УДК 338.246.2

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DETERMINATION OF POSSIBILITIES AND LIMITS OF INFLUENCE OF ECB POLICY ON THE LEVEL OF UNEMPLOYMENT IN EU COUNTRIES

The article investigates a question of the influence of monetary policy on the level of unemployment in nine EU countries and compares the results with a situation in Ukraine. The problem of effective ECB monetary policy is very important during crisis times. Unemployment is the factor that is under jurisdiction of ECB since 2011 using inflation targeting. The main instrument we use for defining the influence of ECB policy is the OLS method. The time period from 2000 till 2015 is considered. Our findings show that the influence of inflation on unemployment in all countries apart from Austria is terribly low. Other factors, such as labor productivity and foreign direct investments inflow have a greater influence on unemployment.

Keywords: unemployment, monetary policy, foreign direct investments, ECB.

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ВИЗНАЧЕННЯ МОЖЛИВОСТЕЙ І МЕЖ ВПЛИВУ ПОЛІТИКИ ЄЦБ НА РІВЕНЬ БЕЗРОБІТТЯ В ЄВРОПЕЙСЬКИХ КРАЇНАХ

Стаття досліджує питання впливу монетарної політики на рівень безробіття у дев’яти країнах ЄС та порівнює результати з ситуацією в Україні. Проблема ефективності монетарної політики ЄЦБ дуже актуальною під час кризи. Регулювання рівня безробіття також є одним з головних завдань ЄЦБ з 2011 року за допомогою інфляційного таргетування. Ми використовуємо метод OLS для проведення дослідження. Ми опираємось на період з 2000 по 2015 роки. Отримані результати демонструють, що вплив інфляції на рівень безробіття в усіх країнах, крім Австрії дуже незначний. Інші фактори, такі як продуктивність праці та прямі іноземні інвестиції мають більш значний вплив на рівень безробіття.

Ключові слова: безробіття, монетарна політика, прямі іноземні

інвестиції, ЄЦБ.

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ОПРЕДЕЛЕНИЕ ВОЗМОЖНОСТЕЙ И ГРАНИЦ ВЛИЯНИЯ ПОЛИТИКИ ЕЦБ НА УРОВЕНЬ БЕЗРАБОТИЦЫ В ЕВРОПЕЙСКИХ СТРАНАХ

В статье исследуется вопрос влияния монетарной политики на уровень безработицы в девяти странах ЕС и сделан сравнительный анализ с ситуацией в Украине. Проблема эффективности монетарной политики ЕЦБ очень актуальна во время кризиса. Регулирование уровня безработицы также является одним из главных заданий ЕЦБ с 2011 года при помощи инфляционного таргетирования. Для проведения исследования мы используем метод OLS. Мы опираемся на период с 2000 по 2015 гг. Полученные результаты демонстрируют, что влияние инфляции на уровень безработицы во всех странах, кроме Австрии очень незначительно. Другие факторы, такие как производительность труда и прямые иностранные инвестиции имеют большее влияние на уровень безработицы.

Ключевые слова: безработица, монетарная политика, прямые иностранные инвестиции, ЕЦБ.

Statement of a problem. In the beginning of a new decade a number of countries that are Eurozone members faced sovereign debt crises.

Monetary policy is an important tool to consider during crisis because it influences all major macroeconomic indicators of the country. Unfortunately, another big problem has become unemployment in the countries that suffered from crisis. ECB was having not as a first goal the unemployment until 2011. Now one of the goals of ECB is keeping inflation lower than 2 %. Investigating the question of unemployment in Europe in crisis times is extremely important today, particularly identifying the factors that influence it the most.

Analysis of the last researches and publications: The problem of influence of monetary policy on unemployment was investigated by many foreign scientists; among those are O. Napolitano and A .Montagnoli (2010), P. Engler (2011) L. Laureys (2014). A classical reference to stem

from would be mentioning the Phillips curve, a model used by many central bankers to elaborate actual monetary policy (Rudd and Whelan, 2005). They argue that existing rational expectations sticky-price models fail to provide a useful empirical description of the inflation process, especially relative to traditional econometric Phillips curves of the sort commonly employed for policy analysis and forecasting. They find that there is little evidence at present that structural modeling of inflation in a rational expectations framework provides a clearly superior approach relative to traditional models of inflation dynamics. A NAIRU concept was elaborated by Gordon (1988, 1998), Steiger, Stock, and Watson (1997a, 1997b), Ball and Mankiw (2002) and others. Ball and Mankiw (2002) in their paper consider the role of the NAIRU concept in business cycle theory, arguing that this concept is implicit in any model in which monetary policy influences both inflation and unemployment. The paper then discusses why the NAIRU changes and, in particular, why it fell in the United States during the 1990s. They state that in the past, most macroeconomists studying the Phillips curve have concentrated their attention on the dynamic relationship between inflation and unemployment. In the future, they should expand their scope to build and test models of inflation, unemployment, and productivity.

Part of a common problem unresolved earlier: There has been done a lot of work in the investigation of dependency between unemployment and inflation. A study of unemployment and inflation as economic variables driven by labor force change was conducted by Kitov (2006a, 2006b, 2006c). The study has revealed linear relationships between inflation, unemployment and labor force. Another study was investigating the effect of foreign direct investments on unemployment (R. Nikolaev, V. Stancheva, 2013). We suppose that factors that influence unemployment are inflation, foreign direct investments and labor productivity.

Article purpose – the purpose of the following article is to determine the difference between influence of the monetary policy of ECB on the unemployment on the example of 3 groups of EU member states, make a comparative analysis with the situation in Ukraine and to forecast possible perspective for Ukrainian integration in the EU. The first group includes countries that have been EU members for a long time, but whose GDP doesn’t comprise the biggest part of the economy of EU. Those are Austria, Finland and Ireland. The second group consists of EU-member

states, but those ones who don't belong to Eurozone – Hungary, Czech Republic, and Slovak Republic. The third group comprises Baltic countries, who are EU and Eurozone recent members. Finally, we take also Ukraine in order to make a comparative analysis with the countries mentioned above.

Main materials of research: The model was built in the following way. The dependent variable (Y) was considered the determinant of the level of unemployment. The independent variables are the following:

X1 – inflation rate (%), a factor that in theory should have a direct dependency with the unemployment rate, and also a factor that is influenced directly by ECB. The dependency between this factor and the dependent variable will show to which extent ECB might have a vicarious influence on unemployment using the instruments of inflation targeting. Apart from inflation we included two considerable factors in the regression that would have a great influence on the level of unemployment. The mechanisms of this influence will be described further:

X2 - liabilities, Direct Investment, USD;

X3 - labor productivity.

Let's consider first 3 countries that switched to euro from the very beginning, January, 1, 1999. Such countries as Austria, Finland and Ireland were chosen for the analysis. These countries, the population of which doesn't exceed 2,5% of the total population of the Eurozone and the volume of GDP of each one comprises not more than 2% from the GDP of the Eurozone (explicitly 2%, 1,2% and 1,2% for Austria, Finland and Ireland correspondingly). Apart from that, each of the countries refers to its household domain – Austria gravitates towards Germany in respect of household connections and an economic model, Ireland is close to Great Britain and Finland – to Baltic and Scandinavian countries. Therefore, an absence of influence of the chosen countries separately on other countries from the list and the economy of Eurozone in general is guaranteed.

In case of Austria we get the following model:

$$Y=-7,84\times X1-10,9\times X2+29,3\times X3 \ (R^2=73,2\%)$$

Therefore, the influence of inflation is on the third place among the considered factors. The coefficient has a negative meaning, in other words, the rise of inflation leads to the fall in unemployment, what corresponds to theory. However, we can get a complete picture on to which extent ECB might influence unemployment not considering the standardized model, but a coefficient of elasticity, showing on how many percents the resulting

variable changes when the corresponding factor variable increases on 1 percent. In case of Austria it comprises -0,223 what represents a great result from the point of view of the investigation carried out. In other words, the rise of inflation in 1% decreases unemployment by 0,233% with a probability more than 70%. But still, other factors influence unemployment to a greater extent. As follows, the inflow of investments influences with a coefficient of -0,3% what gives and interesting picture: additional capital inflow to the country deprives local citizens from work places. At the same time, the rise of labor productivity by 1% leads to a rise in unemployment by as much as 0,871%. Such picture is most probably connected with the fact that the investments inflow, first and foremost, goes to a financial sector and doesn't lead to a necessity in additional labor resources. The rise in labor productivity takes place first in this sector. Also rise in labor productivity in "old" EU countries leads vicariously to the rise in the volume of governmental finances and rise in welfare payments, in other words to a situation when it's more profitable not to work than to work.

Among other peculiarities of the model one might notice a high correlation between variables X2 and X3 (around 95%). This means that the rise in investments is closely connected with a rise in labor productivity. Looking forward, one might consider that among considered countries the least correlation among these variables was noted in case of Ireland (72%).

For Ireland the standardized equation looks in the following way:

$$Y=-1,05\times X1+8,23\times X2-7,5\times X3 \ (R^2=73,19\%)$$

The coefficient of elasticity for inflation variable is -0,0891, what is definitely less than in Austria. When there is such level of connection the vicarious influence on unemployment by inflation targeting loses sense, because inflation should rise up to 11% so that unemployment falls down at least by 1%, what is impossible in the conditions of Eurozone. But still, the relationship is inverse, what corresponds to the theory.

The Foreign Direct Investments (FDI) inflow influences positively on unemployment with an indicator 0,977%. At the same time, the labor productivity influences with an indicator -0,977, what mostly corresponds to theory and data on other countries. In other words, the rise in the labor productivity has an effect 11 times stronger than inflation. At the same time, as it was noted earlier, the correlation between FDI and labor productivity is the lowest among all the countries considered.

For Finland the standardized equation looks in the following way:

$$Y=-3,02\times X1+5,37\times X2-20,1\times X3 (R^2=67,2\%)$$

The coefficient of elasticity for inflation variable is -0,0654%, what like in case of Ireland makes influence of this factor almost impossible on the unemployment variable. In general, the indicator still has a negative sign, what corresponds to theory; however its value is close to an error. The variable of FDI has a bigger influence (0,136%), as well as the labor productivity factor (-0,531%). The last one influences to a least extent among all the first group of considered countries, however much more than inflation indicator. At the same time, as theory states, the rise in labor productivity leads to a cut in unemployment.

The second group of countries includes Czech Republic, Slovak Republic and Hungary – Eastern European countries, which became EU members in 2004, among which only Slovak Republic is a member of Eurozone since 2009.

Countries are relatively close when looking on the population (around 10 mln. people in case of Czech Republic and Hungary and 5,5 mln. in Slovak Republic) and GDP from 0,5 to 1% of the EU GDP. Considering these parameters, the countries are much closer to each other than, let's say, to a neighboring Poland, different considerably in terms of population as well as GDP volume.

Currencies of Czech Republic and Hungary have a peg to euro, expressed by the presence of currency corridor. It means that the processes taking place in the Eurozone countries might have a vicarious effect on the economies of these countries. However, a direct relationship between the ECB policy in terms of inflation and the level of unemployment in these countries is not noted. And the possible опосредованное influence of these factors on each other most probably would be inconsiderable. At the same time, in case of Slovak Republic ECB might have a direct influence on unemployment using inflation policy. In theory, the picture should be different in case of these neighboring countries. Is it really so?

The model for Czech Republic looks in the following way:

$$Y=-0,394\times X1+6,08\times X2-17,3\times X3 (R^2=63,21\%)$$

The influence of inflation on unemployment in this country is on the level of mathematical failure (-0,0138%). It is impossible to talk about a possibility of any influence in such case. However, the labor productivity has a significant influence (-0,71%). Natural development of the country has a bigger influence on unemployment than any changes in the inflation

level.

A similar situation is noted in Hungary (elasticity coefficient for inflation = 0,0494%). The regression equation for Hungary is showed below:

$$Y=0,886\times X1+6,67\times X2-0,901\times X3\ (R^2=61,88\%)$$

However, this country is the only in the group where labor productivity influences unemployment with a negative sign (-0,0561%). This proves that there are serious structural problems in the economy of the country.

The elasticity coefficient for inflation variable in Slovak Republic is much lower than in average countries (0,00582%). Below there is represented a regression equation:

$$Y=0,145\times X1+10,2\times X2-24,9\times X3\ (R^2=83,04\%)$$

Influence on the level of unemployment is definitely impossible. Apart from that, a positive sign at the coefficient tells about a break of a theoretical rule. At the same time, we are not talking about stagflation. Inflation was going down since the moment of entry in Eurozone, what proves a successful policy of ECB. Unemployment was going down at the same time since 2012, however a reason to that lies in a labor productivity rise, what is proved by a reasonably high elasticity coefficient at this variable (-1,23%).

For the Baltic countries group carrying out the regression analysis hasn't given reasonable results – all the built models turned out insignificant. It means that the choses variables don't describe the unemployment variable to a certain extent. The reason of this might become a topic for a separate research.

Finally, in case of Ukraine, that doesn't belong neither to EU nor to Eurozone, we get the following equation:

$$Y=4,44\times X1+11,5\times X2-20,4\times X3\ (R^2=82,4\%)$$

Correlation between inflation and unemployment is strong and positive (0,152%), what means that there is a stagflation in the country. The FDI inflow influences on unemployment to the greatest extent among all the countries considered. (0,438%). FDI inflow lowers the necessity in labor force. Only highly qualified workers remain in demand. Also the coefficient of elasticity at the labor productivity variable remains high (-0,857). Rise in labor productivity considerably lowers unemployment, however during the economic crisis it is difficult to talk about a rise in

productivity. The data on coefficients of elasticity is represented in Table 1 below.

Table 1

Elasticity coefficients at the factor variables in all the models

Country	Inflation	FDI	Labor Productivity
Austria	-0,223	-0,3	0,871
Finland	-0,0654	0,136	-0,531
Ireland	-0,0891	0,977	-0,977
Hungary	0,0494	0,365	-0,0561
Czech Republic	-0,0138	0,236	-0,71
Slovak Republic	0,00582	0,472	-1,23
Ukraine	0,152	0,438	-0,857

Conclusions and prospects for further research: All in all, we might draw following conclusions based on the analysis carried out. The influence of inflation on unemployment in all countries apart from Austria is terribly low. As a result, there is a probability of vicarious influence of ECB on unemployment by influence targeting is inconsiderable. In all countries apart from Slovak Republic and Ukraine the correlation between inflation and unemployment is negative, what corresponds to theory. But if in Ukraine a positive correlation is caused by stagflation, in Slovak republic unemployment falls due to economy rise, while inflation is decreased due to ECB actions. This country may be called a successful example of ECB activity. In Austria, where the correlation is strong, a fall in inflation due to ECB actions leads on the contrary to a rise in unemployment.

However, a much bigger on unemployment has labor productivity. Its rise in all countries except for Hungary and Austria leads to fall in unemployment. This is connected with the rise in competitiveness of a country by M.Porter. Particularly in Austria such effect is driven by the development of financial markets, in Hungary – structural problems of economy. At the same time, such important factor of economy development as FDI inflow in all countries doesn’t create work places, but on the contrary takes them from low qualified workers. Furthermore, the less the

level of country development is, the more labor market loses from the FDI inflow.

Literature

1. Rudd J., Whelan K. Modelling Inflation Dynamics: A Critical Review of Recent Research / J. Rudd, K.Whelan // Finance and Economics Discussion Series Divisions of Research & Statistics and Monetary Affairs. – 2005. – pp.1-42.

2. Nikolaev R., Stancheva V. The Effect of Foreign Direct Investment On Unemployment in Bulgaria / R. Nikolaev, V.Stancheva // IZVESTIA – Journal of University of Economics. – Varna. – 2013. – pp.14-24.

3. Napolitano O., Montagnoli A. The European Unemployment Gap and the Role of Monetary Policy / O. Napolitano, A. Montagnoli // Economics Bulletin. – Vol.30. – Issue 2. – 2010. – pp.1-13.

4. Wen Y. Monetary Policy's Effects on Unemployment / Y. Wen // Economic SYNOPSES. – No.10. – 2011. – pp.1-2.

5. Laureys L. Optimal monetary policy in the presence of human capital depreciation during unemployment / L.Laureys // Bank of England.- Working Paper. – No. 514. – pp. 1-51.

6. Engler P. Monetary Policy and Unemployment in Open Economies / P. Engler // NCER Working Paper Series. – 2011. – pp. 1-35.

7. International Monetary Fund Data [Internet source] / Rezim dostypy. - www.omf.org

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25.04.2016