

## СВІТОВА ЕКОНОМІКА ТА МІЖНАРОДНІ ВІДНОСИНИ

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## EXPORT AND ECONOMIC GROWTH IN CENTRAL AND EASTERN EUROPEAN COUNTRIES WITH APPLYING TO UKRAINIAN ECONOMY

The article discusses the problem of creating successful strategy of export oriented growth. Exports and export policies, in particular, are considered to be the most important stimulators of economic growth. Export is an effective mean of introducing new technologies, both for exporters, in particular, and in other sectors of the economy. In our study, we attempted to measure the process of export changes and economic growth in Central and Eastern Europe during the opening the economy of these countries, membership in European Union, global financial crisis 2008. The study included 15 countries: EU countries Bulgaria, Czech Republic, Estonia, Hungary, Latvia, Lithuania, Poland, Romania, Slovakia and Slovenia, as well post-Soviet European countries: Ukraine, Russia, Moldova, Belarus and also Albania for the period from 1991 to 2017. We use World Development Indicators Data base of the World Bank for this period. In order to test the impact of export on economic growth the Keynesian model of economic development is used. For estimation of this model we used panel GLS regression with fixed effects for CEE countries for the period 1991–2017 yy. In summary, we investigated the factors influencing economic growth for the entire period 1991–2017. Exports and private consumption remain dominant factors with coefficients of 0.21 and 0.42, respectively. In the European Union countries economic growth is dominated by private consumption (impact ratio – 0.56 and exports – 0.27). The rest of the CEE countries are growing due to private consumption (coefficient – 0.25) and investment – 0.23. The results of the study of the impact of EU membership on the relationship between exports and economic growth show that the economies of countries that have joined the European Union are more export-oriented than European countries that have not joined the EU, the coefficient of the impact of export growth on GDP growth in the EU countries is more than 5 times higher than in other CEE countries (0.34 and 0.06, respectively). Thus, the economies of CEE countries acquire the features of the Keynesian model of economic development, coefficients of determination  $R^2$  explain 80–90% of changes in economic growth.

**Keywords:** export, economic growth, Keynesian model, Central and Eastern Europe, Ukraine, panel GLS regression with fixed effects.

## ЕКСПОРТ ТА ЕКОНОМІЧНЕ ЗРОСТАННЯ В КРАЇНАХ ЦЕНТРАЛЬНОЇ ТА СХІДНОЇ ЄВРОПИ З ПРОЄКЦІЄЮ НА УКРАЇНСЬКУ ЕКОНОМІКУ

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У статті розглядається проблема формування успішної стратегії експорторієнтованого зростання. Зокрема, експорт та політика експорту вважаються найважливішими двигунами економічного зростання. Експорт є ефективним засобом упровадження нових технологій як для експортерів, так і для інших галузей економіки. У нашому дослідженні ми спробували виміряти процес змін експорту та економічного зростання у Центральній та Східній Європі під час відкриття економіки цих країн до світових ринків, членства в Європейському Союзі, світової фінансової кризи 2008 р. До дослідження було включено 15 країн: країни ЄС: Болгарія, Чеська Республіка, Естонія, Угорщина, Латвія, Литва, Польща, Румунія, Словаччина та Словенія, а також пострадянські європейські країни: Україна, Росія, Молдова, Білорусь, а також Албанія за період з 1991 по 2017 р. Ми використовуємо базу даних Світового банку WDI Data base про показники світового розвитку за цей період. Для перевірки впливу експорту на економічне зростання використовується кейнсіанська модель економічного розвитку. Для оцінки цієї моделі ми використовували панельну регресію GLS із фіксованими ефектами для країн ЦЄ за період 1991–2017 рр. Ми дослідили чинники, що впливають на економічне зростання, за весь період 1991–2017 років. Експорт та приватне споживання залишаються домінуючими факторами з коефіцієнтами 0,21 та 0,42 відповідно. У країнах Європейського Союзу в економічному зростанні переважає приватне споживання (коефіцієнт впливу – 0,56 та експорт – 0,27). Решта країн ЦЄ зростають за рахунок приватного споживання (коефіцієнт – 0,25) та інвестицій – 0,23. Результати дослідження впливу членства в ЄС на взаємозв'язок між експортом та економічним зростанням показують, що економіка країн, які приєдналися до Європейського Союзу, більш орієнтована на експорт, ніж європейські країни, які не вступили до ЄС, коефіцієнт впливу зростання експорту на зростання ВВП у країнах ЄС більше ніж у п'ять разів вищий, ніж у інших країнах ЦЄ (0,34 та 0,06, відповідно). Економіки країн ЦЄ набувають рис кейнсіанської моделі економічного розвитку, коефіцієнти детермінації  $R^2$  пояснюють 80–90% змін економічного зростання.

**Ключові слова:** експорт, економічне зростання, кейнсіанська модель, Центральна та Східна Європа, Україна, панельна регресія GLS із фіксованими ефектами.

**Introduction.** The study of the experience of economic transformation of developed countries, especially in the postwar period, will allow our further analysis to identify certain strategies in economic reforms in Central and Eastern Europe to achieve such economic results as achieved by developed countries of the European Union. Classical works in the field of structural transformations in the world economy can serve as a basis for determining the level of imbalance, inconsistency of the economic structure of post-socialist countries in comparison with developed market states.

**Literature review.** The concept of economic structure, structural changes has aroused considerable interest of economists, especially in the context of economic growth of states, increasing its efficiency and optimization.

The accumulation of physical and human capital, as well as shifts in the structure of demand, trade, production and employment, according to H. Chenery, is the main core of transformation [1].

The processes of industrialization, as the basis of structural change in countries, have long prevailed in economic analysis.

The well-known economist H. Chenery, who was engaged in the optimization of the sectoral structure of the economy, identified the universal factors on the basis of which the structural transformation of the state economy is formed.

Among these universal factors: 1) common technological knowledge; 2) similar human desires; 3) access to the same import and export markets; 4) accumulation of capital, if the level of income increases; 5) increasing the level of skills, education with increasing income [1].

International trade has a significant impact on the production structure of the national economy, especially the open economy. In closed economies, the structure of production is identical to the structure of demand, with increasing openness, the specialization of production changes. M. Sirquin emphasizes the size of the economy as a basis for the formation of its dependence on foreign trade. The smaller the economy, the more specialized it is, which in turn is due to the availability of natural resources, the structure of factors of production and government policy [2, p. 265].

The foreign economic policy of large countries is focused on import substitution, which allows to achieve certain structural changes in the direction from raw materials to industrial, and this is achieved at relatively low levels of gross domestic product. In small countries, export specialization in raw materials can actually take a long time, and the reorientation to industrial goods occurs with a significant increase in government revenues.

If we analyze the contribution of domestic demand, international trade, cost ratios to change the share of industry, then foreign economic relations are the main factor contributing to the decline in the share of service industries and growth of industrial production. Export-expanding policy in the countries of Southeast Asia has extremely strongly stimulated industrialization in these countries, income growth.

Export-driven growth is a term used to describe a strategy to encourage and support export production. The rationale lies in the belief of many economists that foreign trade is the engine of economic growth, in the sense that it can promote a more efficient allocation of resources within countries, as well as transfer growth in different countries and regions.

Exports and export policies, in particular, are considered to be the most important stimulators of economic growth. Export is an effective mean of introducing new technologies, both for exporters, in particular, and in other sectors of the economy. In addition, export growth plays an important role in the growth process by stimulating demand, stimulating savings and capital accumulation.

The impact of exports on economic growth has been studied by many scientists and described in many economic concepts. It is safe to say that export growth plays a leading role in increasing GDP, and therefore stimulating export supplies, supporting export-oriented industries based on the production of high-tech products are the main tasks of the state if its goal is successful and stable economic growth.

The countries of Southeast Asia and some Western European countries pursued export-oriented economic policies during the second half of the 20<sup>th</sup> century. The results of their economic development and achievements, which led to the growth of general welfare and economic power, indicate that this model has proved effectiveness. After the Second World War, these countries were either underdeveloped or devastated by war. Applying the model of export-oriented growth, they were able to achieve significant economic development in a short period of time.

In each country, this model had slightly different modifications, but the main advantage, and perhaps a condition for the success of this model was the focus on non-raw, high-tech industrial exports. The development of the industrial sector became a priority during the period of economic restructuring. Significant human resources, interest to these countries from such powerful states as the United States or Japan, attracting foreign investment – all this has also contributed to successful economic development in Southeast Asia.

World experience testifies the important role of industrial, high-tech exports in ensuring high rates of economic growth and transition to a higher level of economic development. Economic development of Southeast Asia has become possible due to a balanced and well-thought-out policy of state export promotion based on the use of customs and tariff policy instruments, financial and tax incentives, international scientific and technical cooperation, government cooperation with private business, attracting foreign direct investment in strategic areas, implementation of state programs to promote the development of high-tech industries.

**Export policy in cee.** Reforms of the trade policy in transition economies took place in two different ways: the first way – the rapid liberalization of foreign trade, the second way – the gradual transformation of foreign trade (so-called gradualism). The countries of Central and Eastern Europe and the Baltic states have chosen the first fast way, and the CIS member states – the second one.

The synchronicity and pace of foreign trade liberalization varied from country to country, but they all introduced a uniform exchange rate and introduced a convertible national currency, gave the private sector full autonomy to operate in international markets, and abolished export controls. In addition, all these countries have introduced new tariffs, customs duties and protectionist procedures.

Institutionally, CEE countries have gone through three stages in the field of foreign trade liberalization: WTO membership since 1995, participation in CEFTA, EFTA

free trade areas and direct accession to the European Union in 2004. Thus, from unilateral liberalization to joining multilateral regional integration associations.

Countries that have chosen another path of foreign trade reform – gradualism, have failed to create conditions for genuine competition for domestic producers. The policies pursued by the governments of these countries were detrimental to exports: all CIS member states had a complex system of export registration and licenses, in addition to the mandatory surrender of foreign currency earnings and taxes on hard foreign currency earnings.

**Model and empirical research.** In order to test the impact of export on economic growth the Keynesian model of economic development is used.

The Keynesian model in dynamic is based on the following formula (1):

$$\Delta Y = \Delta C + \Delta I + \Delta G + (\Delta X - \Delta M), \quad (1)$$

where  $\Delta Y$  – GDP growth;  $\Delta C$  – private consumption growth;  $\Delta I$  – investment growth,  $\Delta G$  – government expenditures growth;  $\Delta X$  – export growth and  $\Delta M$  – import growth.

In our study, we attempted to measure the process of export changes and economic growth in Central and Eastern Europe during the opening the economy of these countries, membership in European Union, global financial crisis 2008. The study included 15 countries: EU countries Bulgaria, Czech Republic, Estonia, Hungary, Latvia, Lithuania, Poland, Romania, Slovakia and Slovenia, as well post-Soviet European countries: Ukraine, Russia, Moldova, Belarus and also Albania for the period from 1991 to 2017. We use World Development Indicators Data base of the World Bank for this period [3].

For estimation of this model we used panel GLS regression with fixed effects for CEE countries for the period 1991–2017 yy. Dependent variable is  $GDPG_{it}$  – Gross Domestic Product Growth; independent variables:  $GGCG_{it}$  – General Government Final Consumption Growth;  $GFCFG_{it}$  – Gross Fixed Capital Forma-

tion Growth;  $HFCEG_{it}$  – Household Final Consumption Expenditures Growth;  $IG_{it}$  – Import of Goods and Services Growth;  $EG_{it}$  – Export of Goods and Services Growth; indexes t and i mean accordingly year and country.

Firstly we analyzed the impact of exports on economic growth in the post-socialist countries of Central and Eastern Europe over the 20-years period up to the global financial crisis of 2008–2009 (see Table 1). For the whole group of countries during this period, the impact of exports on GDP growth is determined by a coefficient of 0,10, which means that if the change in export growth is 1 percentage point, economic growth will increase by 0.10 percentage points.

Differentiation of this indicator depending on the period is quite significant. Thus, at the beginning of structural reforms in the transition from a command-administrative economy to a market, the impact of export growth of goods and services is low (coefficient is 0.09), and since 2000 until the height of the global financial crisis increased more than twice. This period is characterized by extremely high economic growth of post-Soviet European countries, due to almost threefold increase in prices for steel, oil, gas, as well as preparations for accession and accession to the EU in a number of post-socialist CEE countries.

The results of the study of the impact of EU membership on the relationship between exports and economic growth (see Table 2) show that the economies of countries that have joined the European Union are more export-oriented than European countries that have not joined the EU, the coefficient of the impact of export growth on GDP growth in the EU countries is more than 5 times higher than in other CEE countries (0.34 and 0.06, respectively).

During the period 1991–2010, there is a tendency to reduce the impact of private consumption and increase the impact of investment in fixed assets and exports of goods and services. Thus, the economies of CEE countries acquire the features of the Keynesian model of economic development. Coefficients of determination  $R^2$  increase

Table 1

Economic Growth By Componets in CEE ,1991-2010

Independent variables	Dependent variable $GDPG_{it}$				
	All countries 1991–2010	All countries 1991–1999	All countries 2000–2010	EU members 1991–2010	Non EU members 1991–2010
$GGCG_{it}$	0,12 (5,87)	0,12 (3,04)	0,07 (2,84)	0,10 (3,39)	0,14 (4,44)
$GFCFG_{it}$	0,11 (10,3)	0,08 (4,73)	0,14 (9,01)	0,19 (12,86)	0,10 (6,60)
$HFCEG_{it}$	0,45 (14,14)	0,49 (7,82)	0,34 (10,61)	0,51 (21,21)	0,43 (7,39)
$IG_{it}$	-0,08 (-5,01)	-0,09 (-3,90)	-0,11 (-2,88)	-0,30 (-11,25)	-0,06 (-2,69)
$EG_{it}$	0,10 (4,96)	0,09 (2,77)	0,20 (6,01)	0,34 (13,55)	0,06 (1,90)
$Constant_{it}$	-0,03 (-0,2)	-1,15 (-2,24)	0,73 (3,05)	0,31 (0,16)	-0,75 (-1,45)
Within $R^2$	0,72	0,61	0,82	0,91	0,63
Between $R^2$	0,57	0,75	0,87	0,30	0,79
Overall $R^2$	0,70	0,65	0,83	0,90	0,64
Statistical tests F-test	653	27,0	140,3	311,8	36,96
Number of observations	270	105	165	151	119

\*in parenthesis t- statistic.

almost 1.5 times, explaining 80-90% of changes in economic growth.

In 1989, the CEECs' general trade profile with the EU was typical for a less developed trading partner. Exports were mostly labour intensive and energy intensive and there were substantial deficits in R&D-, skill- and – to a lesser extent – capital-intensive branches. Over the past decade, however, the more advanced of the CEECs have markedly changed their specialization relative to the EU: specialization advantages in R&D-, skill- and capital-intensive areas have increased significantly, while those in labour-intensive branches have been substantially reduced pointed by M. Landessman [ 4, p.114].

In parallel with the change in the pattern of interindustry trade specialization, there have also been substantial changes in the quality of products produced and exported by CEE producers (i.e. in their position in “vertically differentiated” intraindustry trade). In 1989/1990 the CEE economies were at the very low quality end of the product spectrum.

From the results presented in Table 2, which analyzes the economic growth of CEE countries after the global financial crisis, we can conclude that there is a significant structural difference in the components of economic growth of EU member states and CEE countries outside the EU. The economies of the EU countries have been increasing their GDP growth rates due to government spending and exports. In the post-Soviet countries, the statistical significance of the impact of the components of the Keynesian model is very low, there is a significant decline in government spending, investment, exports.

In summary, we investigated the factors influencing economic growth for the entire period 1991–2017. Exports and private consumption remain dominant factors with coefficients of 0.21 and 0.42, respectively. In the European Union countries economic growth is dominated by pri-

vate consumption (impact ratio – 0.56 and exports – 0.27). The rest of the CEE countries are growing due to private consumption (coefficient – 0.25) and investment – 0.23. In general, over the 27-year period of our study, the impact of export operations on economic growth has increased significantly, which certainly creates grounds for crisis-free and stable development of CEE countries.

The openness of the Ukrainian economy presupposes the consideration of the external sector as a decisive factor in the economic growth of the state. Analysis of the commodity structure of Ukrainian exports, which dominated by capital-intensive goods of standard quality (ferrous metal-lurgy products), shows that the share of industrial products is declining, comparing to 2000 the share of exports of food products and raw materials for their production increased almost 6 times to 40%, that is, industries that use Ukraine's scarce energy resources (domestic agriculture is the most energy-intensive in Europe) dominate in export. A low share is occupied by goods with a high intensity of human capital.

Another conclusion is that a high level of prosperity contributes to increasing exports and imports from the EU, given their significant investment component, as well as a tool to improve the quality of life of Ukrainians. This gave hope that fundamental reforms in the structure of Ukrainian production could begin, which unfortunately did not take place.

Given that the Ukrainian government prefers to use monetary instruments to regulate the economy in times of crisis, and especially often uses the instrument of devaluation of the national currency, which does not affect the competitiveness of Ukrainian exports to the European Union, nor does it reduce imports from the EU, only monetary regulation is ineffective in contrast to the 1998 crisis.

The general conclusion about monetary instruments to stimulate the competitiveness of the Ukrainian economy

Table 2

Export, Growth, EU membership and Crisis in CEE, 1991–2017

Independent variables	Dependent variable GDPG <sub>it</sub>				
	All countries 1991–2017	EU members 1991–2017	Non EU members 1991–2017	EU members 2009–2017	Non EU members 2009–2017
GGCG <sub>it</sub>	0,10 (4,49)	0,06 (2,33)	0,13 (3,63)	0,18 (3,13)	-0,01 (-0,16)
GFCFG <sub>it</sub>	0,16 (13,87)	0,13 (12,4)	0,23 (9,97)	0,11 (6,35)	0,11 (3,59)
HFCEG <sub>it</sub>	0,42 (15,98)	0,56 (19,6)	0,25 (5,58)	0,49 (9,96)	0,26 (4,20)
IG <sub>it</sub>	-0,14 (-7,8)	-0,20 (-9,81)	-0,08 (-3,09)	-0,13 (-2,70)	0,05 (1,13)
EG <sub>it</sub>	0,21 (12,46)	0,27 (13,94)	0,14 (5,23)	0,31 (6,00)	0,09 (2,23)
Constant <sub>it</sub>	-0,03 (-0,2)	-0,32 (-0,22)	-0,02 (-0,09)	-0,40 (-1,94)	0,51 (1,67)
Within R <sup>2</sup>	0,80	0,84	0,81	0,93	0,90
Between R <sup>2</sup>	0,84	0,75	0,96	0,88	0,88
Overall R <sup>2</sup>	0,80	0,84	0,82	0,93	0,88
Statistical tests F-test	273	250,0	97,8	194,17	54,96
Number of observations	358	239	119	80	40

\* in parenthesis t-statistic.

can be as follows: temporary containment of imbalances in the country's foreign exchange market, rather than stimulating the optimal allocation of resources for dynamic development and creation of new progressive and competitive sectors.

The analysis shows that those industries that are material-intensive and energy-intensive account for almost half of output, providing employment for just over ten percent of the average number of industrial workers, but these industries in the Ukrainian economy enjoy state support and have not been significant until recently. downturns in production.

Production in mechanical engineering has been declining sharply in recent times. But it is industries such as mechanical engineering that determine technical progress in the country, at least in the medium term. To create a job in the fuel industry, you need to spend much more money than in mechanical engineering. In addition, the number of jobs in the energy and fuel industries is limited. The development of these industries directly depends on how total output increases. On the other hand, the growth of production in mechanical engineering is not strictly limited.

**Conclusions.** The formation of an expanded free trade zone with EU countries will be key to changing the production structure of Ukraine's industry, forming new high-tech industries that require significant amounts of physical and human capital and provide the Ukrainian economy with long-term dynamic efficiency.

The dynamic effects of economic integration are observed in the long run [5]. At the heart of these effects is increased competition and new opportunities for market integration, as well as a growing economies of scale from full capacity utilization, optimal resource allocation

and the introduction of new technologies, which in turn contributes to increased investment and economic growth. New investments in physical and human capital are the foundation of dynamic effects in a free trade area.

In the EU, countries have roughly the same economic structure, which creates good prospects for competition, from which consumers and producers benefit, given the effect of scale. At the moment, the Ukrainian economy complements the economies of the EU, supplying mainly raw materials that are energy-intensive and capital-intensive goods, which, in turn, leads to intensive use of scarce for Ukraine factors of production, and thus their rise in price.

In the EU, foreign trade based on the model of intra-industry trade predominates, and in Ukraine, intersectoral trade, which dominated Europe in the early twentieth century, predominates. It should also be noted that it is necessary to use the Ukrainian labor force, which has a high level of education and skills, so investments, loans should be directed and stimulated by the state in labor-intensive technological sectors of the economy.

Our study has shown that if we want to achieve quick but short-term results, the structure of foreign trade and domestic production must remain as it is today, and long-term effects for stable economic growth and high GDP per capita can only be achieved by increasing the share trade with more efficient countries of the European Union and accordingly, the free trade zone with the EU will allow, first of all, to carry out an investment revolution in Ukraine, which would allow to use underestimated human capital and provide an intra-industry model of international trade without which accession to the European Union is impossible in the near future.

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