confirmed. Following the example of Asian economies, the impact of growth on inflation in Bulgaria would have a lagged effect of different intensity depending on the specifics of the current economic situation. In Bulgaria, the change in the inflation rate as a result of growth finds its strongest expression and a lag of one and four quarters back in time can be obtained.

The major contributions of this research study are:

1) in terms of the chosen time interval for verification there is actuality, as shown by our empirical research on the impact of economic growth on the unemployment rate and the inflation rate in Bulgaria for the 2006-2016 period by quarter. Therefore, this is perhaps the most recent research on this relationship in Bulgaria

2) at certain points, there is a trend towards a positive impact of growth on unemployment and a negative trend as regards the impact on inflation. This contradicts basic economic assumptions about the relationship between growth, unemployment and inflation. The reasons for such factors will be analysed in future work. These conflicting results are being published for the first time in Bulgaria and may well inspire further research on the topic

3) a model is presented of the impact of economic growth on inflation and unemployment with lag effects, which is published for the first time in the Bulgarian literature.

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Appendix

Table 1 – Impact of economic growth on unemployment in Bulgaria for the period first quarter of 2006 – third quarter of 2016

	Model 1	**Model 2**	**Model 3**
Y = Unemployment **X =** $Unempl_{t-n}$			
β_0	1.505***	1.721**	2.285***
	(0.494)	(0.820)	(0.570)
U_{t-1}	-0.113	-0.252	-0.216
	(0.156)	(0.169)	(0.174)
U_{t-2}	-0.317*	-0.346*	-0.619***
	(0.205)	(0.192)	(0.175)
U_{t-3}	0.564**	0.726***	
	(0.244)	(0.212)	
U_{t-4}	0.354	0.360	0.236
	(0.237)	(0.228)	(0.226)
U_{t-5}	-0.505*	-0.397*	-0.372**
	(0.293)	(0.217)	(0.200)
U_{t-6}	-0.046	0.021	0.123
	(0.235)	(0.207)	(0.186)
U_{t-7}	-0.276	-0.486**	-0.398**
	(0.202)	(0.226)	(0.190)
U_{t-8}	0.204*	0.213	0.324*
	(0.139)	(0.098)	(0.197)
Y = Unemployment **X = Economic growth**			
G_1	-0.093***	0.073	
	(0.033)	(0.096)	
G_{t-1}		0.018**	-0.148***

	Model 1	**Model 2**	**Model 3**
		(0.079)	(0.042)
G_{t-2}		-0.042	0.014
		(0.062)	(0.052)
G_{t-3}		-0.016	
		(0.071)	
G_{t-4}		0.095	
		(0.098)	
R – sq.	0.782	0.840	0.862
N	35	35	33

Note: Table 1 presents the results of the accomplished linear regression with lag effects included in the article. The results give examples of the impact of economic growth on the unemployment rate in the 2006-2016 period expressed in equation (3). The results show the impact of the dependent variable rate of unemployment on itself during different lag periods shown in equation (4). The factors of influence of the independent variable / economic growth – x / are presented in 4 quarters back in time, while the impact of the dependent variable on itself is presented in a lag of 8 quarters back in time. Econometric examination has been completed in three different models, which are the subject of comparative analysis. Model 1 presents data only from the influence of the dependent variable on itself in the lag period. Model 2 presents the combined results of model 1 and the impact of economic growth on unemployment. Model 3 is a vector autoregressive analysis which examines both the relationship between the dependent variables in different periods and the influence of the independent on the dependent. Besides the ratios of the independent variable, the table includes its standard deviation, the level of statistical significance, the explanatory capacity of the model and the number of observations. There are the following levels of statistical significance: P<0.10 *, P<0.05 **, P<0.01 ***.

Table 2 – Impact of economic growth on inflation for the period first quarter of 2006 – third quarter of 2016

	Model 1	**Model 2**	**Model 3**
Y = CPI, X=$CPI_{t-n(1\ldots10)}$			
β_0	-1.078*	-1.047	-0.462
	(0.618)	(0.723)	(0.418)
CPI_{t-1}	-0.147	-0.193	-0.044
	(0.152)	(0.167)	(0.168)
CPI_{t-2}	-0.036	-0.013	-0.029*
	(0.194)	(0.247)	(0.137)
CPI_{t-3}	0.315*	0.452*	0.209
	(0.183)	(0.241)	0.180)
CPI_{t-4}	-0.944***	-0.936***	-0.849***
	(0.205)	(0.216)	(0.172)
CPI_{t-5}	0.483*	0.322	0.265*
	(0.253)	(0.297)	(0.204)
CPI_{t-6}	0.186	0.240	0.139
	(0.180)	(0.345)	(0.194)
CPI_{t-7}	0.428**	0.677**	0.518***
	(0.220)	(0.276)	(0.195)
CPI_{t-8}	-0.559	-0.545*	-0.452**
	(0.220)	(0.289)	(0.202)
CPI_{t-9}	0.224	-0.110	-0.047
	(0.217)	(0.338)	(0.173)
CPI_{t-10}	-0.009	0.093	0.154
	(0.112)	(0.212)	(0.78)
Y = CPI	$X = growth_{t-n}$		
G_1	0.461**	0.366	
	(0.204)	(0.325)	

	Model 1	**Model 2**	**Model 3**
G_{t-1}		0.472*	0.280*
		(0.291)	(0.197)
G_{t-2}		-0.175	-0.072
		(0.225)	(0.197)
G_{t-3}		-0.276	
		(0.305)	
G_{t-4}		0.032	
		(0.282)	
R – sq.	0.683	0.722	0.693
N	37	37	35

Note: Table 2 presents the results of the accomplished linear regression with lag effects included in the article. The results give examples of the impact of economic growth on the inflation rate in the period 2006-2016, expressed in equation (2). The factors of influence of the independent variable / economic growth – x / are presented in 4 quarters back in time, while the impact of CPI on itself is presented in a lag period 10 quarters back in time. Econometric examination has been completed in three different models which are subject to comparative analysis. Model 1 presents the data only of the influence of the dependent variable on itself in the lag period. Model 2 presents the combined results of model 1 and the impact of economic growth on CPI. Model 3 is a vector autoregressive analysis which examines both the relationship between the dependent variables in different periods and the influence of the independent on the dependent. Besides the ratios of the independent variable, the table includes its standard deviation, the level of statistical significance, the explanatory capacity of the model and the number of observations. There are the following levels of statistical significance: P<0.10 *, P<0.05 **, P<0.01 ***.