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IMPACT OF MONETARY AND NON-MONETARY FACTORS ON ECONOMIC DEVELOPMENT OF THE BALTIC COUNTRIES

ВПЛИВ МОНЕТАРНИХ І НЕМОНЕТАРНИХ ФАКТОРІВ НА ЕКОНОМІЧНИЙ РОЗВИТОК КРАЇН БАЛТІЇ

ВЛИЯНИЕ МОНЕТАРНЫХ И НЕМОНЕТАРНЫХ ФАКТОРОВ НА ЭКОНОМИЧЕСКОЕ РАЗВИТИЕ СТРАН БАЛТИИ

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Abstract. *The aim of the paper is to identify the factors affecting economic growth of Baltic countries. Correlation analysis has been exploited to analyze the impact of both monetary and non-monetary factors on gross domestic product dynamics of Estonia, Latvia and Lithuania. The research results show that the most strong relationship in these three countries is observed between GDP dynamics and the following variables: domestic credit provided by financial sector, exports of goods and services including high-technology exports, official exchange rate, household final consumption expenditure, unemployment and real interest rate. The findings of the study indicate that inflation is related to GDP dynamics only in Latvia, foreign direct investments are associated to GDP only in Estonia. Especial role in economic development of these states belongs to export diversification. Companies diversified their product ranges switching to high added value products. Development of new branches and new markets, especially in Euro zone made sufficient impact on economic development of "Baltic Tigers". Thus, both monetary and non-monetary factors had impact on economic growth of these states.*

Key words: *gross domestic product, economic growth, linear regression, correlation, Baltic countries.*

Анотація. *Мета статті полягає у ідентифікації факторів, що визначають економічне зростання Прибалтійських країн. Для аналізу впливу монетарних та немонетарних факторів на динаміку валового внутрішнього продукту Естонії, Латвії та Литви було використано кореляційний аналіз. Результати дослідження демонструють, що у цих країнах найбільш стійкий зв'язок спостерігається між динамікою ВВП та наступних змінних: внутрішнього кредиту, наданого фінансовим сектором, експорту товарів і послуг, у тому числі високотехнологічних, офіційного валютного курсу, обсягів кінцевих витрат на споживання, безробіття та реальної відсоткової ставки. Результати дослідження свідчать, що інфляція пов'язана з динамікою ВВП лише у Латвії, прями іноземні інве-*

стиції мають зв'язок з ВВП лише у Естонії. Особливу роль у економічному розвитку цих країн відіграла диверсифікація експорту. Компанії розширювали перелік своїх товарів, фокусуючись на продукції високого ступеню обробки. Розвиток нових галузей та нові ринки збуту, особливо у зоні «євро» зчинили суттєвий вплив на економічний розвиток «Прибалтійських тигрів». Так, можна констатувати, що економічне зростання цих країн перебуває під впливом як монетарних, так і немонетарних факторів.

Ключові слова: валовий внутрішній продукт, економічне зростання, лінійна регресія, кореляція, країни Балтії.

Аннотація. Цель статьи заключается в идентификации факторов, определяющих экономический рост Прибалтийских стран. Для анализа влияния монетарных и немонетарных факторов на динамику валового внутреннего продукта Эстонии, Латвии и Литвы был использован корреляционный анализ. Результаты исследования показывают, что в этих странах наиболее устойчивая связь наблюдается между динамикой ВВП и последующих переменных: внутреннего кредита, предоставленного финансовым сектором, экспорта товаров и услуг, в том числе высокотехнологических, официального валютного курса, объемов конечных расходов на потребление, безработицы и реальной процентной ставки. Результаты исследования свидетельствуют, что инфляция связана с динамикой ВВП только в Латвии, прямые иностранные инвестиции имеют связь с ВВП только в Эстонии. Особую роль в экономическом развитии этих стран сыграла диверсификация экспорта. Компании расширяли перечень своих товаров, фокусируясь на продукции высокой степени обработки. Развитие новых отраслей и новые рынки сбыта, особенно в зоне «евро» имели существенное влияние на экономическое развитие «Прибалтийских тигров». Следовательно, можно констатировать, что экономический рост этих стран находится под влиянием как монетарных, так и немонетарных факторов.

Ключевые слова: валовой внутренний продукт, экономический рост, линейная регрессия, корреляция, страны Балтии.

Introduction. European and non-European scientists have been researching different factors of economic growth, including monetary impact, for years. Successful transition experience and rapid economic growth of “Baltic tigers” could be used by other post-soviet economies, Ukraine included. That is why the study is focused on monetary and non-monetary impact on GDP dynamics of these countries to develop effective economic policy and promote economic growth in our state.

The purpose of research is the relationship between economic growth and monetary and non-monetary factors. This research have studied the effect of different factors on GDP dynamics of the post-soviet Baltic countries. The tasks of the study are the following:

- to analyze the correlation between GDP dynamics (per capita, constant 2010 US\$, GDP) and broad money growth (annual %, BMG), GDP and real interest rate (% , RIR), GDP and inflation (GDP deflator, annual %, DEF), GDP and official exchange rate (local currency unit per US\$, period average, OER), GDP and domestic credit provided by financial sector (% of GDP, DC), GDP and foreign direct investment (net inflows, % of GDP, FDI), GDP and high-technology exports (% of manufactured exports, HTE), GDP and exports of goods and services (per capita, constant 2010 US\$, EGS), GDP and unemployment (total, % of total labor force, national estimate, UN), GDP and household final consumption expenditure (per capita, constant 2010 US\$, HHFE);
- to determine the factors affecting GDP dynamics more than other variables estimating pairwise correlations of the variables (growth vs. factor of growth);

Data was collected from Knoema, World data atlas. Because of the monetary changes in these countries related to their joining the euro area some data were missing and the study analyzed the following period: 1996 – 2008.

Analysis of the latest publications. Variety of both European and non-European research papers scientists are focused on different factors of economic growth. Robert Barro has become one of the first economists who have used panel methods in their studies. He has performed cross-country research that was based on the data of around 100 countries from 1960 to 1990. The research results indicated that the growth rate was enhanced by higher initial schooling and life expectancy, lower fertility, lower government consumption, better maintenance of the rule of law, lower inflation, and improvements in the terms of trade [Barro, 1996: 1–3]. Following Barro's study Parash Upreti analyzed the raw of factors affecting economic growth. The findings indicated that a high volume of exports, plentiful natural resources, longer life expectancy, and higher investment rates have positive impacts on the growth of per capita gross domestic product in developing countries [Upreti, 2015: 37].

A lot of research papers are focused on the transition economies, especially on the financial factors driving and supporting economic growth. Thus, Mariush Próchhiak has analyzed Central and Eastern European economies and has concluded that the most important economic growth determinants in these countries are the following: investment rate (including FDI), financial sector development, low budget deficit and low public debt, high services share in GDP, low interest rates, low inflation and some others [Próchhiak, 2011]. Petr Hlavacek and Beata Bal-Domanska have analysed the impact of foreign direct investment on economic growth in the Central and Eastern European focusing on the Czech Republic, Estonia, Hungary, Latvia, Lithuania, Poland, Slovakia and Slovenia. They have found statistically significant relations existing between economic growth, FDI and investment growth [Hlavacek, Bal-Domanska 2016: 294]. Gulcin Elif Yucel (2014) using panel data method for the 1996–2008 period has explored the interactions between FDI and economic growth of Baltic countries. He has founded that FDI has a positive effect on economic growth in Baltic countries [Yucel, 2014:115]. Gabor Hunya having analysed the evolution and determinants of foreign direct investment (FDI) in Estonia, Latvia and Lithuania has concluded that sound economic policies have created an environment conducive for FDI. His analysis has shown that FDI has contributed to economic growth in the Baltic economies, having financed around one-fifth of fixed investment [Hunya, 2004: 92]. Ramona Jimborean and Anna Kelber have researched the influence of FDI on economic development of the Central and Eastern European countries. The results admitted a positive effect of FDI inflows on economic growth [Jimborean, Kelber, 2014]. Alexander Chubrik basing on the estimations of panel data for 25 transition economies in 1989–2003 has analyzed the role of the banking reforms. According to his findings governance and enterprise restructuring, banking sector reform, trade and foreign exchange liberalization are the main drivers of economic growth [Chubrik, 2004].

This study is focused on factors of economic development of post-soviet Baltic countries – Estonia, Latvia and Lithuania. These states have often been called “Baltic Tigers” – due to their economic reforms, foreign investments, and fast growth of GDP, especially between 2004 and 2007. In spite of crisis in 2008–2009, resulting in deep recession, the past quarter of a century can certainly be considered successful for Lithuania, Latvia, and Estonia. Nowadays, Baltic States have stable economies with low public deficit and debt levels [Kowalczyk, 2017. Baltic States did a remarkable improvement in its competitiveness as evidenced in its high rankings in Global Competitiveness, Ease of Doing Business or Economic Freedom indices [Nordea, 2016].

“Baltic Tiger” is a term used to refer to Estonia in particular, as the richest and best developed country among the three Baltic States. According to data of the International Monetary

Fund from 2016, Estonia has the highest Gross Domestic Product per capita (nominal) among them [Kowalczyk, 2017]. Nowadays Estonia is one of the world's most open economies, with trade amounting to almost 160% of the gross domestic product. According to the Christian Schulz's research results, when predicting macroeconomic variables for Estonia, special consideration might be taken of variables that represent the influence of trade on the Estonian economy [Schulz, 2007: 10]. Studying trade variables and their impact on GDP dynamics he states that the Estonian economy is more strongly influenced by its new Western and Northern European partners than by its older Russian liaisons [Schulz, 2007: 14]. Estonian industry is heavily dependent on ongoing recovery in the Euro area and Nordic demand, since more than 70% of manufacturing goes for exports, with the Nordics share standing as high as 40% of overall industrial exports. Today, more than half of the branches are expanding with more sectors to deliver revenue growth next year supported by fairly steady performance by the Euro area economy [Nordea, 2016]. Finnish and Euro zone variables seem to have the strongest coefficients, with Finnish exports, Finnish GDP and euro zone GDP "scoring" the highest. Russian variables, represented here by Russian GDP, exhibit weaker relationships [Schulz, 2007: 15]. The remarkable trade growth could happen due to the great infrastructure development in Estonia resulting from high EU transfers (amounting to 4% of GDP in 2012), that had mostly been spent on infrastructure projects. According to OECD overview transport, communication and energy networks are key factors for internationalization and economic growth of Estonia [OECD, 2015: 17].

The next important factor of Estonian economic development is foreign direct investment. Mentioned before Christian Schulz, who has dedicated to Estonian economy a lot of his research papers, puts attention to the association of GDP growth and monetary variables and evidences that monetary supply (M1 and M2) exhibits a rather strong shortterm leading characteristic, while interest rates seem to be lagging with high coefficients [Schulz, 2007: 14]. He states that financial variables, particularly the growth of monetary aggregates, have the best predictive power for GDP dynamics, followed by the variables of investment and some survey-type data [Schulz, 2007: 37].

After its accession to the EU, Latvia, like the other two Baltic States (Estonia and Lithuania) has shown a sharp rise in its GDP (gross domestic product), justifying its rank as one of "Baltic tigers". Between 2004 and 2007 Latvia's GDP rose by 33%, even reaching a growth rate of 12% in 2006 [Kajaks, 2016: 2]. When estimating production function for Latvia, various researchers have remarked high total factor productivity (TFP) role in GDP growth. However, Olegs Krasnopjorovs' study shows that this result could be a consequence of imprecise modelling of the fixed capital accumulation process. He believes that that the role of TFP in some papers may be overestimated [Krasnopjorovs, 2017: 29]. Assessing the role of supply factors in Latvia's GDP growth during the 2001–2010 period Olegs Krasnopjorovs concludes that fixed capital accumulation was found to be the main GDP growth driver [Krasnopjorovs, 2017: 22]. But it is noticeable that Latvia has not managed to attract as much FDI geared directly to export as for example Estonia [Cunška et al, 2013: 128]. It is worth mentioning that Latvia's GDP growth was also driven by its foreign trade. Latvia changed foreign trade directions from Russia to Euro zone dramatically. The fraction of European countries in Latvia's export in 2000–2002 amounted to more than 64% [Институт экономики РАН, 2013]. Latvian companies began to diversify their product ranges switching to high added value products. Development of new branches and new markets, especially in Euro zone, Great Britain, USA and Eastern countries, influenced Latvia's economic growth [Институт экономики РАН, 2013].

Monetary factors have also played an important role in Latvia's economic development. In 1998 the changes of Latvia's mortgage legislation caused so-called "mortgage fever". Mortgage rates offered by big banks have amounted to 8% and have been followed by construction boom

and fast GDP growth. But high-speed economic growth has been also connected to huge foreign debt increase. Growing for 25% per year (since 2005) Latvian external debt has reached 37 bln. in 2007 [Институт экономики РАН, 2013].

Like in case of two other “Baltic tigers” – Estonia and Latvia – Lithuanian economic growth was also driven by export. Various studies [Nordea, 2016; OECD, 2016] show that the growth of export and commerce were the main factors of Lithuania’s economic development. But studies show that with the external environment remaining hostile (Brexit, Russia) and globalisation going out of fashion, Lithuania can no longer rely exclusively on the export-led recovery [Nordea, 2016]. Scientists also observed considerable but controversial role of FDI in Lithuanian economic development [OECD, 2016; Tvaronaviciene, 2006]. Most of FDI came from Denmark, Sweden, Estonia, Germany and the United States. [OECD, 2016]. However, FDI controversially affects growth of an economy by physical capital accumulation, technology, know-how spillovers at some sectors, and by using advantages of high entry barriers and causing bankruptcies of local firms [Tvaronaviciene, 2006: 74]. Thus Baltic economic miracle resulted from foreign trade development focused on EU, European FDI injections, internal credit support and considerable improvement of legislative business environment.

The important research results. In the study the linear regression have been used to find relationship between GDP dynamics and probable predictor variables. The correlation coefficient (a value between -1 and +1) shows how strongly two variables are related to each other. High value (either positive or negative) of the coefficient indicates the strong association between two variables. As it shown in the Table 1, in Estonia the strongest association is observed between

Table 1
**Correlation coefficient of GDP
vs. factor variables for Estonia, Latvia
and Lithuania**

Factor variable	Country		
	Estonia	Latvia	Lithuania
HTE	-0.32	0.69	0.93
DC	0.99	0.99	0.98
EGS	0.97	0.99	0.99
DEF	-0.26	0.69	0.08
OER	-0.55	-0.69	-0.96
BMG	0.09	-0.07	0.08
FDI	0.64	0.23	0.21
RIR	-0.31	-0.91	-0.70
HHFC	1.00	0.99	1.00
UN	-0.79	-0.49	-0.77

Source: authors’ calculations based on [Knoema, World data atlas: 2017].

magnitude of the correlation coefficient is observed when examining the relationship between GDP and real interest rate and level of unemployment. Causal relationship between GDP and these variables needs additional tests.

The research results show that the most strong relationship in these three countries is observed between GDP dynamics and the following variables: domestic credit provided by financial sector, exports of goods and services, official exchange rate, household final consumption expenditure, high-technology exports, unemployment and real interest rate. Inflation is related

GDP dynamics and domestic credit provided by financial sector, exports of goods and services and household final consumption expenditure. The association of GDP dynamics with official exchange rate and foreign direct investment is weaker but it is also essential. In case of Latvia the strongest association is observed between GDP dynamics and domestic credit provided by financial sector, exports of goods and services, real interest rate and household final consumption expenditure. The level of relationship between GDP dynamics on one side and high-technology exports, official exchange rate, unemployment and inflation on the other is also worth mentioning. In Lithuania the highest correlation is observed between GDP dynamics and household final consumption expenditure, exports of goods and services, official exchange rate, high-technology exports. Rather high mag-

to GDP only in Latvia, foreign direct investments are associated to GDP only in Estonia and the relationship is rather weak. Thus both monetary and non-monetary factors had impact on economic growth of “Baltic Tigers”.

Comparing to the previous study focused on economic development of the Visegrad Group countries [Goliuk, 2016: 267], it can be observed that in both post-soviet groups of countries (Baltics and Visegrad countries) export was one of the main driver of economic growth. FDI were more important for Central European economics (especially for Poland). In the Baltic Group only Estonia was influenced by foreign (mostly European) capital. Unlike The Visegrad Group countries Baltic economies (except Latvia) showed no relationship between GDP growth and inflation. The similar results derive from the comparative analysis of the relationship between GDP dynamics and broad money growth in Baltic States. Central European Economies’ study show rather strong association of these variables, but analysis show almost no relationship between them in Baltics.

Comparative analysis of Ukrainian economy and other post-soviet countries has revealed both similar and distinctive factors contributing economic development on the post-soviet area. Like in Baltic economies domestic credit, the real interest rate and the exchange rate have the strongest impact on GDP dynamics in Ukraine. Association of economic development and broad money growth in Ukraine is similar to that of the Visegrad Group countries. Among other variables studied foreign direct investments also make essential influence on GDP growth of Ukraine, that also takes place in Estonia and Poland. Strong relationship between GDP dynamics and inflation, that is inherent for Ukrainian economy, also takes place in Visegrad Group countries, but is not typical for Baltics.

Conclusions. These findings are consistent with the previous research. The study confirms the strong positive effect have been made by foreign trade development on economic growth of Baltic countries. Thus, it corresponds with various studies of Robert Barro, Christian Schulz, Parash Upreti, and many others, who highlighted the role of export in economic development of these countries. Significant correlation of GDP dynamics and domestic credit observed in this study, especially concerning Latvia, was also researched by researchers of The Institute of Economics of the Russian Academy of Sciences. The research results also contribute to the thesis about FDI as one of the key factors of economic growth in Estonia, that was observed by Beata Bal-Domanska, Zane Cunska, Petr Hlavacek, Gabor Hunya, Christian Ketels, Anders Paalzow, Christian Schulz, Alf Vanags.

Successful transition experience of both the Visegrad Group countries and “Baltic tigers” could be useful for other post-socialist economies, especially for our country. These findings indicate prospective ways to drive economic growth in Ukraine, and monetary policy is one of the key factors that can contribute to economic development of our country. That is why the following studies will be focused on the monetary activity of the central banks of these post-soviet countries to use their experience in Ukraine.

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